Computer algebra independent integration tests

4-Trig-functions/4.3-Tangent/4.3.3.1-a+b-tan-^m-c+d-tan-^n-A+B-tan-

Nasser M. Abbasi

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [855]. This is test number [104].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.1 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12 on windows 10.
3. Maple 2020 (64 bit) on windows 10.
4. Maxima 5.43 on Linux. (via sagemath 8.9)
5. Fricas 1.3.6 on Linux (via sagemath 9.0)
6. Sympy 1.5 under Python 3.7.3 using Anaconda distribution.
7. Giac/Xcas 1.5 on Linux. (via sagemath 8.9)

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 100. (855)	% 0. (0)
Mathematica	% 93.22 (797)	% 6.78 (58)
Maple	% 91.23 (780)	% 8.77 (75)
Maxima	% 36.26 (310)	% 63.74 (545)
Fricas	% 68.19 (583)	% 31.81 (272)
Sympy	% 20.35 (174)	% 79.65 (681)
Giac	% 38.71 (331)	% 61.29 (524)

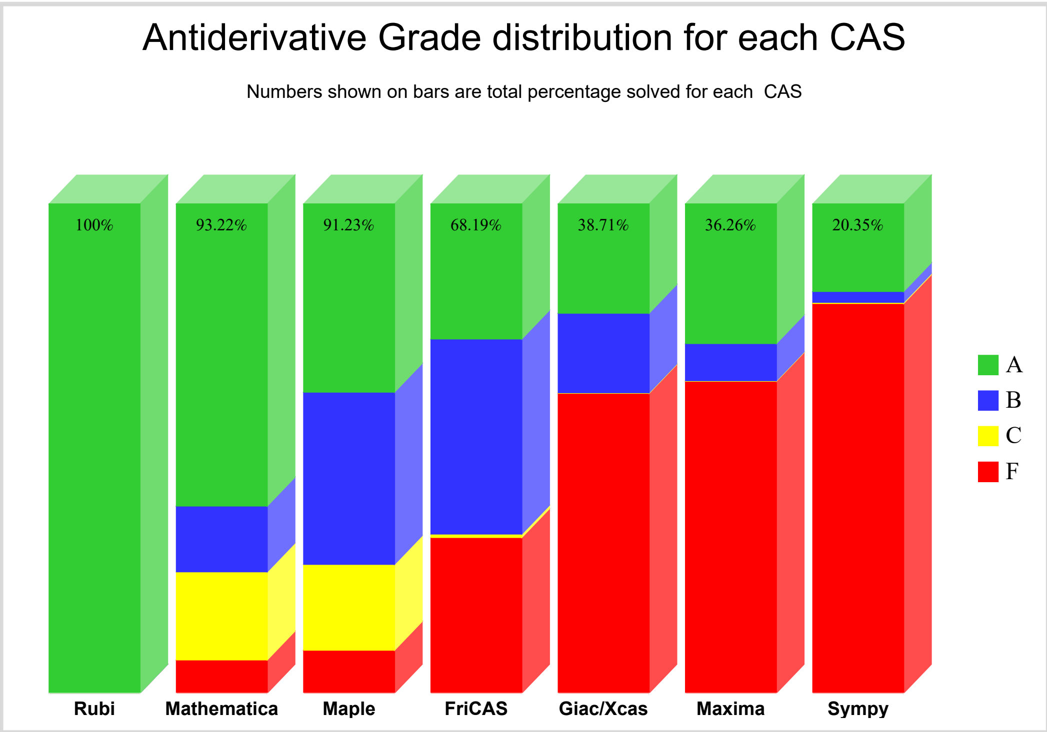
The table below gives additional break down of the grading of quality of the antiderivatives generated by each CAS. The grading is given using the letters A,B,C and F with A being the best quality. The grading is accomplished by comparing the antiderivative generated with the optimal antiderivatives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

grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality. This can be due to one or more of the following reasons 1. antiderivative contains a hypergeometric function and the optimal antiderivative does not. 2. antiderivative contains a special function and the optimal antiderivative does not. 3. antiderivative contains the imaginary unit and the optimal antiderivative does not.
F	Integral was not solved. Either the integral was returned unevaluated within the time limit, or it timed out, or CAS hanged or crashed or an exception was raised.

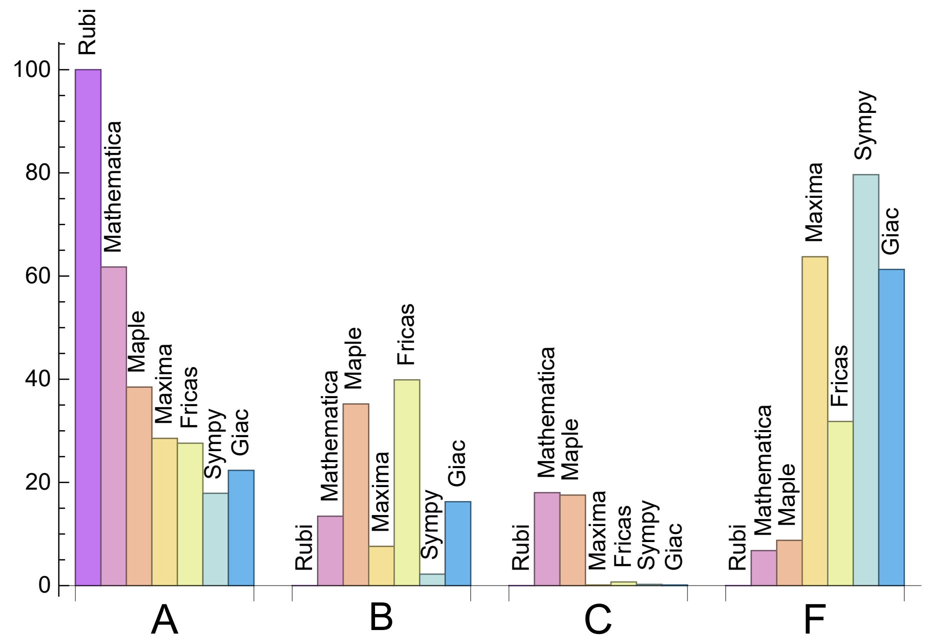
Grading is implemented for all CAS systems. Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	100.	0.	0.	0.
Mathematica	61.75	13.45	18.01	6.78
Maple	38.48	35.2	17.54	8.77
Maxima	28.54	7.6	0.12	63.74
Fricas	27.6	39.88	0.7	31.81
Sympy	17.89	2.22	0.23	79.65
Giac	22.34	16.26	0.12	61.29

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



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



1.3 Performance

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

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.53	202.72	1.	189.	1.
Mathematica	5.28	2489.43	9.76	215.	1.09
Maple	0.41	136789.	579.08	496.	2.46
Maxima	2.8	452.06	2.48	237.	1.59
Fricas	4.22	1939.69	10.79	1026.	5.5
Sympy	13.94	276.52	2.54	222.	1.95
Giac	1.88	447.57	3.	269.	1.98

1.4 list of integrals that has no closed form antiderivative

{}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {74, 80, 81, 85, 86, 87, 88, 89, 95, 127, 128, 132, 133, 149, 150, 169, 170, 171, 172, 173, 174, 175, 195, 209, 210, 211, 222, 289, 437, 445, 446, 458, 463, 532, 533, 546, 550, 551, 552, 553, 600, 623, 631, 632, 646, 652, 716, 816, 822, 823, 824, 851}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

The percentage of such failures were not counted for each test file, but for an example, for the Timofeev test file, there were about 30 such integrals out of total 705, or about 4 percent. This pecrentage can be higher or lower depending on the specific input test file.

Such integrals can be indentified by looking at the output of the integration in each section for Maxima. If the output was an exception `ValueError` then this is most likely due to this reason.

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

The other CAS systems (SageMath and Sympy) do not have special buildin function for this purpose at this time. Therefore the leaf size is determined as follows.

For Fricas, Giac and Maxima (all called via sagemath) the following code is used

```
#see https://stackoverflow.com/questions/25202346/how-to-obtain-leaf-count-expression-size-in

def tree(expr):
    if expr.operator() is None:
       return expr
    else:
       return [expr.operator()]+map(tree, expr.operands())

try:
    # 1.35 is a fudge factor since this estimate of leaf count is bit lower than
    #what it should be compared to Mathematica's
    leafCount = round(1.35*len(flatten(tree(anti))))
except Exception as ee:
    leafCount =1
```

For Sympy, called directly from Python, the following code is used

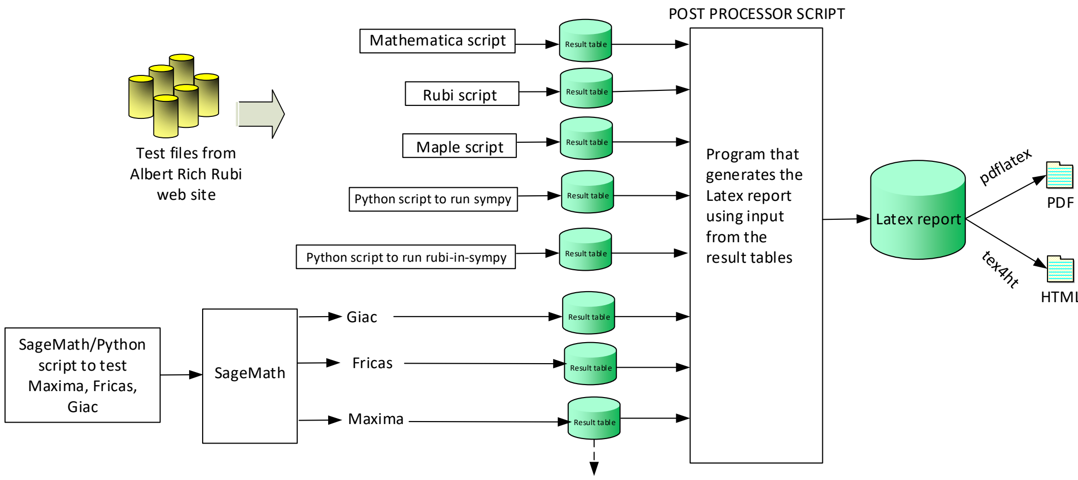
```
try:
  # 1.7 is a fudge factor since it is low side from actual leaf count
  leafCount = round(1.7*count_ops(anti))

  except Exception as ee:
         leafCount =1
```

When these cas systems have a buildin function to find the leaf size of expressions, it will be used instead, and these tests run again.

1.10 Design of the test system

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



One record (line) per one integral result. The line is CSV comma separated. It contains 13 fields. This is description of each record (line)

1. integer, the problem number.
2. integer. 0 or 1 for failed or passed. (this is not the grade field)
3. integer. Leaf size of result.
4. integer. Leaf size of the optimal antiderivative.
5. number. CPU time used to solve this integral. 0 if failed.
6. string. The integral in Latex format
7. string. The input used in CAS own syntx.
8. string. The result (antiderivative) produced by CAS in Latex format
9. string. The optimal antiderivative in Latex format.
10. integer. 0 or 1. Indicates if problem has known antiderivative or not
11. String. The result (antiderivative) in CAS own syntax.
12. String. The grade of the antiderivative. Can be “A”, “B”, “C”, or “F”
13. String. The optimal antiderivative in CAS own syntax.

High level overview of the CAS independent integration test build system

Nasser M. Abbasi
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Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855 }

B grade: { }

C grade: { }

F grade: { }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 33, 45, 46, 47, 48, 52, 53, 54, 55, 56, 59, 60, 61, 62, 63, 64, 67, 68, 69, 70, 71, 73, 74, 75, 76, 77, 78, 79, 82, 83, 84, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 114, 115, 116, 117, 119, 120, 122, 123, 124, 126, 129, 130, 131, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 174, 175, 176, 177, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 205, 222, 232, 233, 234, 235, 270, 298, 299, 300, 301, 302, 304, 315, 317, 318, 319, 320, 321, 322, 323, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 338, 339, 340, 343, 344, 345, 346, 347, 348, 349, 352, 354, 355, 356, 360, 362, 363, 364, 367, 369, 370, 373, 374, 382, 383, 384, 400, 401, 417, 419, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 438, 439, 440, 441, 442, 443, 444, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 459, 460, 461, 462, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 478, 479, 480, 481, 482, 483, 484, 485, 494, 495, 496, 497, 498, 499, 500, 501, 504, 505, 506, 507, 509, 510, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 541, 542, 543, 544, 545, 546, 547, 548, 549, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 607, 609, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 624, 625, 626, 627, 628, 629, 630, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 647, 648, 649, 650, 651, 653, 654, 655, 665, 668, 669, 670, 672, 673, 674, 676, 678, 679, 680, 681, 685, 686, 687, 688, 690, 691, 692, 693, 694, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 711, 712, 713, 714, 719, 720, 721, 722, 723, 724, 725, 726, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 767, 768, 769, 770, 774, 775, 776, 777, 778, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 808, 809, 810, 811, 812, 813, 814, 816, 819, 820, 821, 822, 823, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855 }

B grade: { 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 49, 50, 51, 57, 58, 65, 66, 72, 80, 81, 85, 86, 87, 88, 89, 112, 113, 118, 121, 125, 127, 128, 132, 133, 155, 156, 170, 171, 172, 173, 178, 195, 206, 207, 209, 210, 211, 221, 314, 324, 336, 337, 410, 486, 502, 503, 508, 511, 550, 666, 667, 671, 675, 677, 682, 683, 684, 689, 695, 696, 697, 698, 709, 710, 716, 717, 718, 728, 729, 806, 807, 815, 817, 818, 824, 825, 826, 827, 828, 829 }

C grade: { 5, 6, 7, 8, 197, 198, 199, 200, 202, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 303, 305, 306, 307, 308, 309, 310, 311, 312, 313, 316, 341, 342, 350, 351, 353, 357, 358, 359, 361, 365, 366, 368, 371, 372, 375, 376, 377, 378, 379, 380, 381, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 402, 403, 404, 405, 406, 407, 408, 409, 411, 412, 413, 414, 415, 416, 418, 420, 421, 422, 423, 424, 425, 426, 437, 445, 446, 458, 463, 477, 606, 608, 610, 611, 623, 631, 632, 646, 652 }

F grade: { 154, 196, 201, 203, 204, 208, 212, 213, 214, 215, 216, 217, 218, 219, 220, 223, 224, 225, 226, 227, 228, 229, 230, 231, 487, 488, 489, 490, 491, 492, 493, 540, 567, 568, 569, 570, 571, 572, 573, 656, 657, 658, 659, 660, 661, 662, 663, 664, 715, 727, 764, 765, 766, 771, 772, 773, 779, 780}

2.1.3 Maple

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 49, 50, 51, 52, 53, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 75, 76, 77, 82, 83, 84, 90, 91, 92, 93, 97, 98, 99, 100, 104, 105, 106, 107, 108, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 196, 197, 198, 199, 202, 203, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 273, 275, 276, 281, 282, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 377, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 706, 707, 708, 709, 713, 714, 716, 717, 718, 719, 720, 724, 725, 726, 728, 729, 730, 731, 732, 734, 735, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 792, 793, 794, 795, 796, 797, 798, 801, 802, 803, 804, 806, 807, 808, 812, 813, 814, 815, 817, 819, 820, 825, 826, 827, 828, 829, 833, 834, 835, 839, 840, 841, 842, 846, 847, 848, 849, 850, 855 }

B grade: { 39, 40, 46, 47, 48, 54, 55, 71, 72, 73, 74, 78, 79, 80, 81, 85, 86, 87, 88, 89, 94, 95, 96, 101, 102, 103, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 257, 258, 270, 271, 272, 274, 277, 278, 279, 280, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 315, 316, 317, 318, 319, 320, 325, 326, 327, 332, 333, 334, 340, 341, 342, 343, 344, 345, 346, 350, 351, 352, 353, 357, 358, 359, 360, 361, 365, 366, 368, 370, 371, 372, 373, 374, 375, 376, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 665, 676, 710, 712, 721, 722, 733, 791, 799, 800, 805, 809, 810, 811, 816, 818, 821, 822, 823, 824, 830, 831, 832, 836, 837, 838, 843, 844, 845, 854 }

C grade: { 321, 322, 323, 324, 328, 329, 330, 331, 335, 336, 337, 338, 339, 347, 348, 349, 354, 355, 356, 362, 363, 364, 367, 369, 473, 474, 475, 476, 477, 478, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 689, 711, 723, 736 }

F grade: { 200, 201, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 567, 568, 569, 570, 571, 572, 573, 656, 657, 658, 659, 660, 661, 662, 663, 664, 705, 715, 727, 851, 852, 853 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 119, 120, 121, 125, 126, 127, 128, 129, 130, 131, 132, 133, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 295, 296, 297, 298, 299, 300, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 416, 417, 418, 419, 420, 421, 508, 512, 513, 514, 515, 516, 517, 518, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 606, 607, 608, 609, 610, 611, 666, 667, 668, 669, 670, 677, 678, 679, 680, 681, 682, 690, 691, 692, 693, 694, 695, 696, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 800, 801, 802, 803, 804, 811, 813, 814, 815, 824, 826, 827, 828, 829, 832, 833, 838, 841, 845, 846

B grade: { 112, 113, 114, 115, 116, 117, 118, 122, 123, 124, 292, 293, 294, 302, 502, 503, 504, 505, 506, 507, 509, 510, 511, 536, 537, 538, 541, 542, 543, 547, 548, 549, 665, 676, 689, 787, 788, 789, 790, 795, 796, 797, 798, 799, 805, 806, 807, 808, 809, 810, 812, 816, 817, 818, 819, 820, 821, 822, 823, 825, 830, 831, 836, 844, 850 }

C grade: { 301 }

F grade: { 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 539, 540, 544, 545, 546, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 671, 672, 673, 674, 675, 683, 684, 685, 686, 687, 688, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 791, 792, 793, 794, 834, 835, 837, 839, 840, 842, 843, 847, 848, 849, 851, 852, 853, 854, 855 }

2.1.5 FriCAS

A grade: { 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 277, 278, 298, 299, 300, 301, 302, 304, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 375, 665, 667, 668, 670, 671, 672, 673, 674, 677, 678, 679, 681, 682, 683, 684, 685, 686, 687, 688, 690, 691, 692, 694, 696, 697, 698, 699, 700, 701, 702, 703, 704, 708, 709, 710, 712, 713, 714, 716, 717, 718, 719, 720, 721, 722, 724, 725, 726, 728, 729, 730, 731, 732, 733, 734, 735, 737, 738, 739, 741, 742, 743, 744, 745, 746, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 785, 786, 792, 793, 794, 801, 802, 803, 804, 812, 813, 814, 815, 825, 826, 827, 828, 829, 833, 834, 835, 839, 840, 841, 842, 846, 847, 848, 849, 850, 854 }

B grade: { 1, 7, 8, 29, 30, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 275, 276, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 303, 305, 317, 318, 319, 320, 340, 341, 342, 343, 344, 345, 346, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 376, 377, 378, 379, 380, 381, 382, 383, 384, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 477, 478, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 666, 675, 676, 689, 695, 706, 707, 740, 747, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 787, 788, 789, 790, 791, 795, 796, 797, 798, 799, 800, 805, 806, 807, 808, 809, 810, 811, 816, 817, 818, 819, 820, 821, 822, 823, 824, 830, 831, 832, 836, 837, 838, 843, 844, 845, 853, 855 }

C grade: { 669, 680, 693, 711, 723, 736 }

F grade: { 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 705, 715, 727, 851, 852 }

2.1.6 Sympy

A grade: { 2, 3, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 28, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 59, 60, 61, 62, 63, 64, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 257, 258, 259, 260, 261, 262, 263, 267, 268, 269, 270, 271, 272, 273, 298, 299, 300, 301, 302, 303, 304, 314, 315, 670, 671, 672, 673, 682, 683, 684, 685, 686, 687, 688, 696, 697, 698, 699, 700, 701, 702, 703, 704, 706, 707, 708, 709, 710, 711, 712, 713, 714, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 854 }

B grade: { 1, 4, 7, 8, 20, 21, 29, 666, 667, 668, 674, 675, 677, 678, 679, 681, 692, 694, 695 }

C grade: { 669, 680 }

F grade: { 26, 27, 35, 58, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 256, 264, 265, 266, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 305, 306, 307, 308, 309, 310, 311, 312, 313, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 676, 689, 690, 691, 693, 705, 715, 727, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 855 }

2.1.7 Giac

A grade: { 36, 37, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 182, 183, 184, 187, 188, 189, 193, 194, 195, 235, 243, 244, 251, 252, 253, 260, 261, 262, 263, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 280, 281, 282, 283, 288, 297, 299, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 381, 382, 383, 384, 388, 389, 390, 391, 394, 395, 396, 397, 401, 402, 403, 407, 408, 409, 414, 415, 419, 420, 421, 425, 426, 474, 476, 478, 668, 679, 711, 712, 713, 714, 720, 721, 722, 723, 724, 725, 726, 733, 734, 735, 736, 737, 738, 739 }

B grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 39, 157, 181, 232, 233, 234, 236, 237, 238, 239, 240, 241, 242, 245, 246, 247, 248, 249, 250, 254, 255, 256, 257, 258, 259, 264, 265, 266, 277, 278, 279, 284, 285, 286, 287, 289, 290, 291, 292, 293, 294, 295, 296, 298, 300, 302, 303, 304, 305, 373, 374, 473, 475, 477, 666, 667, 669, 670, 671, 672, 673, 674, 675, 677, 678, 680, 681, 682, 683, 684, 685, 686, 687, 688, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 706, 707, 708, 709, 710, 716, 717, 718, 719, 728, 729, 730, 731, 732, 854 }

C grade: { 301 }

F grade: { 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 179, 180, 185, 186, 190, 191, 192, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 375, 376, 377, 378, 379, 380, 385, 386, 387, 392, 393, 398, 399, 400, 404, 405, 406, 410, 411, 412, 413, 416, 417, 418, 422, 423, 424, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 676, 689, 705, 715, 727, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 855 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	86	141	113	467	156	383
normalized size	1	1.	0.95	1.55	1.24	5.13	1.71	4.21
time (sec)	N/A	0.111	0.87	0.012	1.526	1.42	12.603	1.643

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	70	110	92	304	110	262
normalized size	1	1.	1.01	1.59	1.33	4.41	1.59	3.8
time (sec)	N/A	0.056	0.306	0.005	1.648	1.469	4.956	1.292

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	46	46	66	81	68	161	58	139
normalized size	1	1.	1.43	1.76	1.48	3.5	1.26	3.02
time (sec)	N/A	0.028	0.026	0.003	1.665	1.361	2.381	1.343

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	40	40	49	56	66	103	92	104
normalized size	1	1.	1.22	1.4	1.65	2.58	2.3	2.6
time (sec)	N/A	0.071	0.056	0.059	1.715	1.385	2.492	1.449

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	44	44	84	71	86	162	58	142
normalized size	1	1.	1.91	1.61	1.95	3.68	1.32	3.23
time (sec)	N/A	0.084	0.198	0.046	1.668	1.386	3.392	1.404

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	68	68	76	101	113	302	109	220
normalized size	1	1.	1.12	1.49	1.66	4.44	1.6	3.24
time (sec)	N/A	0.121	0.361	0.064	1.706	1.402	5.836	1.459

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	89	89	102	129	140	471	156	300
normalized size	1	1.	1.15	1.45	1.57	5.29	1.75	3.37
time (sec)	N/A	0.152	0.69	0.061	1.678	1.433	10.136	1.38

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	96	159	159	589	204	382
normalized size	1	1.	0.86	1.43	1.43	5.31	1.84	3.44
time (sec)	N/A	0.186	0.866	0.064	1.536	1.47	36.645	1.548

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	141	305	193	158	643	221	551
normalized size	1	1.	2.16	1.37	1.12	4.56	1.57	3.91
time (sec)	N/A	0.252	6.323	0.006	1.615	1.383	42.024	1.71

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	107	107	273	158	126	474	172	421
normalized size	1	1.	2.55	1.48	1.18	4.43	1.61	3.93
time (sec)	N/A	0.115	3.916	0.006	1.705	1.32	15.407	1.479

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	263	123	100	339	121	290
normalized size	1	1.	3.29	1.54	1.25	4.24	1.51	3.62
time (sec)	N/A	0.069	2.22	0.006	1.545	1.475	7.089	1.387

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	75	75	201	100	90	265	119	240
normalized size	1	1.	2.68	1.33	1.2	3.53	1.59	3.2
time (sec)	N/A	0.159	2.707	0.06	1.715	1.448	4.316	1.49

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	79	79	202	100	101	266	121	213
normalized size	1	1.	2.56	1.27	1.28	3.37	1.53	2.7
time (sec)	N/A	0.178	3.085	0.06	1.544	1.552	5.219	1.552

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	94	94	302	119	130	316	119	254
normalized size	1	1.	3.21	1.27	1.38	3.36	1.27	2.7
time (sec)	N/A	0.208	2.356	0.071	1.666	1.405	5.362	1.619

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	117	117	435	154	154	498	170	346
normalized size	1	1.	3.72	1.32	1.32	4.26	1.45	2.96
time (sec)	N/A	0.256	3.301	0.066	1.627	1.322	7.441	1.489

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	139	139	902	188	182	620	221	437
normalized size	1	1.	6.49	1.35	1.31	4.46	1.59	3.14
time (sec)	N/A	0.293	8.44	0.074	1.711	1.432	22.491	1.649

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	182	182	847	230	182	836	272	680
normalized size	1	1.	4.65	1.26	1.	4.59	1.49	3.74
time (sec)	N/A	0.424	8.209	0.005	1.927	1.413	54.875	1.755

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	980	195	155	626	223	551
normalized size	1	1.	7.1	1.41	1.12	4.54	1.62	3.99
time (sec)	N/A	0.135	7.61	0.006	1.698	1.479	25.506	1.397

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	331	160	131	509	172	421
normalized size	1	1.	3.01	1.45	1.19	4.63	1.56	3.83
time (sec)	N/A	0.089	3.826	0.003	1.692	1.484	6.484	1.501

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	107	107	281	135	123	466	207	362
normalized size	1	1.	2.63	1.26	1.15	4.36	1.93	3.38
time (sec)	N/A	0.281	7.659	0.067	1.688	1.447	8.413	1.576

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	116	116	291	134	115	360	199	351
normalized size	1	1.	2.51	1.16	0.99	3.1	1.72	3.03
time (sec)	N/A	0.296	4.201	0.061	1.561	1.406	3.944	1.593

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	1010	136	132	474	207	306
normalized size	1	1.	8.21	1.11	1.07	3.85	1.68	2.49
time (sec)	N/A	0.315	8.581	0.075	1.661	1.506	8.865	1.65

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	134	134	442	154	157	504	170	344
normalized size	1	1.	3.3	1.15	1.17	3.76	1.27	2.57
time (sec)	N/A	0.365	4.684	0.071	2.379	1.388	14.52	1.718

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	1007	189	185	626	221	439
normalized size	1	1.	6.41	1.2	1.18	3.99	1.41	2.8
time (sec)	N/A	0.418	8.496	0.077	2.31	1.64	34.132	1.77

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	180	180	943	224	208	844	272	529
normalized size	1	1.	5.24	1.24	1.16	4.69	1.51	2.94
time (sec)	N/A	0.46	8.779	0.08	2.245	1.648	146.15	1.767

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	225	225	951	264	208	1019	0	810
normalized size	1	1.	4.23	1.17	0.92	4.53	0.	3.6
time (sec)	N/A	0.642	8.66	0.006	2.176	1.71	0.	1.982

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	168	168	589	229	182	790	0	680
normalized size	1	1.	3.51	1.36	1.08	4.7	0.	4.05
time (sec)	N/A	0.158	4.522	0.006	2.209	1.76	0.	1.623

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	140	140	448	194	158	670	223	551
normalized size	1	1.	3.2	1.39	1.13	4.79	1.59	3.94
time (sec)	N/A	0.115	3.224	0.003	2.066	1.715	48.713	1.571

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	142	429	169	149	672	262	454
normalized size	1	1.	3.02	1.19	1.05	4.73	1.85	3.2
time (sec)	N/A	0.421	6.971	0.074	2.18	1.487	29.704	1.64

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	1122	165	142	686	230	458
normalized size	1	1.	7.79	1.15	0.99	4.76	1.6	3.18
time (sec)	N/A	0.432	10.521	0.066	2.139	1.55	8.586	1.685

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	1116	166	149	678	228	433
normalized size	1	1.	7.15	1.06	0.96	4.35	1.46	2.78
time (sec)	N/A	0.442	10.343	0.074	2.103	1.547	16.967	1.739

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	163	163	1138	170	159	679	262	397
normalized size	1	1.	6.98	1.04	0.98	4.17	1.61	2.44
time (sec)	N/A	0.453	9.595	0.074	2.377	1.535	28.472	1.905

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	177	177	319	189	188	622	221	439
normalized size	1	1.	1.8	1.07	1.06	3.51	1.25	2.48
time (sec)	N/A	0.532	5.82	0.079	2.1	1.43	20.132	1.895

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	200	200	542	224	211	857	272	529
normalized size	1	1.	2.71	1.12	1.05	4.28	1.36	2.64
time (sec)	N/A	0.592	8.239	0.081	2.003	1.464	146.132	1.865

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	223	223	1009	259	239	948	0	624
normalized size	1	1.	4.52	1.16	1.07	4.25	0.	2.8
time (sec)	N/A	0.646	9.411	0.087	2.045	1.367	0.	2.111

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	898	169	0	527	196	169
normalized size	1	1.	6.96	1.31	0.	4.09	1.52	1.31
time (sec)	N/A	0.173	7.199	0.033	0.	1.468	13.363	2.01

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	240	137	0	362	150	136
normalized size	1	1.	2.38	1.36	0.	3.58	1.49	1.35
time (sec)	N/A	0.125	4.357	0.028	0.	1.471	7.32	1.634

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	67	67	148	121	0	189	114	111
normalized size	1	1.	2.21	1.81	0.	2.82	1.7	1.66
time (sec)	N/A	0.093	0.919	0.027	0.	1.555	4.198	1.443

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	102	121	0	108	88	115
normalized size	1	1.	2.17	2.57	0.	2.3	1.87	2.45
time (sec)	N/A	0.043	0.452	0.027	0.	1.391	1.43	1.425

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	150	136	0	186	117	135
normalized size	1	1.	2.42	2.19	0.	3.	1.89	2.18
time (sec)	N/A	0.109	0.938	0.103	0.	1.413	2.157	1.378

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	225	170	0	365	151	184
normalized size	1	1.	2.21	1.67	0.	3.58	1.48	1.8
time (sec)	N/A	0.175	2.701	0.096	0.	1.543	3.991	1.401

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	902	206	0	528	197	223
normalized size	1	1.	6.89	1.57	0.	4.03	1.5	1.7
time (sec)	N/A	0.212	7.145	0.111	0.	1.536	7.907	1.414

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	1062	241	0	724	243	252
normalized size	1	1.	6.85	1.55	0.	4.67	1.57	1.63
time (sec)	N/A	0.246	7.362	0.106	0.	1.534	25.152	1.448

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	142	956	177	0	424	223	162
normalized size	1	1.	6.73	1.25	0.	2.99	1.57	1.14
time (sec)	N/A	0.28	6.91	0.033	0.	1.466	14.432	1.857

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	185	162	0	240	223	144
normalized size	1	1.	1.8	1.57	0.	2.33	2.17	1.4
time (sec)	N/A	0.211	0.873	0.032	0.	1.443	4.923	1.543

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	76	76	92	162	0	154	167	147
normalized size	1	1.	1.21	2.13	0.	2.03	2.2	1.93
time (sec)	N/A	0.131	0.531	0.03	0.	1.423	2.053	1.349

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	94	162	0	150	163	149
normalized size	1	1.	1.18	2.02	0.	1.88	2.04	1.86
time (sec)	N/A	0.062	0.521	0.028	0.	1.364	1.807	1.346

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	95	95	184	177	0	242	221	165
normalized size	1	1.	1.94	1.86	0.	2.55	2.33	1.74
time (sec)	N/A	0.229	0.965	0.112	0.	1.551	3.756	1.29

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	141	302	211	0	433	223	219
normalized size	1	1.	2.14	1.5	0.	3.07	1.58	1.55
time (sec)	N/A	0.346	6.032	0.102	0.	1.435	14.798	1.316

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	170	170	1112	247	0	601	274	239
normalized size	1	1.	6.54	1.45	0.	3.54	1.61	1.41
time (sec)	N/A	0.405	7.084	0.118	0.	1.561	35.129	1.422

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	191	191	1251	219	0	506	292	194
normalized size	1	1.	6.55	1.15	0.	2.65	1.53	1.02
time (sec)	N/A	0.473	7.013	0.036	0.	1.464	35.956	2.372

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	148	148	178	203	0	306	253	176
normalized size	1	1.	1.2	1.37	0.	2.07	1.71	1.19
time (sec)	N/A	0.368	1.206	0.034	0.	1.514	13.85	1.955

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	124	124	147	203	0	219	260	177
normalized size	1	1.	1.19	1.64	0.	1.77	2.1	1.43
time (sec)	N/A	0.289	1.076	0.034	0.	1.38	5.453	1.587

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	148	203	0	216	260	176
normalized size	1	1.	1.35	1.85	0.	1.96	2.36	1.6
time (sec)	N/A	0.165	1.309	0.031	0.	1.444	4.556	1.381

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	150	203	0	217	260	177
normalized size	1	1.	1.34	1.81	0.	1.94	2.32	1.58
time (sec)	N/A	0.084	0.775	0.03	0.	1.395	4.21	1.407

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	180	218	0	305	294	197
normalized size	1	1.	1.37	1.66	0.	2.33	2.24	1.5
time (sec)	N/A	0.361	1.064	0.125	0.	1.483	11.229	1.399

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	183	183	1282	252	0	504	294	252
normalized size	1	1.	7.01	1.38	0.	2.75	1.61	1.38
time (sec)	N/A	0.53	6.981	0.12	0.	1.538	31.108	1.507

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	216	216	1448	288	0	691	0	286
normalized size	1	1.	6.7	1.33	0.	3.2	0.	1.32
time (sec)	N/A	0.598	7.251	0.13	0.	1.525	0.	1.522

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	185	185	195	244	0	359	360	208
normalized size	1	1.	1.05	1.32	0.	1.94	1.95	1.12
time (sec)	N/A	0.509	1.2	0.04	0.	1.486	35.788	3.434

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	159	159	158	244	0	262	303	207
normalized size	1	1.	0.99	1.53	0.	1.65	1.91	1.3
time (sec)	N/A	0.466	1.359	0.035	0.	1.432	8.532	2.266

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	145	145	144	244	0	232	243	204
normalized size	1	1.	0.99	1.68	0.	1.6	1.68	1.41
time (sec)	N/A	0.291	1.497	0.035	0.	1.388	6.474	1.576

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	143	143	141	244	0	236	246	208
normalized size	1	1.	0.99	1.71	0.	1.65	1.72	1.45
time (sec)	N/A	0.192	1.228	0.033	0.	1.363	8.76	1.423

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	145	145	160	244	0	261	301	208
normalized size	1	1.	1.1	1.68	0.	1.8	2.08	1.43
time (sec)	N/A	0.106	0.818	0.031	0.	1.425	11.346	1.337

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	162	162	193	259	0	362	360	224
normalized size	1	1.	1.19	1.6	0.	2.23	2.22	1.38
time (sec)	N/A	0.494	1.124	0.122	0.	1.532	23.555	1.342

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	220	220	1466	293	0	578	0	278
normalized size	1	1.	6.66	1.33	0.	2.63	0.	1.26
time (sec)	N/A	0.721	7.004	0.122	0.	1.78	0.	1.304

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	255	255	1625	329	0	772	0	309
normalized size	1	1.	6.37	1.29	0.	3.03	0.	1.21
time (sec)	N/A	0.79	7.237	0.136	0.	1.829	0.	1.407

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	201	162	0	1253	0	0
normalized size	1	1.	1.04	0.84	0.	6.46	0.	0.
time (sec)	N/A	0.518	3.313	0.069	0.	1.827	0.	0.

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	143	143	184	124	0	1084	0	0
normalized size	1	1.	1.29	0.87	0.	7.58	0.	0.
time (sec)	N/A	0.302	2.509	0.062	0.	1.785	0.	0.

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	132	82	0	919	0	0
normalized size	1	1.	1.26	0.78	0.	8.75	0.	0.
time (sec)	N/A	0.137	1.293	0.018	0.	1.505	0.	0.

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	75	75	87	63	0	755	0	0
normalized size	1	1.	1.16	0.84	0.	10.07	0.	0.
time (sec)	N/A	0.072	1.165	0.018	0.	1.467	0.	0.

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	86	86	113	312	0	1139	0	0
normalized size	1	1.	1.31	3.63	0.	13.24	0.	0.
time (sec)	N/A	0.227	1.645	0.414	0.	1.552	0.	0.

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	293	1179	0	1644	0	0
normalized size	1	1.	2.38	9.59	0.	13.37	0.	0.
time (sec)	N/A	0.385	4.618	0.553	0.	1.791	0.	0.

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	230	2240	0	1921	0	0
normalized size	1	1.	1.36	13.25	0.	11.37	0.	0.
time (sec)	N/A	0.565	3.18	0.536	0.	1.879	0.	0.

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	210	210	414	1783	0	2192	0	0
normalized size	1	1.	1.97	8.49	0.	10.44	0.	0.
time (sec)	N/A	0.752	4.42	0.513	0.	2.015	0.	0.

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	197	197	239	164	0	1365	0	0
normalized size	1	1.	1.21	0.83	0.	6.93	0.	0.
time (sec)	N/A	0.532	4.272	0.027	0.	1.812	0.	0.

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	137	137	204	123	0	1180	0	0
normalized size	1	1.	1.49	0.9	0.	8.61	0.	0.
time (sec)	N/A	0.176	3.647	0.018	0.	1.751	0.	0.

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	107	107	190	99	0	1017	0	0
normalized size	1	1.	1.78	0.93	0.	9.5	0.	0.
time (sec)	N/A	0.1	2.547	0.018	0.	1.703	0.	0.

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	113	113	157	467	0	1354	0	0
normalized size	1	1.	1.39	4.13	0.	11.98	0.	0.
time (sec)	N/A	0.375	1.928	0.345	0.	1.864	0.	0.

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	125	125	201	1117	0	1796	0	0
normalized size	1	1.	1.61	8.94	0.	14.37	0.	0.
time (sec)	N/A	0.39	2.984	0.437	0.	1.898	0.	0.

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	171	171	400	1290	0	2080	0	0
normalized size	1	1.	2.34	7.54	0.	12.16	0.	0.
time (sec)	N/A	0.583	5.654	0.45	0.	1.986	0.	0.

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	213	213	439	1804	0	2348	0	0
normalized size	1	1.	2.06	8.47	0.	11.02	0.	0.
time (sec)	N/A	0.772	6.376	0.522	0.	1.873	0.	0.

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	246	246	284	206	0	1585	0	0
normalized size	1	1.	1.15	0.84	0.	6.44	0.	0.
time (sec)	N/A	0.753	5.643	0.027	0.	1.796	0.	0.

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	171	171	268	165	0	1385	0	0
normalized size	1	1.	1.57	0.96	0.	8.1	0.	0.
time (sec)	N/A	0.2	3.936	0.019	0.	1.761	0.	0.

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	141	236	141	0	1223	0	0
normalized size	1	1.	1.67	1.	0.	8.67	0.	0.
time (sec)	N/A	0.126	3.019	0.017	0.	1.749	0.	0.

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	147	147	429	965	0	1652	0	0
normalized size	1	1.	2.92	6.56	0.	11.24	0.	0.
time (sec)	N/A	0.534	7.939	0.431	0.	1.884	0.	0.

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	158	158	413	1141	0	1872	0	0
normalized size	1	1.	2.61	7.22	0.	11.85	0.	0.
time (sec)	N/A	0.552	6.896	0.471	0.	1.901	0.	0.

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	173	173	427	1292	0	2133	0	0
normalized size	1	1.	2.47	7.47	0.	12.33	0.	0.
time (sec)	N/A	0.606	8.459	0.445	0.	1.83	0.	0.

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	217	217	634	2506	0	2412	0	0
normalized size	1	1.	2.92	11.55	0.	11.12	0.	0.
time (sec)	N/A	0.797	8.602	0.483	0.	1.844	0.	0.

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	261	261	698	3444	0	2722	0	0
normalized size	1	1.	2.67	13.2	0.	10.43	0.	0.
time (sec)	N/A	1.005	8.984	0.429	0.	1.934	0.	0.

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	176	168	0	1266	0	0
normalized size	1	1.	0.86	0.82	0.	6.18	0.	0.
time (sec)	N/A	0.524	3.34	0.064	0.	2.098	0.	0.

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	159	159	147	127	0	1089	0	0
normalized size	1	1.	0.92	0.8	0.	6.85	0.	0.
time (sec)	N/A	0.335	2.332	0.061	0.	2.031	0.	0.

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	109	109	140	88	0	913	0	0
normalized size	1	1.	1.28	0.81	0.	8.38	0.	0.
time (sec)	N/A	0.141	1.379	0.054	0.	2.002	0.	0.

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	82	82	129	71	0	918	0	0
normalized size	1	1.	1.57	0.87	0.	11.2	0.	0.
time (sec)	N/A	0.073	0.974	0.056	0.	1.93	0.	0.

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	114	114	208	948	0	1543	0	0
normalized size	1	1.	1.82	8.32	0.	13.54	0.	0.
time (sec)	N/A	0.348	2.317	0.488	0.	2.72	0.	0.

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	167	167	224	2727	0	2034	0	0
normalized size	1	1.	1.34	16.33	0.	12.18	0.	0.
time (sec)	N/A	0.567	3.962	0.575	0.	2.978	0.	0.

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	363	2751	0	2369	0	0
normalized size	1	1.	1.66	12.56	0.	10.82	0.	0.
time (sec)	N/A	0.762	4.203	0.494	0.	3.049	0.	0.

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	209	209	176	153	0	1210	0	0
normalized size	1	1.	0.84	0.73	0.	5.79	0.	0.
time (sec)	N/A	0.535	4.13	0.032	0.	2.139	0.	0.

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	167	167	167	116	0	1031	0	0
normalized size	1	1.	1.	0.69	0.	6.17	0.	0.
time (sec)	N/A	0.353	2.757	0.032	0.	1.988	0.	0.

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	145	96	0	1027	0	0
normalized size	1	1.	1.22	0.81	0.	8.63	0.	0.
time (sec)	N/A	0.186	2.344	0.024	0.	2.021	0.	0.

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	121	121	143	96	0	1027	0	0
normalized size	1	1.	1.18	0.79	0.	8.49	0.	0.
time (sec)	N/A	0.102	2.117	0.021	0.	1.981	0.	0.

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	192	1026	0	1694	0	0
normalized size	1	1.	1.23	6.58	0.	10.86	0.	0.
time (sec)	N/A	0.514	3.869	0.369	0.	2.831	0.	0.

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	217	217	259	2818	0	2230	0	0
normalized size	1	1.	1.19	12.99	0.	10.28	0.	0.
time (sec)	N/A	0.804	4.788	0.432	0.	3.133	0.	0.

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	268	268	283	2818	0	2570	0	0
normalized size	1	1.	1.06	10.51	0.	9.59	0.	0.
time (sec)	N/A	0.983	5.405	0.415	0.	3.23	0.	0.

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	255	255	191	181	0	1274	0	0
normalized size	1	1.	0.75	0.71	0.	5.	0.	0.
time (sec)	N/A	0.779	5.305	0.033	0.	2.164	0.	0.

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	211	211	193	142	0	1100	0	0
normalized size	1	1.	0.91	0.67	0.	5.21	0.	0.
time (sec)	N/A	0.569	4.223	0.03	0.	2.059	0.	0.

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	167	167	176	124	0	1092	0	0
normalized size	1	1.	1.05	0.74	0.	6.54	0.	0.
time (sec)	N/A	0.395	3.159	0.031	0.	2.024	0.	0.

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	153	153	176	121	0	1095	0	0
normalized size	1	1.	1.15	0.79	0.	7.16	0.	0.
time (sec)	N/A	0.228	2.74	0.023	0.	2.053	0.	0.

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	176	123	0	1095	0	0
normalized size	1	1.	1.14	0.79	0.	7.06	0.	0.
time (sec)	N/A	0.13	2.462	0.023	0.	1.989	0.	0.

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	192	192	233	1084	0	1764	0	0
normalized size	1	1.	1.21	5.65	0.	9.19	0.	0.
time (sec)	N/A	0.676	4.175	0.388	0.	2.96	0.	0.

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	259	259	287	2858	0	2310	0	0
normalized size	1	1.	1.11	11.03	0.	8.92	0.	0.
time (sec)	N/A	1.048	7.767	0.473	0.	3.285	0.	0.

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	312	312	317	2876	0	2677	0	0
normalized size	1	1.	1.02	9.22	0.	8.58	0.	0.
time (sec)	N/A	1.237	9.094	0.484	0.	3.494	0.	0.

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	B	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	280	537	275	1326	0	193
normalized size	1	1.	2.15	4.13	2.12	10.2	0.	1.48
time (sec)	N/A	0.198	4.279	0.015	1.771	2.315	0.	1.268

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	B	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	266	506	254	1160	0	151
normalized size	1	1.	2.53	4.82	2.42	11.05	0.	1.44
time (sec)	N/A	0.166	2.67	0.012	1.768	2.007	0.	1.218

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	112	475	230	977	0	112
normalized size	1	1.	1.4	5.94	2.88	12.21	0.	1.4
time (sec)	N/A	0.121	1.802	0.011	1.866	1.836	0.	1.205

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	55	55	92	444	204	811	0	63
normalized size	1	1.	1.67	8.07	3.71	14.75	0.	1.15
time (sec)	N/A	0.09	1.53	0.012	1.806	1.754	0.	1.25

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	53	53	76	443	204	944	0	63
normalized size	1	1.	1.43	8.36	3.85	17.81	0.	1.19
time (sec)	N/A	0.093	2.359	0.013	1.867	1.802	0.	1.229

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	78	78	94	474	231	1135	0	95
normalized size	1	1.	1.21	6.08	2.96	14.55	0.	1.22
time (sec)	N/A	0.127	1.875	0.015	1.801	1.908	0.	1.273

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	B	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	265	505	254	1305	0	127
normalized size	1	1.	2.57	4.9	2.47	12.67	0.	1.23
time (sec)	N/A	0.155	3.78	0.014	1.894	2.039	0.	1.246

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	183	183	315	607	316	1555	0	263
normalized size	1	1.	1.72	3.32	1.73	8.5	0.	1.44
time (sec)	N/A	0.357	6.122	0.015	1.848	2.658	0.	1.285

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	307	574	292	1382	0	216
normalized size	1	1.	1.97	3.68	1.87	8.86	0.	1.38
time (sec)	N/A	0.31	5.094	0.014	1.819	2.239	0.	1.285

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	272	537	265	1193	0	171
normalized size	1	1.	2.11	4.16	2.05	9.25	0.	1.33
time (sec)	N/A	0.259	4.999	0.013	1.831	1.952	0.	1.242

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	110	500	238	1034	0	124
normalized size	1	1.	1.06	4.81	2.29	9.94	0.	1.19
time (sec)	N/A	0.224	3.312	0.014	2.075	1.773	0.	1.361

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	98	98	85	484	230	1010	0	95
normalized size	1	1.	0.87	4.94	2.35	10.31	0.	0.97
time (sec)	N/A	0.214	3.249	0.016	1.835	1.768	0.	1.261

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	96	504	239	1181	0	108
normalized size	1	1.	0.94	4.94	2.34	11.58	0.	1.06
time (sec)	N/A	0.218	3.187	0.017	2.482	1.803	0.	1.271

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	272	537	265	1359	0	146
normalized size	1	1.	2.14	4.23	2.09	10.7	0.	1.15
time (sec)	N/A	0.257	4.946	0.018	1.824	1.923	0.	1.255

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	296	570	289	1547	0	184
normalized size	1	1.	1.92	3.7	1.88	10.05	0.	1.19
time (sec)	N/A	0.299	7.116	0.017	2.013	2.291	0.	1.273

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	198	198	496	610	316	1569	0	262
normalized size	1	1.	2.51	3.08	1.6	7.92	0.	1.32
time (sec)	N/A	0.467	10.002	0.014	1.896	2.414	0.	1.341

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	171	171	452	574	289	1381	0	217
normalized size	1	1.	2.64	3.36	1.69	8.08	0.	1.27
time (sec)	N/A	0.421	9.843	0.014	2.102	2.089	0.	1.275

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	146	146	273	538	262	1214	0	171
normalized size	1	1.	1.87	3.68	1.79	8.32	0.	1.17
time (sec)	N/A	0.377	7.253	0.016	2.11	1.849	0.	1.386

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	134	134	151	521	254	1069	0	149
normalized size	1	1.	1.13	3.89	1.9	7.98	0.	1.11
time (sec)	N/A	0.355	6.517	0.017	2.534	1.819	0.	1.398

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	136	136	266	522	255	1185	0	131
normalized size	1	1.	1.96	3.84	1.88	8.71	0.	0.96
time (sec)	N/A	0.358	6.695	0.017	2.098	1.859	0.	1.367

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	144	144	449	538	262	1366	0	146
normalized size	1	1.	3.12	3.74	1.82	9.49	0.	1.01
time (sec)	N/A	0.377	10.028	0.017	2.286	1.879	0.	1.365

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	169	169	495	572	286	1558	0	184
normalized size	1	1.	2.93	3.38	1.69	9.22	0.	1.09
time (sec)	N/A	0.425	12.053	0.019	2.103	2.073	0.	1.373

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	306	306	248	290	0	1886	0	223
normalized size	1	1.	0.81	0.95	0.	6.16	0.	0.73
time (sec)	N/A	0.408	2.796	0.052	0.	2.042	0.	1.226

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	275	275	220	255	0	1642	0	162
normalized size	1	1.	0.8	0.93	0.	5.97	0.	0.59
time (sec)	N/A	0.354	2.084	0.047	0.	2.026	0.	1.223

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	236	236	198	192	0	1477	0	131
normalized size	1	1.	0.84	0.81	0.	6.26	0.	0.56
time (sec)	N/A	0.286	1.583	0.061	0.	1.808	0.	1.245

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	234	234	199	192	0	1513	0	132
normalized size	1	1.	0.85	0.82	0.	6.47	0.	0.56
time (sec)	N/A	0.291	1.987	0.057	0.	1.835	0.	1.229

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	267	267	217	254	0	1832	0	153
normalized size	1	1.	0.81	0.95	0.	6.86	0.	0.57
time (sec)	N/A	0.366	2.104	0.049	0.	1.976	0.	1.299

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	296	296	241	289	0	2156	0	190
normalized size	1	1.	0.81	0.98	0.	7.28	0.	0.64
time (sec)	N/A	0.401	2.728	0.049	0.	2.084	0.	1.255

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	316	316	255	311	0	1759	0	196
normalized size	1	1.	0.81	0.98	0.	5.57	0.	0.62
time (sec)	N/A	0.575	2.261	0.049	0.	2.031	0.	1.241

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	277	277	243	294	0	1754	0	166
normalized size	1	1.	0.88	1.06	0.	6.33	0.	0.6
time (sec)	N/A	0.501	2.352	0.05	0.	1.948	0.	1.233

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	279	279	241	294	0	1694	0	171
normalized size	1	1.	0.86	1.05	0.	6.07	0.	0.61
time (sec)	N/A	0.469	1.954	0.06	0.	1.905	0.	1.2

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	285	285	243	294	0	1755	0	170
normalized size	1	1.	0.85	1.03	0.	6.16	0.	0.6
time (sec)	N/A	0.5	2.174	0.065	0.	1.864	0.	1.242

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	318	318	250	311	0	2009	0	193
normalized size	1	1.	0.79	0.98	0.	6.32	0.	0.61
time (sec)	N/A	0.578	2.382	0.055	0.	2.373	0.	1.221

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	347	347	282	346	0	2340	0	221
normalized size	1	1.	0.81	1.	0.	6.74	0.	0.64
time (sec)	N/A	0.631	3.224	0.052	0.	2.319	0.	1.265

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	393	393	300	404	0	2095	0	284
normalized size	1	1.	0.76	1.03	0.	5.33	0.	0.72
time (sec)	N/A	0.827	4.993	0.057	0.	1.989	0.	1.344

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	364	364	286	369	0	1860	0	223
normalized size	1	1.	0.79	1.01	0.	5.11	0.	0.61
time (sec)	N/A	0.771	3.412	0.06	0.	1.796	0.	1.262

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	307	307	254	323	0	1778	0	182
normalized size	1	1.	0.83	1.05	0.	5.79	0.	0.59
time (sec)	N/A	0.638	2.597	0.057	0.	1.699	0.	1.211

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	309	309	274	278	0	1713	0	177
normalized size	1	1.	0.89	0.9	0.	5.54	0.	0.57
time (sec)	N/A	0.627	3.777	0.05	0.	1.618	0.	1.261

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	317	317	272	278	0	1670	0	177
normalized size	1	1.	0.86	0.88	0.	5.27	0.	0.56
time (sec)	N/A	0.624	3.374	0.066	0.	1.615	0.	1.217

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	315	315	258	323	0	1820	0	185
normalized size	1	1.	0.82	1.03	0.	5.78	0.	0.59
time (sec)	N/A	0.64	2.95	0.068	0.	1.958	0.	1.203

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	364	364	278	368	0	2071	0	225
normalized size	1	1.	0.76	1.01	0.	5.69	0.	0.62
time (sec)	N/A	0.804	3.144	0.058	0.	2.1	0.	1.254

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	393	393	306	403	0	2407	0	246
normalized size	1	1.	0.78	1.03	0.	6.12	0.	0.63
time (sec)	N/A	0.861	4.019	0.062	0.	2.291	0.	1.222

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	B	F	B	F(-1)	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	200	200	0	838	0	2155	0	378
normalized size	1	1.	0.	4.19	0.	10.78	0.	1.89
time (sec)	N/A	0.68	10.131	0.073	0.	1.962	0.	1.359

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	152	152	560	713	0	1847	0	313
normalized size	1	1.	3.68	4.69	0.	12.15	0.	2.06
time (sec)	N/A	0.489	4.2	0.042	0.	1.91	0.	1.292

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	238	498	0	1516	0	189
normalized size	1	1.	2.12	4.45	0.	13.54	0.	1.69
time (sec)	N/A	0.323	3.943	0.061	0.	1.845	0.	1.487

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	90	90	156	434	0	1157	0	216
normalized size	1	1.	1.73	4.82	0.	12.86	0.	2.4
time (sec)	N/A	0.186	6.104	0.045	0.	1.743	0.	1.441

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	174	553	0	1327	0	240
normalized size	1	1.	1.29	4.1	0.	9.83	0.	1.78
time (sec)	N/A	0.342	6.458	0.043	0.	1.81	0.	1.422

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	178	178	211	630	0	1482	0	265
normalized size	1	1.	1.19	3.54	0.	8.33	0.	1.49
time (sec)	N/A	0.535	7.414	0.048	0.	1.822	0.	1.447

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	221	221	239	707	0	1666	0	289
normalized size	1	1.	1.08	3.2	0.	7.54	0.	1.31
time (sec)	N/A	0.713	9.338	0.043	0.	1.82	0.	1.479

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	248	248	420	652	0	2564	0	412
normalized size	1	1.	1.69	2.63	0.	10.34	0.	1.66
time (sec)	N/A	0.902	7.185	0.062	0.	2.045	0.	1.387

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	204	204	389	565	0	2290	0	348
normalized size	1	1.	1.91	2.77	0.	11.23	0.	1.71
time (sec)	N/A	0.7	5.959	0.048	0.	1.92	0.	1.364

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	221	484	0	2020	0	209
normalized size	1	1.	1.42	3.1	0.	12.95	0.	1.34
time (sec)	N/A	0.493	3.247	0.059	0.	1.946	0.	1.523

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	146	146	234	521	0	2007	0	236
normalized size	1	1.	1.6	3.57	0.	13.75	0.	1.62
time (sec)	N/A	0.483	3.895	0.046	0.	1.857	0.	1.539

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	137	137	221	618	0	1418	0	261
normalized size	1	1.	1.61	4.51	0.	10.35	0.	1.91
time (sec)	N/A	0.366	5.609	0.042	0.	1.748	0.	1.522

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	181	181	237	707	0	1598	0	285
normalized size	1	1.	1.31	3.91	0.	8.83	0.	1.57
time (sec)	N/A	0.55	8.641	0.043	0.	1.774	0.	1.527

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	225	225	261	796	0	1774	0	309
normalized size	1	1.	1.16	3.54	0.	7.88	0.	1.37
time (sec)	N/A	0.735	11.016	0.044	0.	1.845	0.	1.487

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	269	269	242	885	0	1971	0	333
normalized size	1	1.	0.9	3.29	0.	7.33	0.	1.24
time (sec)	N/A	0.936	14.21	0.048	0.	1.892	0.	1.5

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	298	298	581	742	0	2928	0	416
normalized size	1	1.	1.95	2.49	0.	9.83	0.	1.4
time (sec)	N/A	1.132	9.7	0.041	0.	2.018	0.	1.593

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	252	252	537	653	0	2603	0	347
normalized size	1	1.	2.13	2.59	0.	10.33	0.	1.38
time (sec)	N/A	0.922	8.981	0.042	0.	1.936	0.	1.492

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	206	206	499	564	0	2363	0	212
normalized size	1	1.	2.42	2.74	0.	11.47	0.	1.03
time (sec)	N/A	0.712	9.173	0.058	0.	2.01	0.	1.643

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	196	196	493	565	0	2295	0	239
normalized size	1	1.	2.52	2.88	0.	11.71	0.	1.22
time (sec)	N/A	0.7	9.367	0.042	0.	1.96	0.	1.681

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	190	190	618	620	0	2317	0	263
normalized size	1	1.	3.25	3.26	0.	12.19	0.	1.38
time (sec)	N/A	0.665	9.913	0.044	0.	1.94	0.	1.649

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	185	185	323	709	0	1642	0	288
normalized size	1	1.	1.75	3.83	0.	8.88	0.	1.56
time (sec)	N/A	0.575	10.7	0.044	0.	1.763	0.	1.601

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	231	231	363	798	0	1813	0	312
normalized size	1	1.	1.57	3.45	0.	7.85	0.	1.35
time (sec)	N/A	0.757	12.968	0.044	0.	1.822	0.	1.638

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	277	277	246	887	0	2014	0	336
normalized size	1	1.	0.89	3.2	0.	7.27	0.	1.21
time (sec)	N/A	0.951	14.996	0.048	0.	1.878	0.	1.72

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	323	323	328	976	0	2203	0	360
normalized size	1	1.	1.02	3.02	0.	6.82	0.	1.11
time (sec)	N/A	1.161	19.332	0.046	0.	1.886	0.	1.713

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	190	190	485	551	0	2410	0	258
normalized size	1	1.	2.55	2.9	0.	12.68	0.	1.36
time (sec)	N/A	0.729	10.221	0.076	0.	1.965	0.	1.638

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	277	1141	0	2268	0	0
normalized size	1	1.	1.35	5.57	0.	11.06	0.	0.
time (sec)	N/A	0.691	4.779	0.101	0.	3.035	0.	0.

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	183	900	0	1989	0	0
normalized size	1	1.	1.17	5.77	0.	12.75	0.	0.
time (sec)	N/A	0.48	3.56	0.09	0.	2.805	0.	0.

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	123	639	0	1183	0	207
normalized size	1	1.	1.24	6.45	0.	11.95	0.	2.09
time (sec)	N/A	0.193	3.064	0.094	0.	2.048	0.	1.353

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	143	143	181	701	0	1330	0	234
normalized size	1	1.	1.27	4.9	0.	9.3	0.	1.64
time (sec)	N/A	0.365	3.197	0.1	0.	2.067	0.	1.457

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	191	191	221	746	0	1523	0	258
normalized size	1	1.	1.16	3.91	0.	7.97	0.	1.35
time (sec)	N/A	0.546	3.805	0.103	0.	2.087	0.	1.482

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	241	821	0	1694	0	282
normalized size	1	1.	1.02	3.46	0.	7.15	0.	1.19
time (sec)	N/A	0.739	5.091	0.098	0.	2.155	0.	1.45

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	203	203	285	1223	0	2169	0	0
normalized size	1	1.	1.4	6.02	0.	10.68	0.	0.
time (sec)	N/A	0.669	6.15	0.068	0.	2.864	0.	0.

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	150	150	228	868	0	1293	0	0
normalized size	1	1.	1.52	5.79	0.	8.62	0.	0.
time (sec)	N/A	0.379	4.664	0.049	0.	2.037	0.	0.

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	148	148	230	868	0	1303	0	209
normalized size	1	1.	1.55	5.86	0.	8.8	0.	1.41
time (sec)	N/A	0.38	5.039	0.079	0.	2.094	0.	1.414

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	237	931	0	1462	0	236
normalized size	1	1.	1.22	4.8	0.	7.54	0.	1.22
time (sec)	N/A	0.577	4.802	0.069	0.	2.059	0.	1.463

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	240	240	244	1012	0	1656	0	261
normalized size	1	1.	1.02	4.22	0.	6.9	0.	1.09
time (sec)	N/A	0.769	6.641	0.08	0.	2.222	0.	1.471

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	249	249	275	1542	0	2205	0	0
normalized size	1	1.	1.1	6.19	0.	8.86	0.	0.
time (sec)	N/A	0.855	7.551	0.073	0.	2.979	0.	0.

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	214	1096	0	1368	0	0
normalized size	1	1.	1.1	5.65	0.	7.05	0.	0.
time (sec)	N/A	0.6	6.98	0.062	0.	2.132	0.	0.

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	196	196	215	1096	0	1357	0	0
normalized size	1	1.	1.1	5.59	0.	6.92	0.	0.
time (sec)	N/A	0.592	5.708	0.052	0.	2.11	0.	0.

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	216	1096	0	1370	0	209
normalized size	1	1.	1.11	5.65	0.	7.06	0.	1.08
time (sec)	N/A	0.597	6.138	0.076	0.	2.132	0.	1.459

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	240	240	288	1158	0	1534	0	236
normalized size	1	1.	1.2	4.82	0.	6.39	0.	0.98
time (sec)	N/A	0.803	9.887	0.059	0.	2.189	0.	1.529

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	B	F(-1)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	286	286	701	1239	0	1740	0	261
normalized size	1	1.	2.45	4.33	0.	6.08	0.	0.91
time (sec)	N/A	1.007	9.454	0.058	0.	2.403	0.	1.568

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	201	201	0	297	0	1131	0	0
normalized size	1	1.	0.	1.48	0.	5.63	0.	0.
time (sec)	N/A	0.166	180.004	0.019	0.	1.767	0.	0.

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	270	270	104	367	0	1762	0	0
normalized size	1	1.	0.39	1.36	0.	6.53	0.	0.
time (sec)	N/A	0.444	2.642	0.027	0.	1.822	0.	0.

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	232	232	115	321	0	1520	0	0
normalized size	1	1.	0.5	1.38	0.	6.55	0.	0.
time (sec)	N/A	0.221	1.473	0.018	0.	1.772	0.	0.

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	202	202	91	297	0	1283	0	0
normalized size	1	1.	0.45	1.47	0.	6.35	0.	0.
time (sec)	N/A	0.149	1.05	0.015	0.	1.772	0.	0.

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	F	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	289	289	127	0	0	1848	0	0
normalized size	1	1.	0.44	0.	0.	6.39	0.	0.
time (sec)	N/A	0.373	1.502	0.167	0.	1.89	0.	0.

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	B	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	342	342	0	0	0	2824	0	0
normalized size	1	1.	0.	0.	0.	8.26	0.	0.
time (sec)	N/A	0.59	6.249	0.211	0.	2.009	0.	0.

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	137	318	0	1503	0	0
normalized size	1	1.	0.64	1.49	0.	7.06	0.	0.
time (sec)	N/A	0.158	1.073	0.02	0.	1.779	0.	0.

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	213	213	0	318	0	1411	0	0
normalized size	1	1.	0.	1.49	0.	6.62	0.	0.
time (sec)	N/A	0.16	0.629	0.02	0.	1.734	0.	0.

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	290	290	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.068	19.647	0.532	0.	0.	0.	0.

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	374	0	0	0	0	0
normalized size	1	1.	1.82	0.	0.	0.	0.	0.
time (sec)	N/A	0.642	10.868	0.383	0.	0.	0.	0.

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	132	132	323	0	0	0	0	0
normalized size	1	1.	2.45	0.	0.	0.	0.	0.
time (sec)	N/A	0.36	5.581	0.346	0.	0.	0.	0.

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	70	70	190	0	0	0	0	0
normalized size	1	1.	2.71	0.	0.	0.	0.	0.
time (sec)	N/A	0.117	2.203	0.821	0.	0.	0.	0.

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	168	168	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.22	7.237	1.348	0.	0.	0.	0.

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	226	226	565	0	0	0	0	0
normalized size	1	1.	2.5	0.	0.	0.	0.	0.
time (sec)	N/A	0.484	8.278	1.386	0.	0.	0.	0.

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	308	308	712	0	0	0	0	0
normalized size	1	1.	2.31	0.	0.	0.	0.	0.
time (sec)	N/A	0.833	113.738	1.496	0.	0.	0.	0.

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	386	386	921	0	0	0	0	0
normalized size	1	1.	2.39	0.	0.	0.	0.	0.
time (sec)	N/A	1.207	115.997	0.901	0.	0.	0.	0.

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	316	316	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.986	6.682	0.51	0.	0.	0.	0.

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	227	227	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.703	4.705	0.488	0.	0.	0.	0.

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	159	159	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.365	3.758	0.57	0.	0.	0.	0.

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	214	214	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.625	180.003	0.582	0.	0.	0.	0.

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	285	285	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.976	15.655	0.482	0.	0.	0.	0.

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	363	363	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.369	72.679	0.474	0.	0.	0.	0.

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	167	167	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.304	18.191	184.135	0.	0.	0.	0.

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-1)	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	245	245	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.649	21.194	0.647	0.	0.	0.	0.

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	164	164	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.313	38.865	1.212	0.	0.	0.	0.

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	270	0	0	0	0	0
normalized size	1	1.	2.43	0.	0.	0.	0.	0.
time (sec)	N/A	0.12	30.009	0.998	0.	0.	0.	0.

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	78	78	152	0	0	0	0	0
normalized size	1	1.	1.95	0.	0.	0.	0.	0.
time (sec)	N/A	0.066	7.155	0.787	0.	0.	0.	0.

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	97	97	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.178	23.956	0.745	0.	0.	0.	0.

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	131	131	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.327	44.251	0.761	0.	0.	0.	0.

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	185	185	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.583	64.709	0.942	0.	0.	0.	0.

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	383	383	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.138	15.275	0.336	0.	0.	0.	0.

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	291	291	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.779	16.56	0.327	0.	0.	0.	0.

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	215	215	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.495	20.289	0.347	0.	0.	0.	0.

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	158	158	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.308	19.692	0.369	0.	0.	0.	0.

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-1)	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	194	194	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.49	9.516	0.327	0.	0.	0.	0.

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	247	247	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.723	12.678	0.326	0.	0.	0.	0.

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	87	87	86	135	116	208	136	1373
normalized size	1	1.	0.99	1.55	1.33	2.39	1.56	15.78
time (sec)	N/A	0.117	0.547	0.012	1.507	1.889	0.457	2.477

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	65	65	67	105	89	161	104	832
normalized size	1	1.	1.03	1.62	1.37	2.48	1.6	12.8
time (sec)	N/A	0.059	0.272	0.013	1.492	1.931	0.297	1.602

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	42	42	59	77	68	122	73	444
normalized size	1	1.	1.4	1.83	1.62	2.9	1.74	10.57
time (sec)	N/A	0.025	0.027	0.012	1.472	1.972	0.216	1.327

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	37	37	44	51	70	146	78	72
normalized size	1	1.	1.19	1.38	1.89	3.95	2.11	1.95
time (sec)	N/A	0.069	0.072	0.056	1.496	2.02	0.671	1.18

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	43	43	78	65	92	178	122	161
normalized size	1	1.	1.81	1.51	2.14	4.14	2.84	3.74
time (sec)	N/A	0.082	0.174	0.052	1.459	1.984	1.56	1.278

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	66	66	77	96	116	234	150	242
normalized size	1	1.	1.17	1.45	1.76	3.55	2.27	3.67
time (sec)	N/A	0.12	0.45	0.069	1.472	1.892	2.819	1.279

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	87	87	101	124	140	292	180	320
normalized size	1	1.	1.16	1.43	1.61	3.36	2.07	3.68
time (sec)	N/A	0.153	1.023	0.069	1.494	1.975	4.912	1.284

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	108	108	100	150	165	340	211	404
normalized size	1	1.	0.93	1.39	1.53	3.15	1.95	3.74
time (sec)	N/A	0.187	1.17	0.066	1.478	2.06	8.459	1.365

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	148	148	221	249	198	340	246	3008
normalized size	1	1.	1.49	1.68	1.34	2.3	1.66	20.32
time (sec)	N/A	0.269	6.198	0.013	1.468	1.98	0.773	4.92

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	172	199	162	275	192	2037
normalized size	1	1.	1.54	1.78	1.45	2.46	1.71	18.19
time (sec)	N/A	0.124	1.745	0.012	1.461	2.02	0.56	2.867

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	87	87	96	151	123	209	143	1216
normalized size	1	1.	1.1	1.74	1.41	2.4	1.64	13.98
time (sec)	N/A	0.076	0.441	0.013	1.472	2.037	0.372	1.937

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	70	70	93	109	115	217	129	116
normalized size	1	1.	1.33	1.56	1.64	3.1	1.84	1.66
time (sec)	N/A	0.114	0.288	0.062	1.483	2.065	1.41	1.349

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	72	72	100	110	126	274	167	159
normalized size	1	1.	1.39	1.53	1.75	3.81	2.32	2.21
time (sec)	N/A	0.133	0.262	0.066	1.485	2.015	2.868	1.415

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	88	88	123	141	162	285	214	320
normalized size	1	1.	1.4	1.6	1.84	3.24	2.43	3.64
time (sec)	N/A	0.191	0.345	0.081	1.51	1.967	4.776	1.478

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	118	118	152	188	201	367	260	451
normalized size	1	1.	1.29	1.59	1.7	3.11	2.2	3.82
time (sec)	N/A	0.243	1.386	0.072	1.467	2.033	7.873	1.494

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	151	151	180	238	236	446	313	587
normalized size	1	1.	1.19	1.58	1.56	2.95	2.07	3.89
time (sec)	N/A	0.301	3.038	0.076	1.521	2.001	14.483	1.532

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	201	201	241	383	289	494	384	5396
normalized size	1	1.	1.2	1.91	1.44	2.46	1.91	26.85
time (sec)	N/A	0.369	2.067	0.014	1.537	2.085	1.099	9.771

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	165	165	209	314	242	408	311	3875
normalized size	1	1.	1.27	1.9	1.47	2.47	1.88	23.48
time (sec)	N/A	0.194	1.436	0.011	1.456	1.94	0.819	5.839

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	140	140	130	247	193	324	240	2580
normalized size	1	1.	0.93	1.76	1.38	2.31	1.71	18.43
time (sec)	N/A	0.154	0.966	0.013	1.483	2.002	0.571	3.864

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	117	117	115	183	167	305	204	174
normalized size	1	1.	0.98	1.56	1.43	2.61	1.74	1.49
time (sec)	N/A	0.27	0.573	0.08	1.516	2.144	2.698	1.881

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	113	168	169	347	223	205
normalized size	1	1.	0.95	1.41	1.42	2.92	1.87	1.72
time (sec)	N/A	0.263	0.507	0.067	1.474	2.166	4.894	1.903

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	126	186	192	383	262	261
normalized size	1	1.	0.99	1.46	1.51	3.02	2.06	2.06
time (sec)	N/A	0.29	0.426	0.092	1.476	2.124	7.837	1.978

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	164	233	243	419	332	527
normalized size	1	1.	1.06	1.51	1.58	2.72	2.16	3.42
time (sec)	N/A	0.365	1.219	0.081	1.673	1.968	14.819	2.047

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	191	191	199	302	290	518	400	713
normalized size	1	1.	1.04	1.58	1.52	2.71	2.09	3.73
time (sec)	N/A	0.453	0.703	0.093	1.488	2.009	41.583	2.108

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	233	233	237	376	338	620	0	905
normalized size	1	1.	1.02	1.61	1.45	2.66	0.	3.88
time (sec)	N/A	0.496	1.156	0.087	1.483	2.01	0.	2.107

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	263	263	290	539	392	662	536	8629
normalized size	1	1.	1.1	2.05	1.49	2.52	2.04	32.81
time (sec)	N/A	0.432	5.608	0.014	1.497	2.169	1.625	18.457

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	226	226	257	449	332	562	437	6465
normalized size	1	1.	1.14	1.99	1.47	2.49	1.93	28.61
time (sec)	N/A	0.273	3.529	0.014	1.498	1.962	1.185	11.444

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	202	202	240	362	273	456	347	4567
normalized size	1	1.	1.19	1.79	1.35	2.26	1.72	22.61
time (sec)	N/A	0.23	3.454	0.011	1.471	2.083	0.885	7.058

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	172	172	149	277	236	423	291	258
normalized size	1	1.	0.87	1.61	1.37	2.46	1.69	1.5
time (sec)	N/A	0.471	1.394	0.089	1.485	2.361	4.895	2.602

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	175	175	134	242	221	448	289	263
normalized size	1	1.	0.77	1.38	1.26	2.56	1.65	1.5
time (sec)	N/A	0.482	1.016	0.081	1.471	2.214	8.107	2.697

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	186	140	244	234	456	309	302
normalized size	1	1.	0.75	1.31	1.26	2.45	1.66	1.62
time (sec)	N/A	0.505	0.673	0.094	1.463	2.148	14.332	2.795

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	187	187	167	278	273	520	369	379
normalized size	1	1.	0.89	1.49	1.46	2.78	1.97	2.03
time (sec)	N/A	0.531	1.095	0.089	1.499	2.289	41.373	2.807

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	225	225	211	347	332	571	0	788
normalized size	1	1.	0.94	1.54	1.48	2.54	0.	3.5
time (sec)	N/A	0.645	0.92	0.094	1.502	1.927	0.	2.904

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	273	273	257	440	390	695	0	1030
normalized size	1	1.	0.94	1.61	1.43	2.55	0.	3.77
time (sec)	N/A	0.733	1.564	0.098	1.466	1.836	0.	2.926

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	323	323	299	532	450	813	0	1273
normalized size	1	1.	0.93	1.65	1.39	2.52	0.	3.94
time (sec)	N/A	0.858	1.268	0.106	1.503	1.806	0.	3.029

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	138	211	176	412	1297	182
normalized size	1	1.	1.09	1.66	1.39	3.24	10.21	1.43
time (sec)	N/A	0.397	1.377	0.033	1.512	2.036	48.537	1.768

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	118	179	147	333	1015	149
normalized size	1	1.	1.17	1.77	1.46	3.3	10.05	1.48
time (sec)	N/A	0.197	0.555	0.035	1.491	1.972	8.95	1.443

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	98	159	127	251	700	128
normalized size	1	1.	1.22	1.99	1.59	3.14	8.75	1.6
time (sec)	N/A	0.127	0.155	0.032	1.528	1.862	4.4	1.218

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	58	58	66	153	119	174	524	127
normalized size	1	1.	1.14	2.64	2.05	3.	9.03	2.19
time (sec)	N/A	0.068	0.103	0.031	1.49	1.647	2.569	1.229

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	113	174	144	267	952	153
normalized size	1	1.	1.41	2.17	1.8	3.34	11.9	1.91
time (sec)	N/A	0.109	0.335	0.1	1.495	1.821	21.129	1.293

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	138	214	177	404	2066	212
normalized size	1	1.	1.34	2.08	1.72	3.92	20.06	2.06
time (sec)	N/A	0.251	0.831	0.1	1.483	1.905	151.578	1.32

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	137	137	163	266	213	518	2594	289
normalized size	1	1.	1.19	1.94	1.55	3.78	18.93	2.11
time (sec)	N/A	0.55	1.35	0.114	1.479	2.035	159.793	1.293

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	194	337	270	644	0	385
normalized size	1	1.	1.15	1.99	1.6	3.81	0.	2.28
time (sec)	N/A	0.833	2.485	0.11	1.484	2.083	0.	1.271

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	208	208	444	364	297	936	0	392
normalized size	1	1.	2.13	1.75	1.43	4.5	0.	1.88
time (sec)	N/A	0.455	3.779	0.044	1.495	2.371	0.	1.836

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	323	313	266	682	0	329
normalized size	1	1.	2.06	1.99	1.69	4.34	0.	2.1
time (sec)	N/A	0.273	1.994	0.042	1.55	2.091	0.	1.448

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	140	305	250	490	0	325
normalized size	1	1.	1.22	2.65	2.17	4.26	0.	2.83
time (sec)	N/A	0.159	1.965	0.04	1.478	1.742	0.	1.236

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	190	301	239	489	0	316
normalized size	1	1.	1.71	2.71	2.15	4.41	0.	2.85
time (sec)	N/A	0.137	1.841	0.04	1.521	1.702	0.	1.272

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	137	137	183	325	281	701	0	377
normalized size	1	1.	1.34	2.37	2.05	5.12	0.	2.75
time (sec)	N/A	0.319	0.789	0.126	1.492	2.073	0.	1.264

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	192	192	193	399	354	1017	0	489
normalized size	1	1.	1.01	2.08	1.84	5.3	0.	2.55
time (sec)	N/A	0.541	3.279	0.124	1.605	2.394	0.	1.281

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	250	250	220	457	439	1283	0	543
normalized size	1	1.	0.88	1.83	1.76	5.13	0.	2.17
time (sec)	N/A	0.86	4.338	0.15	1.574	2.518	0.	1.334

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	331	331	1146	619	525	1895	0	682
normalized size	1	1.	3.46	1.87	1.59	5.73	0.	2.06
time (sec)	N/A	0.798	6.673	0.05	1.556	2.918	0.	2.46

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	250	250	462	566	494	1432	0	618
normalized size	1	1.	1.85	2.26	1.98	5.73	0.	2.47
time (sec)	N/A	0.493	4.492	0.054	1.623	2.547	0.	1.746

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	189	189	288	495	450	1038	0	554
normalized size	1	1.	1.52	2.62	2.38	5.49	0.	2.93
time (sec)	N/A	0.372	4.606	0.051	1.566	1.88	0.	1.429

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	179	179	188	488	446	1058	0	554
normalized size	1	1.	1.05	2.73	2.49	5.91	0.	3.09
time (sec)	N/A	0.275	3.57	0.045	1.551	1.904	0.	1.245

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	175	175	243	483	433	1038	0	552
normalized size	1	1.	1.39	2.76	2.47	5.93	0.	3.15
time (sec)	N/A	0.266	3.709	0.046	1.616	1.865	0.	1.266

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	215	215	254	540	502	1451	0	647
normalized size	1	1.	1.18	2.51	2.33	6.75	0.	3.01
time (sec)	N/A	0.621	3.35	0.181	1.6	2.563	0.	1.347

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	288	651	613	1982	0	756
normalized size	1	1.	1.	2.27	2.14	6.91	0.	2.63
time (sec)	N/A	0.882	6.401	0.145	1.559	2.985	0.	1.312

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	352	352	320	713	730	2338	0	1096
normalized size	1	1.	0.91	2.03	2.07	6.64	0.	3.11
time (sec)	N/A	1.249	6.465	0.177	1.757	3.238	0.	1.377

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	351	351	1812	854	787	2438	0	971
normalized size	1	1.	5.16	2.43	2.24	6.95	0.	2.77
time (sec)	N/A	0.824	6.692	0.059	1.587	3.056	0.	2.347

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	298	298	465	780	743	1777	0	905
normalized size	1	1.	1.56	2.62	2.49	5.96	0.	3.04
time (sec)	N/A	0.572	6.307	0.059	1.682	2.104	0.	1.791

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	B	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	411	709	710	1829	0	853
normalized size	1	1.	1.57	2.72	2.72	7.01	0.	3.27
time (sec)	N/A	0.483	6.266	0.059	1.614	2.125	0.	1.494

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	B	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	250	250	248	702	706	1831	0	861
normalized size	1	1.	0.99	2.81	2.82	7.32	0.	3.44
time (sec)	N/A	0.428	1.131	0.052	1.595	2.104	0.	1.29

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	B	B	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	247	247	327	695	694	1777	0	851
normalized size	1	1.	1.32	2.81	2.81	7.19	0.	3.45
time (sec)	N/A	0.408	6.233	0.053	1.537	2.068	0.	1.261

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	302	302	308	789	783	2457	0	975
normalized size	1	1.	1.02	2.61	2.59	8.14	0.	3.23
time (sec)	N/A	0.899	3.041	0.189	1.589	3.564	0.	1.29

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	399	399	357	969	942	3368	0	1142
normalized size	1	1.	0.89	2.43	2.36	8.44	0.	2.86
time (sec)	N/A	1.321	5.872	0.165	1.594	4.274	0.	1.339

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	477	477	417	1030	1100	3954	0	1219
normalized size	1	1.	0.87	2.16	2.31	8.29	0.	2.56
time (sec)	N/A	1.738	6.628	0.173	1.644	4.685	0.	1.357

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	29	29	26	33	41	78	53	252
normalized size	1	1.	0.9	1.14	1.41	2.69	1.83	8.69
time (sec)	N/A	0.018	0.028	0.022	1.481	1.715	14.007	1.839

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	16	16	25	26	30	39	36	30
normalized size	1	1.	1.56	1.62	1.88	2.44	2.25	1.88
time (sec)	N/A	0.012	0.01	0.022	1.668	1.738	0.828	1.483

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	13	13	13	18	23	51	37	134
normalized size	1	1.	1.	1.38	1.77	3.92	2.85	10.31
time (sec)	N/A	0.007	0.007	0.017	1.677	1.939	0.689	1.228

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	C	A	A	C
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	3	3	3	4	14	7	2	14
normalized size	1	1.	1.	1.33	4.67	2.33	0.67	4.67
time (sec)	N/A	0.001	0.	0.006	1.677	1.724	0.172	1.193

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	12	12	20	13	39	57	49	80
normalized size	1	1.	1.67	1.08	3.25	4.75	4.08	6.67
time (sec)	N/A	0.007	0.011	0.044	1.695	2.058	1.187	1.278

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	17	17	30	22	31	99	37	53
normalized size	1	1.	1.76	1.29	1.82	5.82	2.18	3.12
time (sec)	N/A	0.011	0.014	0.041	1.779	1.899	33.205	1.253

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	30	30	35	29	54	131	80	167
normalized size	1	1.	1.17	0.97	1.8	4.37	2.67	5.57
time (sec)	N/A	0.016	0.075	0.048	1.819	1.732	27.372	1.404

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	31	31	34	27	51	212	0	93
normalized size	1	1.	1.1	0.87	1.65	6.84	0.	3.
time (sec)	N/A	0.026	0.015	0.044	1.805	1.679	0.	1.329

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	108	115	140	328	0	142
normalized size	1	1.	1.06	1.13	1.37	3.22	0.	1.39
time (sec)	N/A	0.291	0.412	0.034	1.759	1.908	0.	2.395

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	83	83	92	98	120	277	0	122
normalized size	1	1.	1.11	1.18	1.45	3.34	0.	1.47
time (sec)	N/A	0.174	0.382	0.033	1.73	1.874	0.	1.782

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	81	81	79	83	101	224	0	103
normalized size	1	1.	0.98	1.02	1.25	2.77	0.	1.27
time (sec)	N/A	0.116	0.082	0.032	1.783	1.77	0.	1.474

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	48	48	67	78	96	153	0	103
normalized size	1	1.	1.4	1.62	2.	3.19	0.	2.15
time (sec)	N/A	0.067	0.108	0.029	1.721	1.637	0.	1.236

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	77	77	97	153	0	104
normalized size	1	1.	1.64	1.64	2.06	3.26	0.	2.21
time (sec)	N/A	0.054	0.063	0.029	1.739	1.751	0.	1.262

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	69	69	79	99	119	242	0	124
normalized size	1	1.	1.14	1.43	1.72	3.51	0.	1.8
time (sec)	N/A	0.085	0.114	0.089	1.522	1.788	0.	1.244

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	85	85	97	117	142	347	0	165
normalized size	1	1.	1.14	1.38	1.67	4.08	0.	1.94
time (sec)	N/A	0.182	0.387	0.081	1.757	1.843	0.	1.281

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	107	151	176	435	0	223
normalized size	1	1.	0.96	1.35	1.57	3.88	0.	1.99
time (sec)	N/A	0.325	0.622	0.095	1.592	1.903	0.	1.323

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	25	25	62	41	47	109	39	49
normalized size	1	1.	2.48	1.64	1.88	4.36	1.56	1.96
time (sec)	N/A	0.048	0.042	0.024	1.801	1.647	0.406	1.202

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	58	58	65	142	128	174	233	134
normalized size	1	1.	1.12	2.45	2.21	3.	4.02	2.31
time (sec)	N/A	0.078	0.097	0.033	1.717	1.738	2.409	1.165

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	187	222	217	417	0	269
normalized size	1	1.	1.85	2.2	2.15	4.13	0.	2.66
time (sec)	N/A	0.128	1.946	0.039	1.798	1.711	0.	1.235

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	233	233	212	1099	0	18625	0	0
normalized size	1	1.	0.91	4.72	0.	79.94	0.	0.
time (sec)	N/A	0.63	2.667	0.121	0.	72.883	0.	0.

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	186	169	1032	0	18297	0	0
normalized size	1	1.	0.91	5.55	0.	98.37	0.	0.
time (sec)	N/A	0.455	1.841	0.125	0.	76.076	0.	0.

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	146	146	140	989	0	17963	0	0
normalized size	1	1.	0.96	6.77	0.	123.03	0.	0.
time (sec)	N/A	0.279	0.452	0.105	0.	62.566	0.	0.

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	122	122	120	968	0	17595	0	0
normalized size	1	1.	0.98	7.93	0.	144.22	0.	0.
time (sec)	N/A	0.212	0.12	0.084	0.	60.819	0.	0.

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	219	29038	0	0	0	0
normalized size	1	1.	1.67	221.66	0.	0.	0.	0.
time (sec)	N/A	0.36	0.556	1.433	0.	0.	0.	0.

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	167	167	235	50548	0	0	0	0
normalized size	1	1.	1.41	302.68	0.	0.	0.	0.
time (sec)	N/A	0.516	2.331	1.578	0.	0.	0.	0.

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	271	81276	0	0	0	0
normalized size	1	1.	1.24	371.12	0.	0.	0.	0.
time (sec)	N/A	0.861	4.652	1.935	0.	0.	0.	0.

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	279	279	564	118304	0	0	0	0
normalized size	1	1.	2.02	424.03	0.	0.	0.	0.
time (sec)	N/A	1.168	6.392	2.46	0.	0.	0.	0.

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	214	214	252	1729	0	0	0	0
normalized size	1	1.	1.18	8.08	0.	0.	0.	0.
time (sec)	N/A	0.623	2.388	0.111	0.	0.	0.	0.

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	175	175	192	1686	0	0	0	0
normalized size	1	1.	1.1	9.63	0.	0.	0.	0.
time (sec)	N/A	0.378	1.289	0.107	0.	0.	0.	0.

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	150	150	140	1665	0	0	0	0
normalized size	1	1.	0.93	11.1	0.	0.	0.	0.
time (sec)	N/A	0.312	0.482	0.088	0.	0.	0.	0.

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	152	152	144	41721	0	0	0	0
normalized size	1	1.	0.95	274.48	0.	0.	0.	0.
time (sec)	N/A	0.64	0.335	1.837	0.	0.	0.	0.

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	282	69532	0	0	0	0
normalized size	1	1.	1.67	411.43	0.	0.	0.	0.
time (sec)	N/A	0.635	0.552	1.714	0.	0.	0.	0.

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	195	102706	0	0	0	0
normalized size	1	1.	0.89	468.98	0.	0.	0.	0.
time (sec)	N/A	0.964	2.427	2.227	0.	0.	0.	0.

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	241	145176	0	0	0	0
normalized size	1	1.	0.87	522.22	0.	0.	0.	0.
time (sec)	N/A	1.315	5.474	2.825	0.	0.	0.	0.

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	252	252	296	2469	0	0	0	0
normalized size	1	1.	1.17	9.8	0.	0.	0.	0.
time (sec)	N/A	0.769	4.456	0.12	0.	0.	0.	0.

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	258	2426	0	0	0	0
normalized size	1	1.	1.21	11.39	0.	0.	0.	0.
time (sec)	N/A	0.531	1.583	0.108	0.	0.	0.	0.

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	188	188	233	2405	0	0	0	0
normalized size	1	1.	1.24	12.79	0.	0.	0.	0.
time (sec)	N/A	0.425	1.054	0.08	0.	0.	0.	0.

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	182	182	177	55566	0	0	0	0
normalized size	1	1.	0.97	305.31	0.	0.	0.	0.
time (sec)	N/A	0.847	1.109	3.712	0.	0.	0.	0.

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	196	196	400	88645	0	0	0	0
normalized size	1	1.	2.04	452.27	0.	0.	0.	0.
time (sec)	N/A	0.882	1.013	2.879	0.	0.	0.	0.

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	220	220	448	128221	0	0	0	0
normalized size	1	1.	2.04	582.82	0.	0.	0.	0.
time (sec)	N/A	0.927	2.35	2.441	0.	0.	0.	0.

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	277	277	240	171974	0	0	0	0
normalized size	1	1.	0.87	620.84	0.	0.	0.	0.
time (sec)	N/A	1.33	6.353	3.369	0.	0.	0.	0.

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	342	342	622	227162	0	0	0	0
normalized size	1	1.	1.82	664.22	0.	0.	0.	0.
time (sec)	N/A	1.669	6.458	4.294	0.	0.	0.	0.

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	151	151	193	1375	0	17797	0	0
normalized size	1	1.	1.28	9.11	0.	117.86	0.	0.
time (sec)	N/A	0.253	1.257	0.104	0.	22.988	0.	0.

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	408	408	183	986	0	9535	0	0
normalized size	1	1.	0.45	2.42	0.	23.37	0.	0.
time (sec)	N/A	0.473	0.454	0.089	0.	5.179	0.	0.

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	422	422	157	2285	0	6637	0	0
normalized size	1	1.	0.37	5.41	0.	15.73	0.	0.
time (sec)	N/A	0.395	0.233	0.093	0.	2.296	0.	0.

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	170	4107	0	17573	0	0
normalized size	1	1.	0.8	19.28	0.	82.5	0.	0.
time (sec)	N/A	0.522	4.081	0.148	0.	20.394	0.	0.

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	166	166	139	4040	0	17361	0	0
normalized size	1	1.	0.84	24.34	0.	104.58	0.	0.
time (sec)	N/A	0.357	1.518	0.124	0.	19.477	0.	0.

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	124	124	118	3997	0	17095	0	0
normalized size	1	1.	0.95	32.23	0.	137.86	0.	0.
time (sec)	N/A	0.223	0.504	0.106	0.	20.912	0.	0.

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	101	3976	0	16926	0	0
normalized size	1	1.	0.99	38.98	0.	165.94	0.	0.
time (sec)	N/A	0.151	0.099	0.108	0.	20.555	0.	0.

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	131	131	170	33052	0	0	0	0
normalized size	1	1.	1.3	252.31	0.	0.	0.	0.
time (sec)	N/A	0.34	0.708	1.214	0.	0.	0.	0.

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	201	69579	0	0	0	0
normalized size	1	1.	1.19	411.71	0.	0.	0.	0.
time (sec)	N/A	0.513	2.805	1.607	0.	0.	0.	0.

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	224	224	362	111109	0	0	0	0
normalized size	1	1.	1.62	496.02	0.	0.	0.	0.
time (sec)	N/A	0.807	6.261	2.191	0.	0.	0.	0.

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	264	264	300	8025	0	0	0	0
normalized size	1	1.	1.14	30.4	0.	0.	0.	0.
time (sec)	N/A	0.724	3.298	0.14	0.	0.	0.	0.

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	167	167	248	7982	0	0	0	0
normalized size	1	1.	1.49	47.8	0.	0.	0.	0.
time (sec)	N/A	0.443	1.271	0.115	0.	0.	0.	0.

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	141	229	7956	0	0	0	0
normalized size	1	1.	1.62	56.43	0.	0.	0.	0.
time (sec)	N/A	0.281	1.389	0.091	0.	0.	0.	0.

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	113	7951	0	0	0	0
normalized size	1	1.	0.82	57.62	0.	0.	0.	0.
time (sec)	N/A	0.236	0.179	0.108	0.	0.	0.	0.

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	171	171	186	63939	0	0	0	0
normalized size	1	1.	1.09	373.91	0.	0.	0.	0.
time (sec)	N/A	0.607	1.182	1.801	0.	0.	0.	0.

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	208	119757	0	0	0	0
normalized size	1	1.	0.95	546.84	0.	0.	0.	0.
time (sec)	N/A	0.858	3.568	2.865	0.	0.	0.	0.

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	285	285	409	174418	0	0	0	0
normalized size	1	1.	1.44	611.99	0.	0.	0.	0.
time (sec)	N/A	1.21	6.217	3.467	0.	0.	0.	0.

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	371	371	450	12953	0	0	0	0
normalized size	1	1.	1.21	34.91	0.	0.	0.	0.
time (sec)	N/A	1.045	6.323	0.137	0.	0.	0.	0.

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	309	12907	0	0	0	0
normalized size	1	1.	1.18	49.45	0.	0.	0.	0.
time (sec)	N/A	0.712	3.313	0.13	0.	0.	0.	0.

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	198	198	260	12849	0	0	0	0
normalized size	1	1.	1.31	64.89	0.	0.	0.	0.
time (sec)	N/A	0.529	0.942	0.102	0.	0.	0.	0.

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	188	188	325	12841	0	0	0	0
normalized size	1	1.	1.73	68.3	0.	0.	0.	0.
time (sec)	N/A	0.401	3.629	0.1	0.	0.	0.	0.

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	185	185	115	12836	0	0	0	0
normalized size	1	1.	0.62	69.38	0.	0.	0.	0.
time (sec)	N/A	0.364	0.149	0.107	0.	0.	0.	0.

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	224	224	242	185586	0	0	0	0
normalized size	1	1.	1.08	828.51	0.	0.	0.	0.
time (sec)	N/A	0.918	4.898	5.095	0.	0.	0.	0.

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	289	289	306	339349	0	0	0	0
normalized size	1	1.	1.06	1174.22	0.	0.	0.	0.
time (sec)	N/A	1.252	4.873	9.231	0.	0.	0.	0.

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	364	364	593	467680	0	0	0	0
normalized size	1	1.	1.63	1284.84	0.	0.	0.	0.
time (sec)	N/A	1.634	6.291	10.691	0.	0.	0.	0.

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	362	362	88	662	0	4263	0	0
normalized size	1	1.	0.24	1.83	0.	11.78	0.	0.
time (sec)	N/A	0.328	0.083	0.103	0.	2.249	0.	0.

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	406	406	88	1575	0	4593	0	0
normalized size	1	1.	0.22	3.88	0.	11.31	0.	0.
time (sec)	N/A	0.334	0.058	0.105	0.	1.536	0.	0.

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	112	20195	0	11555	0	0
normalized size	1	1.	0.94	169.71	0.	97.1	0.	0.
time (sec)	N/A	0.28	0.138	0.808	0.	4.845	0.	0.

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	106	1955	0	14052	0	0
normalized size	1	1.	0.86	15.89	0.	114.24	0.	0.
time (sec)	N/A	0.185	0.138	0.094	0.	2.642	0.	0.

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	166	39987	0	29088	0	0
normalized size	1	1.	1.08	259.66	0.	188.88	0.	0.
time (sec)	N/A	0.494	1.16	1.17	0.	7.602	0.	0.

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	109	1905	0	7656	0	0
normalized size	1	1.	1.07	18.68	0.	75.06	0.	0.
time (sec)	N/A	0.149	0.167	0.139	0.	1.973	0.	0.

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	132	132	154	2291	0	14344	0	0
normalized size	1	1.	1.17	17.36	0.	108.67	0.	0.
time (sec)	N/A	0.225	0.322	0.097	0.	3.505	0.	0.

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	174	174	156	3055	0	23711	0	0
normalized size	1	1.	0.9	17.56	0.	136.27	0.	0.
time (sec)	N/A	0.338	0.269	0.101	0.	6.204	0.	0.

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	70	1624	0	682	0	203
normalized size	1	1.	1.56	36.09	0.	15.16	0.	4.51
time (sec)	N/A	0.052	1.546	0.115	0.	1.065	0.	1.462

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	45	1624	0	718	0	203
normalized size	1	1.	1.	36.09	0.	15.96	0.	4.51
time (sec)	N/A	0.052	0.044	0.102	0.	1.111	0.	1.389

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	30	30	69	54	0	93	0	0
normalized size	1	1.	2.3	1.8	0.	3.1	0.	0.
time (sec)	N/A	0.031	0.173	0.095	0.	1.04	0.	0.

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	27	27	65	52	0	153	0	0
normalized size	1	1.	2.41	1.93	0.	5.67	0.	0.
time (sec)	N/A	0.032	0.116	0.076	0.	1.016	0.	0.

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	85	85	75	142	0	2720	0	0
normalized size	1	1.	0.88	1.67	0.	32.	0.	0.
time (sec)	N/A	0.108	0.091	0.105	0.	1.264	0.	0.

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	151	527	306	28355	0	0
normalized size	1	1.	0.54	1.9	1.1	102.	0.	0.
time (sec)	N/A	0.321	1.594	0.02	1.786	95.206	0.	0.

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	254	254	134	497	284	28034	0	0
normalized size	1	1.	0.53	1.96	1.12	110.37	0.	0.
time (sec)	N/A	0.263	1.002	0.021	1.856	122.131	0.	0.

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	114	467	259	27690	0	0
normalized size	1	1.	0.5	2.04	1.13	120.92	0.	0.
time (sec)	N/A	0.233	0.396	0.021	1.745	104.72	0.	0.

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	94	437	235	27232	0	306
normalized size	1	1.	0.46	2.13	1.15	132.84	0.	1.49
time (sec)	N/A	0.199	0.167	0.022	1.705	90.482	0.	2.123

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	158	437	235	27960	0	306
normalized size	1	1.	0.77	2.13	1.15	136.39	0.	1.49
time (sec)	N/A	0.214	0.632	0.023	1.784	101.37	0.	2.082

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	178	467	259	28280	0	336
normalized size	1	1.	0.78	2.04	1.13	123.49	0.	1.47
time (sec)	N/A	0.228	0.772	0.025	1.765	128.221	0.	1.768

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	254	254	198	497	285	29755	0	370
normalized size	1	1.	0.78	1.96	1.12	117.15	0.	1.46
time (sec)	N/A	0.263	1.197	0.026	1.752	115.376	0.	1.348

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	394	394	205	858	444	0	0	0
normalized size	1	1.	0.52	2.18	1.13	0.	0.	0.
time (sec)	N/A	0.667	6.056	0.022	1.757	0.	0.	0.

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	360	360	178	810	408	0	0	0
normalized size	1	1.	0.49	2.25	1.13	0.	0.	0.
time (sec)	N/A	0.583	2.129	0.024	1.772	0.	0.	0.

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	326	326	151	762	371	0	0	0
normalized size	1	1.	0.46	2.34	1.14	0.	0.	0.
time (sec)	N/A	0.519	1.199	0.022	1.715	0.	0.	0.

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	294	294	119	710	335	0	0	490
normalized size	1	1.	0.4	2.41	1.14	0.	0.	1.67
time (sec)	N/A	0.455	0.516	0.021	1.679	0.	0.	1.525

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	276	276	211	692	324	0	0	462
normalized size	1	1.	0.76	2.51	1.17	0.	0.	1.67
time (sec)	N/A	0.343	0.897	0.026	1.792	0.	0.	1.632

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	283	283	119	710	335	0	0	473
normalized size	1	1.	0.42	2.51	1.18	0.	0.	1.67
time (sec)	N/A	0.354	0.687	0.025	1.695	0.	0.	1.519

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	317	317	120	762	373	0	0	529
normalized size	1	1.	0.38	2.4	1.18	0.	0.	1.67
time (sec)	N/A	0.446	0.597	0.029	1.82	0.	0.	1.588

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	463	463	221	1147	537	0	0	0
normalized size	1	1.	0.48	2.48	1.16	0.	0.	0.
time (sec)	N/A	0.917	3.585	0.026	1.715	0.	0.	0.

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	421	421	197	1077	490	0	0	0
normalized size	1	1.	0.47	2.56	1.16	0.	0.	0.
time (sec)	N/A	0.745	2.028	0.023	1.76	0.	0.	0.

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	380	380	153	1007	441	0	0	690
normalized size	1	1.	0.4	2.65	1.16	0.	0.	1.82
time (sec)	N/A	0.667	1.451	0.022	1.637	0.	0.	2.325

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	374	374	264	971	419	0	0	640
normalized size	1	1.	0.71	2.6	1.12	0.	0.	1.71
time (sec)	N/A	0.676	2.717	0.027	1.839	0.	0.	1.927

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	372	372	165	971	419	0	0	622
normalized size	1	1.	0.44	2.61	1.13	0.	0.	1.67
time (sec)	N/A	0.612	1.222	0.028	1.676	0.	0.	1.671

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	380	380	166	1007	441	0	0	660
normalized size	1	1.	0.44	2.65	1.16	0.	0.	1.74
time (sec)	N/A	0.659	1.346	0.028	1.755	0.	0.	1.697

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	325	325	187	666	0	0	0	0
normalized size	1	1.	0.58	2.05	0.	0.	0.	0.
time (sec)	N/A	0.979	1.11	0.047	0.	0.	0.	0.

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	297	297	165	628	0	0	0	0
normalized size	1	1.	0.56	2.11	0.	0.	0.	0.
time (sec)	N/A	0.654	0.335	0.048	0.	0.	0.	0.

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	195	607	0	0	0	0
normalized size	1	1.	0.7	2.18	0.	0.	0.	0.
time (sec)	N/A	0.369	0.357	0.06	0.	0.	0.	0.

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	194	607	0	0	0	398
normalized size	1	1.	0.7	2.18	0.	0.	0.	1.43
time (sec)	N/A	0.361	0.347	0.064	0.	0.	0.	2.222

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	297	297	153	628	0	0	0	425
normalized size	1	1.	0.52	2.11	0.	0.	0.	1.43
time (sec)	N/A	0.637	0.566	0.05	0.	0.	0.	2.363

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	325	325	174	666	0	0	0	459
normalized size	1	1.	0.54	2.05	0.	0.	0.	1.41
time (sec)	N/A	0.974	3.213	0.052	0.	0.	0.	1.832

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	436	436	275	1160	0	0	0	0
normalized size	1	1.	0.63	2.66	0.	0.	0.	0.
time (sec)	N/A	1.162	2.206	0.063	0.	0.	0.	0.

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	391	391	230	1136	0	0	0	0
normalized size	1	1.	0.59	2.91	0.	0.	0.	0.
time (sec)	N/A	0.788	1.778	0.056	0.	0.	0.	0.

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	391	391	220	1128	0	0	0	0
normalized size	1	1.	0.56	2.88	0.	0.	0.	0.
time (sec)	N/A	0.819	1.343	0.073	0.	0.	0.	0.

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	391	391	204	1136	0	0	0	695
normalized size	1	1.	0.52	2.91	0.	0.	0.	1.78
time (sec)	N/A	0.865	1.06	0.074	0.	0.	0.	1.55

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	439	439	239	1160	0	0	0	749
normalized size	1	1.	0.54	2.64	0.	0.	0.	1.71
time (sec)	N/A	1.173	2.299	0.063	0.	0.	0.	1.513

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	493	493	287	1198	0	0	0	760
normalized size	1	1.	0.58	2.43	0.	0.	0.	1.54
time (sec)	N/A	1.533	3.813	0.061	0.	0.	0.	1.483

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	600	600	1563	1864	0	0	0	0
normalized size	1	1.	2.6	3.11	0.	0.	0.	0.
time (sec)	N/A	1.725	6.312	0.064	0.	0.	0.	0.

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	534	534	690	1843	0	0	0	0
normalized size	1	1.	1.29	3.45	0.	0.	0.	0.
time (sec)	N/A	1.23	6.297	0.062	0.	0.	0.	0.

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	533	533	333	1835	0	0	0	0
normalized size	1	1.	0.62	3.44	0.	0.	0.	0.
time (sec)	N/A	1.228	5.675	0.059	0.	0.	0.	0.

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	531	531	344	1835	0	0	0	0
normalized size	1	1.	0.65	3.46	0.	0.	0.	0.
time (sec)	N/A	1.312	6.112	0.075	0.	0.	0.	0.

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	534	534	288	1843	0	0	0	1062
normalized size	1	1.	0.54	3.45	0.	0.	0.	1.99
time (sec)	N/A	1.25	4.484	0.079	0.	0.	0.	1.548

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	601	601	585	1864	0	0	0	1092
normalized size	1	1.	0.97	3.1	0.	0.	0.	1.82
time (sec)	N/A	1.691	6.263	0.067	0.	0.	0.	1.65

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	38	118	166	1466	0	0
normalized size	1	1.	0.24	0.76	1.06	9.4	0.	0.
time (sec)	N/A	0.11	0.047	0.023	1.55	2.543	0.	0.

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	138	118	166	1311	0	0
normalized size	1	1.	0.9	0.77	1.08	8.51	0.	0.
time (sec)	N/A	0.104	0.114	0.023	1.686	2.299	0.	0.

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	36	104	147	1283	0	0
normalized size	1	1.	0.26	0.75	1.07	9.3	0.	0.
time (sec)	N/A	0.099	0.02	0.035	1.554	2.291	0.	0.

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	110	104	151	1245	0	159
normalized size	1	1.	0.8	0.75	1.09	9.02	0.	1.15
time (sec)	N/A	0.096	0.033	0.04	1.679	2.325	0.	1.702

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	34	118	165	1569	0	177
normalized size	1	1.	0.22	0.77	1.07	10.19	0.	1.15
time (sec)	N/A	0.105	0.028	0.028	1.788	2.129	0.	1.778

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	A	B	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	36	118	167	1526	0	178
normalized size	1	1.	0.23	0.76	1.07	9.78	0.	1.14
time (sec)	N/A	0.099	0.028	0.027	1.793	2.133	0.	1.763

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	256	256	156	325	0	18137	0	0
normalized size	1	1.	0.61	1.27	0.	70.85	0.	0.
time (sec)	N/A	0.526	0.188	0.043	0.	86.383	0.	0.

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	228	305	0	17946	0	0
normalized size	1	1.	0.96	1.29	0.	75.72	0.	0.
time (sec)	N/A	0.304	0.255	0.041	0.	84.229	0.	0.

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	205	304	0	18178	0	0
normalized size	1	1.	0.86	1.28	0.	76.7	0.	0.
time (sec)	N/A	0.278	0.166	0.057	0.	55.717	0.	0.

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	226	305	0	18194	0	312
normalized size	1	1.	0.95	1.29	0.	76.77	0.	1.32
time (sec)	N/A	0.278	0.194	0.061	0.	52.696	0.	2.134

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	A	F(-2)	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	256	256	132	325	0	19458	0	335
normalized size	1	1.	0.52	1.27	0.	76.01	0.	1.31
time (sec)	N/A	0.453	0.502	0.044	0.	53.417	0.	1.504

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	264	264	294	2181075	0	0	0	0
normalized size	1	1.	1.11	8261.65	0.	0.	0.	0.
time (sec)	N/A	1.913	4.023	0.717	0.	0.	0.	0.

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	201	201	241	2178530	0	0	0	0
normalized size	1	1.	1.2	10838.5	0.	0.	0.	0.
time (sec)	N/A	1.547	3.006	0.712	0.	0.	0.	0.

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	208	2177043	0	0	0	0
normalized size	1	1.	1.23	12881.9	0.	0.	0.	0.
time (sec)	N/A	0.644	1.124	0.753	0.	0.	0.	0.

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	168	2178373	0	0	0	0
normalized size	1	1.	1.09	14145.3	0.	0.	0.	0.
time (sec)	N/A	0.541	0.535	0.74	0.	0.	0.	0.

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	199	199	194	2178959	0	0	0	0
normalized size	1	1.	0.97	10949.5	0.	0.	0.	0.
time (sec)	N/A	0.757	1.394	0.704	0.	0.	0.	0.

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	250	250	226	2182092	0	0	0	0
normalized size	1	1.	0.9	8728.37	0.	0.	0.	0.
time (sec)	N/A	1.058	2.465	0.701	0.	0.	0.	0.

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	314	314	265	2183144	0	0	0	0
normalized size	1	1.	0.84	6952.69	0.	0.	0.	0.
time (sec)	N/A	1.343	3.77	0.735	0.	0.	0.	0.

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	323	323	347	2400808	0	0	0	0
normalized size	1	1.	1.07	7432.84	0.	0.	0.	0.
time (sec)	N/A	2.56	4.27	0.767	0.	0.	0.	0.

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	268	268	290	2398581	0	0	0	0
normalized size	1	1.	1.08	8949.93	0.	0.	0.	0.
time (sec)	N/A	2.407	2.485	0.82	0.	0.	0.	0.

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	204	204	243	2396041	0	0	0	0
normalized size	1	1.	1.19	11745.3	0.	0.	0.	0.
time (sec)	N/A	1.731	0.962	0.826	0.	0.	0.	0.

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	209	209	121803	2396071	0	0	0	0
normalized size	1	1.	582.79	11464.5	0.	0.	0.	0.
time (sec)	N/A	1.685	39.146	0.814	0.	0.	0.	0.

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	196	196	238	2397670	0	0	0	0
normalized size	1	1.	1.21	12233.	0.	0.	0.	0.
time (sec)	N/A	0.878	0.9	0.814	0.	0.	0.	0.

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	259	259	286	2398570	0	0	0	0
normalized size	1	1.	1.1	9260.89	0.	0.	0.	0.
time (sec)	N/A	1.153	2.273	0.875	0.	0.	0.	0.

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	311	311	346	2400710	0	0	0	0
normalized size	1	1.	1.11	7719.32	0.	0.	0.	0.
time (sec)	N/A	1.477	5.353	0.849	0.	0.	0.	0.

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	382	382	474	2404245	0	0	0	0
normalized size	1	1.	1.24	6293.84	0.	0.	0.	0.
time (sec)	N/A	1.832	6.633	0.852	0.	0.	0.	0.

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	397	397	411	2656933	0	0	0	0
normalized size	1	1.	1.04	6692.53	0.	0.	0.	0.
time (sec)	N/A	3.12	4.382	0.893	0.	0.	0.	0.

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	316	316	345	2654491	0	0	0	0
normalized size	1	1.	1.09	8400.29	0.	0.	0.	0.
time (sec)	N/A	3.067	4.507	0.919	0.	0.	0.	0.

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	260	260	291	2652267	0	0	0	0
normalized size	1	1.	1.12	10201.	0.	0.	0.	0.
time (sec)	N/A	2.33	2.593	0.935	0.	0.	0.	0.

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	241	241	209298	2652458	0	0	0	0
normalized size	1	1.	868.46	11006.1	0.	0.	0.	0.
time (sec)	N/A	2.351	40.969	0.92	0.	0.	0.	0.

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	240	240	139636	2652764	0	0	0	0
normalized size	1	1.	581.82	11053.2	0.	0.	0.	0.
time (sec)	N/A	2.016	39.583	0.911	0.	0.	0.	0.

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	247	247	321	2653616	0	0	0	0
normalized size	1	1.	1.3	10743.4	0.	0.	0.	0.
time (sec)	N/A	1.17	2.39	0.939	0.	0.	0.	0.

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	309	309	385	2654465	0	0	0	0
normalized size	1	1.	1.25	8590.5	0.	0.	0.	0.
time (sec)	N/A	1.519	5.997	0.95	0.	0.	0.	0.

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	378	378	543	2656820	0	0	0	0
normalized size	1	1.	1.44	7028.62	0.	0.	0.	0.
time (sec)	N/A	1.911	6.861	0.967	0.	0.	0.	0.

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	460	460	632	2660696	0	0	0	0
normalized size	1	1.	1.37	5784.12	0.	0.	0.	0.
time (sec)	N/A	2.313	6.986	0.959	0.	0.	0.	0.

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	253	253	355	1490268	0	0	0	0
normalized size	1	1.	1.4	5890.39	0.	0.	0.	0.
time (sec)	N/A	2.456	4.192	0.658	0.	0.	0.	0.

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	206	206	245	1888526	0	0	0	0
normalized size	1	1.	1.19	9167.6	0.	0.	0.	0.
time (sec)	N/A	1.368	2.344	0.885	0.	0.	0.	0.

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	168	168	208	1885958	0	0	0	0
normalized size	1	1.	1.24	11225.9	0.	0.	0.	0.
time (sec)	N/A	0.608	1.359	0.864	0.	0.	0.	0.

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	137	1878820	0	0	0	0
normalized size	1	1.	1.11	15275.	0.	0.	0.	0.
time (sec)	N/A	0.369	0.224	0.875	0.	0.	0.	0.

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	159	159	172	1886236	0	0	0	0
normalized size	1	1.	1.08	11863.1	0.	0.	0.	0.
time (sec)	N/A	0.535	0.444	0.862	0.	0.	0.	0.

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	203	203	195	1888895	0	0	0	0
normalized size	1	1.	0.96	9304.9	0.	0.	0.	0.
time (sec)	N/A	0.742	1.744	0.882	0.	0.	0.	0.

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	256	256	227	1890924	0	0	0	0
normalized size	1	1.	0.89	7386.42	0.	0.	0.	0.
time (sec)	N/A	1.062	5.44	0.853	0.	0.	0.	0.

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	219	219	177751	1561442	0	0	0	0
normalized size	1	1.	811.65	7129.87	0.	0.	0.	0.
time (sec)	N/A	1.77	39.938	1.622	0.	0.	0.	0.

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	170	170	239	1559497	0	0	0	0
normalized size	1	1.	1.41	9173.51	0.	0.	0.	0.
time (sec)	N/A	0.605	1.494	1.724	0.	0.	0.	0.

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	175	175	202	1559531	0	0	0	0
normalized size	1	1.	1.15	8911.61	0.	0.	0.	0.
time (sec)	N/A	0.578	0.763	1.633	0.	0.	0.	0.

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	216	216	249	1560429	0	0	0	0
normalized size	1	1.	1.15	7224.21	0.	0.	0.	0.
time (sec)	N/A	0.847	2.703	1.599	0.	0.	0.	0.

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	276	276	299	1562498	0	0	0	0
normalized size	1	1.	1.08	5661.22	0.	0.	0.	0.
time (sec)	N/A	1.16	2.763	1.656	0.	0.	0.	0.

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	282	282	265550	2978162	0	0	0	0
normalized size	1	1.	941.67	10560.9	0.	0.	0.	0.
time (sec)	N/A	2.478	41.453	2.164	0.	0.	0.	0.

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	244	244	308	2976654	0	0	0	0
normalized size	1	1.	1.26	12199.4	0.	0.	0.	0.
time (sec)	N/A	0.989	2.85	2.301	0.	0.	0.	0.

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	244	244	320	2976700	0	0	0	0
normalized size	1	1.	1.31	12199.6	0.	0.	0.	0.
time (sec)	N/A	1.009	3.259	2.2	0.	0.	0.	0.

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	247	247	273	2975233	0	0	0	0
normalized size	1	1.	1.11	12045.5	0.	0.	0.	0.
time (sec)	N/A	0.927	2.463	2.143	0.	0.	0.	0.

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	301	301	326	2978232	0	0	0	0
normalized size	1	1.	1.08	9894.46	0.	0.	0.	0.
time (sec)	N/A	1.19	4.711	3.099	0.	0.	0.	0.

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F(-1)	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	359	359	383	2979563	0	0	0	0
normalized size	1	1.	1.07	8299.62	0.	0.	0.	0.
time (sec)	N/A	1.642	3.422	2.284	0.	0.	0.	0.

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	193	943902	0	0	0	0
normalized size	1	1.	1.25	6089.69	0.	0.	0.	0.
time (sec)	N/A	0.2	0.902	0.572	0.	0.	0.	0.

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	117	117	124	940031	0	0	0	0
normalized size	1	1.	1.06	8034.45	0.	0.	0.	0.
time (sec)	N/A	0.143	0.095	0.786	0.	0.	0.	0.

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	111	111	125	939328	0	0	0	0
normalized size	1	1.	1.13	8462.41	0.	0.	0.	0.
time (sec)	N/A	0.137	0.105	0.574	0.	0.	0.	0.

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	F(-1)	F	F(-2)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	150	150	158	943929	0	0	0	0
normalized size	1	1.	1.05	6292.86	0.	0.	0.	0.
time (sec)	N/A	0.222	0.362	0.636	0.	0.	0.	0.

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	379	379	263	101	0	0	0	1397
normalized size	1	1.	0.69	0.27	0.	0.	0.	3.69
time (sec)	N/A	0.44	0.874	0.194	0.	0.	0.	15.494

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	377	377	347	99	0	0	0	666
normalized size	1	1.	0.92	0.26	0.	0.	0.	1.77
time (sec)	N/A	0.406	0.876	0.079	0.	0.	0.	13.59

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	357	357	227	72	0	0	0	752
normalized size	1	1.	0.64	0.2	0.	0.	0.	2.11
time (sec)	N/A	0.278	0.433	0.075	0.	0.	0.	10.155

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	357	357	305	69	0	0	0	215
normalized size	1	1.	0.85	0.19	0.	0.	0.	0.6
time (sec)	N/A	0.284	0.242	0.083	0.	0.	0.	21.371

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	B	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	148	148	109	42	0	757	0	1229
normalized size	1	1.	0.74	0.28	0.	5.11	0.	8.3
time (sec)	N/A	0.126	1.727	0.086	0.	2.187	0.	1.577

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	B	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	299	299	330	72	0	6688	0	390
normalized size	1	1.	1.1	0.24	0.	22.37	0.	1.3
time (sec)	N/A	0.345	0.433	0.081	0.	2.742	0.	2.599

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	403	403	355	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.
time (sec)	N/A	1.328	5.475	0.598	0.	0.	0.	0.

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	267	267	232	0	0	0	0	0
normalized size	1	1.	0.87	0.	0.	0.	0.	0.
time (sec)	N/A	0.691	2.523	0.416	0.	0.	0.	0.

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	155	0	0	0	0	0
normalized size	1	1.	0.8	0.	0.	0.	0.	0.
time (sec)	N/A	0.332	0.672	0.354	0.	0.	0.	0.

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	108	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.139	0.433	0.797	0.	0.	0.	0.

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	185	185	144	0	0	0	0	0
normalized size	1	1.	0.78	0.	0.	0.	0.	0.
time (sec)	N/A	0.313	0.865	0.323	0.	0.	0.	0.

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	282	282	239	0	0	0	0	0
normalized size	1	1.	0.85	0.	0.	0.	0.	0.
time (sec)	N/A	0.704	2.756	0.433	0.	0.	0.	0.

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	438	438	534	0	0	0	0	0
normalized size	1	1.	1.22	0.	0.	0.	0.	0.
time (sec)	N/A	1.285	6.243	0.578	0.	0.	0.	0.

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	659	659	1901	0	0	0	0	0
normalized size	1	1.	2.88	0.	0.	0.	0.	0.
time (sec)	N/A	2.447	6.279	0.633	0.	0.	0.	0.

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	193	193	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.452	28.353	0.49	0.	0.	0.	0.

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	189	189	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.455	14.915	0.493	0.	0.	0.	0.

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	187	187	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.398	4.986	0.542	0.	0.	0.	0.

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	187	187	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.409	9.209	0.568	0.	0.	0.	0.

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	193	193	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.455	25.772	0.517	0.	0.	0.	0.

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	193	193	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.457	70.37	0.505	0.	0.	0.	0.

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	183	183	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.314	2.104	0.415	0.	0.	0.	0.

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	387	385	384	0	0	0	0	0
normalized size	1	0.99	0.99	0.	0.	0.	0.	0.
time (sec)	N/A	1.051	5.781	0.362	0.	0.	0.	0.

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	291	289	281	0	0	0	0	0
normalized size	1	0.99	0.97	0.	0.	0.	0.	0.
time (sec)	N/A	0.584	2.248	0.355	0.	0.	0.	0.

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	219	219	169	0	0	0	0	0
normalized size	1	1.	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.353	1.237	0.368	0.	0.	0.	0.

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	168	168	125	0	0	0	0	0
normalized size	1	1.	0.74	0.	0.	0.	0.	0.
time (sec)	N/A	0.178	0.209	0.328	0.	0.	0.	0.

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	143	143	120	0	0	0	0	0
normalized size	1	1.	0.84	0.	0.	0.	0.	0.
time (sec)	N/A	0.13	0.149	0.553	0.	0.	0.	0.

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	190	190	169	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.273	0.337	0.536	0.	0.	0.	0.

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	228	228	202	0	0	0	0	0
normalized size	1	1.	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.447	0.37	0.343	0.	0.	0.	0.

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	292	292	230	0	0	0	0	0
normalized size	1	1.	0.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.806	0.474	0.653	0.	0.	0.	0.

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	263	2945	259	1153	0	0
normalized size	1	1.	2.55	28.59	2.51	11.19	0.	0.
time (sec)	N/A	0.236	2.967	0.474	1.554	1.592	0.	0.

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	78	78	161	1538	235	983	0	0
normalized size	1	1.	2.06	19.72	3.01	12.6	0.	0.
time (sec)	N/A	0.192	3.312	0.446	1.598	1.457	0.	0.

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	53	53	92	1425	209	803	0	0
normalized size	1	1.	1.74	26.89	3.94	15.15	0.	0.
time (sec)	N/A	0.151	2.003	0.417	1.558	1.411	0.	0.

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	55	55	108	784	209	938	0	0
normalized size	1	1.	1.96	14.25	3.8	17.05	0.	0.
time (sec)	N/A	0.152	3.39	0.454	1.548	1.544	0.	0.

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	96	889	239	1135	0	0
normalized size	1	1.	1.2	11.11	2.99	14.19	0.	0.
time (sec)	N/A	0.188	2.644	0.501	1.553	1.473	0.	0.

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	133	971	261	1310	0	0
normalized size	1	1.	1.27	9.25	2.49	12.48	0.	0.
time (sec)	N/A	0.226	3.501	0.459	1.565	1.651	0.	0.

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	128	128	272	2947	270	1200	0	0
normalized size	1	1.	2.12	23.02	2.11	9.38	0.	0.
time (sec)	N/A	0.36	5.661	0.446	1.568	1.596	0.	0.

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	174	1540	243	1026	0	0
normalized size	1	1.	1.69	14.95	2.36	9.96	0.	0.
time (sec)	N/A	0.326	4.635	0.454	1.551	1.477	0.	0.

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	163	1440	235	1010	0	0
normalized size	1	1.	1.65	14.55	2.37	10.2	0.	0.
time (sec)	N/A	0.317	4.215	0.461	1.556	1.46	0.	0.

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	B	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	254	888	244	1172	0	0
normalized size	1	1.	2.42	8.46	2.32	11.16	0.	0.
time (sec)	N/A	0.326	3.54	0.458	1.565	1.501	0.	0.

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	130	130	133	971	270	1361	0	0
normalized size	1	1.	1.02	7.47	2.08	10.47	0.	0.
time (sec)	N/A	0.372	7.074	0.481	1.551	1.639	0.	0.

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	171	171	161	3132	292	1386	0	0
normalized size	1	1.	0.94	18.32	1.71	8.11	0.	0.
time (sec)	N/A	0.528	9.166	0.568	1.526	1.754	0.	0.

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	146	146	132	2947	267	1208	0	0
normalized size	1	1.	0.9	20.18	1.83	8.27	0.	0.
time (sec)	N/A	0.488	7.52	0.536	1.522	1.59	0.	0.

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	146	1562	259	1077	0	0
normalized size	1	1.	1.06	11.32	1.88	7.8	0.	0.
time (sec)	N/A	0.457	5.467	0.526	1.559	1.501	0.	0.

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	142	132	1539	263	1185	0	0
normalized size	1	1.	0.93	10.84	1.85	8.35	0.	0.
time (sec)	N/A	0.471	5.915	0.54	1.558	1.632	0.	0.

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	148	148	140	973	270	1369	0	0
normalized size	1	1.	0.95	6.57	1.82	9.25	0.	0.
time (sec)	N/A	0.492	6.34	0.61	1.598	1.563	0.	0.

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	173	173	298	1043	294	1553	0	0
normalized size	1	1.	1.72	6.03	1.7	8.98	0.	0.
time (sec)	N/A	0.542	14.26	0.636	1.566	1.762	0.	0.

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	297	297	247	2598	0	1879	0	0
normalized size	1	1.	0.83	8.75	0.	6.33	0.	0.
time (sec)	N/A	0.518	2.765	0.501	0.	1.694	0.	0.

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	268	268	223	2437	0	1634	0	0
normalized size	1	1.	0.83	9.09	0.	6.1	0.	0.
time (sec)	N/A	0.459	2.208	0.436	0.	1.552	0.	0.

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	235	235	199	1139	0	1470	0	0
normalized size	1	1.	0.85	4.85	0.	6.26	0.	0.
time (sec)	N/A	0.379	1.615	0.431	0.	1.758	0.	0.

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	237	237	198	2963	0	1497	0	0
normalized size	1	1.	0.84	12.5	0.	6.32	0.	0.
time (sec)	N/A	0.39	1.977	0.398	0.	1.587	0.	0.

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	276	276	214	3717	0	1823	0	0
normalized size	1	1.	0.78	13.47	0.	6.61	0.	0.
time (sec)	N/A	0.457	2.172	0.416	0.	1.646	0.	0.

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	307	307	242	3871	0	2148	0	0
normalized size	1	1.	0.79	12.61	0.	7.	0.	0.
time (sec)	N/A	0.513	2.66	0.533	0.	1.764	0.	0.

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	317	317	256	2507	0	1783	0	0
normalized size	1	1.	0.81	7.91	0.	5.62	0.	0.
time (sec)	N/A	0.685	2.502	0.652	0.	1.773	0.	0.

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	243	1517	0	1715	0	0
normalized size	1	1.	0.86	5.34	0.	6.04	0.	0.
time (sec)	N/A	0.61	1.998	0.592	0.	1.557	0.	0.

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	274	274	243	5032	0	1717	0	0
normalized size	1	1.	0.89	18.36	0.	6.27	0.	0.
time (sec)	N/A	0.576	1.915	0.575	0.	1.599	0.	0.

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	241	5040	0	1719	0	0
normalized size	1	1.	0.85	17.75	0.	6.05	0.	0.
time (sec)	N/A	0.601	2.406	0.493	0.	1.577	0.	0.

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	319	319	249	5063	0	2032	0	0
normalized size	1	1.	0.78	15.87	0.	6.37	0.	0.
time (sec)	N/A	0.68	2.756	0.497	0.	1.675	0.	0.

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	367	367	284	2577	0	1854	0	0
normalized size	1	1.	0.77	7.02	0.	5.05	0.	0.
time (sec)	N/A	0.918	3.573	0.741	0.	1.672	0.	0.

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	318	318	258	1581	0	1771	0	0
normalized size	1	1.	0.81	4.97	0.	5.57	0.	0.
time (sec)	N/A	0.775	2.44	0.645	0.	1.583	0.	0.

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	316	316	272	5075	0	1706	0	0
normalized size	1	1.	0.86	16.06	0.	5.4	0.	0.
time (sec)	N/A	0.761	3.78	0.602	0.	1.566	0.	0.

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	308	308	274	4520	0	1675	0	0
normalized size	1	1.	0.89	14.68	0.	5.44	0.	0.
time (sec)	N/A	0.725	3.353	0.493	0.	1.484	0.	0.

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	310	310	415	5731	0	1813	0	0
normalized size	1	1.	1.34	18.49	0.	5.85	0.	0.
time (sec)	N/A	0.757	4.229	0.506	0.	1.617	0.	0.

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	367	367	280	6350	0	2064	0	0
normalized size	1	1.	0.76	17.3	0.	5.62	0.	0.
time (sec)	N/A	0.926	4.335	0.635	0.	1.767	0.	0.

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	198	198	188	2243	1875	1337	0	0
normalized size	1	1.	0.95	11.33	9.47	6.75	0.	0.
time (sec)	N/A	0.668	2.983	0.667	3.908	1.533	0.	0.

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	162	2016	1546	1175	0	0
normalized size	1	1.	1.05	13.01	9.97	7.58	0.	0.
time (sec)	N/A	0.48	2.145	0.647	2.459	1.458	0.	0.

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	112	1048	749	1010	0	0
normalized size	1	1.	1.02	9.53	6.81	9.18	0.	0.
time (sec)	N/A	0.314	2.203	0.606	2.069	1.44	0.	0.

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	152	152	241	895	0	1501	0	0
normalized size	1	1.	1.59	5.89	0.	9.88	0.	0.
time (sec)	N/A	0.458	42.847	0.543	0.	1.508	0.	0.

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	B	F	B	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	192	192	0	3889	0	2071	0	0
normalized size	1	1.	0.	20.26	0.	10.79	0.	0.
time (sec)	N/A	0.614	8.873	0.609	0.	1.558	0.	0.

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	245	245	320	3124	5021	1619	0	0
normalized size	1	1.	1.31	12.75	20.49	6.61	0.	0.
time (sec)	N/A	0.894	7.46	0.505	14.406	1.508	0.	0.

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	201	201	289	2244	1940	1436	0	0
normalized size	1	1.	1.44	11.16	9.65	7.14	0.	0.
time (sec)	N/A	0.71	5.247	0.585	3.372	1.447	0.	0.

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	259	2017	1486	1274	0	0
normalized size	1	1.	1.65	12.85	9.46	8.11	0.	0.
time (sec)	N/A	0.511	4.643	0.592	2.319	1.43	0.	0.

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	186	186	286	1366	0	1793	0	0
normalized size	1	1.	1.54	7.34	0.	9.64	0.	0.
time (sec)	N/A	0.634	4.294	0.534	0.	1.548	0.	0.

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	196	196	360	1306	0	2218	0	0
normalized size	1	1.	1.84	6.66	0.	11.32	0.	0.
time (sec)	N/A	0.654	7.011	0.522	0.	1.618	0.	0.

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	244	244	441	4490	0	2515	0	0
normalized size	1	1.	1.81	18.4	0.	10.31	0.	0.
time (sec)	N/A	0.858	6.213	0.571	0.	1.559	0.	0.

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	297	297	354	3412	6020	1813	0	0
normalized size	1	1.	1.19	11.49	20.27	6.1	0.	0.
time (sec)	N/A	1.129	11.546	0.566	26.929	1.542	0.	0.

Problem 548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	251	251	332	3126	5426	1659	0	0
normalized size	1	1.	1.32	12.45	21.62	6.61	0.	0.
time (sec)	N/A	0.946	9.698	0.507	9.947	1.569	0.	0.

Problem 549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	306	2246	2059	1469	0	0
normalized size	1	1.	1.49	10.96	10.04	7.17	0.	0.
time (sec)	N/A	0.736	7.533	0.799	3.589	1.486	0.	0.

Problem 550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-1)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	230	230	496	2629	0	2090	0	0
normalized size	1	1.	2.16	11.43	0.	9.09	0.	0.
time (sec)	N/A	0.829	10.271	0.692	0.	1.591	0.	0.

Problem 551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	236	236	387	1896	0	2300	0	0
normalized size	1	1.	1.64	8.03	0.	9.75	0.	0.
time (sec)	N/A	0.857	9.532	0.55	0.	1.632	0.	0.

Problem 552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-1)	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	246	246	447	1530	0	2566	0	0
normalized size	1	1.	1.82	6.22	0.	10.43	0.	0.
time (sec)	N/A	0.882	8.029	0.589	0.	1.591	0.	0.

Problem 553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	292	292	484	4851	0	2843	0	0
normalized size	1	1.	1.66	16.61	0.	9.74	0.	0.
time (sec)	N/A	1.086	9.612	0.623	0.	1.672	0.	0.

Problem 554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	211	211	166	683	0	1353	0	0
normalized size	1	1.	0.79	3.24	0.	6.41	0.	0.
time (sec)	N/A	0.697	4.052	0.709	0.	1.681	0.	0.

Problem 555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	163	163	165	484	0	1176	0	0
normalized size	1	1.	1.01	2.97	0.	7.21	0.	0.
time (sec)	N/A	0.496	3.089	0.676	0.	1.591	0.	0.

Problem 556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	156	431	0	1184	0	0
normalized size	1	1.	1.31	3.62	0.	9.95	0.	0.
time (sec)	N/A	0.321	2.356	0.584	0.	1.722	0.	0.

Problem 557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	196	196	227	805	0	2007	0	0
normalized size	1	1.	1.16	4.11	0.	10.24	0.	0.
time (sec)	N/A	0.615	4.101	0.633	0.	2.707	0.	0.

Problem 558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	214	214	195	648	0	1299	0	0
normalized size	1	1.	0.91	3.03	0.	6.07	0.	0.
time (sec)	N/A	0.725	4.731	0.673	0.	1.969	0.	0.

Problem 559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	168	168	192	853	0	1293	0	0
normalized size	1	1.	1.14	5.08	0.	7.7	0.	0.
time (sec)	N/A	0.531	3.663	0.595	0.	1.974	0.	0.

Problem 560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	170	170	190	867	0	1292	0	0
normalized size	1	1.	1.12	5.1	0.	7.6	0.	0.
time (sec)	N/A	0.532	4.14	0.582	0.	1.929	0.	0.

Problem 561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	243	243	388	1516	0	2129	0	0
normalized size	1	1.	1.6	6.24	0.	8.76	0.	0.
time (sec)	N/A	0.825	7.5	1.064	0.	2.77	0.	0.

Problem 562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	260	260	200	764	0	1365	0	0
normalized size	1	1.	0.77	2.94	0.	5.25	0.	0.
time (sec)	N/A	0.966	8.75	0.541	0.	2.147	0.	0.

Problem 563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	214	214	167	1078	0	1358	0	0
normalized size	1	1.	0.78	5.04	0.	6.35	0.	0.
time (sec)	N/A	0.747	6.619	0.636	0.	2.03	0.	0.

Problem 564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	216	216	168	1092	0	1359	0	0
normalized size	1	1.	0.78	5.06	0.	6.29	0.	0.
time (sec)	N/A	0.747	7.114	0.626	0.	2.001	0.	0.

Problem 565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	214	214	169	1212	0	1359	0	0
normalized size	1	1.	0.79	5.66	0.	6.35	0.	0.
time (sec)	N/A	0.757	7.574	0.535	0.	2.033	0.	0.

Problem 566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	289	289	426	2158	0	2233	0	0
normalized size	1	1.	1.47	7.47	0.	7.73	0.	0.
time (sec)	N/A	1.032	9.891	0.577	0.	2.847	0.	0.

Problem 567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	179	179	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.429	18.973	179.186	0.	0.	0.	0.

Problem 568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	247	247	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.827	11.254	0.378	0.	0.	0.	0.

Problem 569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	194	194	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.593	28.15	0.38	0.	0.	0.	0.

Problem 570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	158	158	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.391	21.621	0.412	0.	0.	0.	0.

Problem 571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	215	215	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.598	13.803	0.411	0.	0.	0.	0.

Problem 572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	291	291	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.895	19.071	0.375	0.	0.	0.	0.

Problem 573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	383	383	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.264	22.862	0.392	0.	0.	0.	0.

Problem 574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	198	4418	265	0	0	0
normalized size	1	1.	0.86	19.29	1.16	0.	0.	0.
time (sec)	N/A	0.3	0.922	0.45	1.562	0.	0.	0.

Problem 575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	179	4158	240	0	0	0
normalized size	1	1.	0.87	20.28	1.17	0.	0.	0.
time (sec)	N/A	0.242	0.465	0.436	1.788	0.	0.	0.

Problem 576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	178	2187	240	0	0	0
normalized size	1	1.	0.87	10.67	1.17	0.	0.	0.
time (sec)	N/A	0.242	0.21	0.47	1.678	0.	0.	0.

Problem 577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	198	2365	267	0	0	0
normalized size	1	1.	0.86	10.33	1.17	0.	0.	0.
time (sec)	N/A	0.283	0.503	0.489	1.69	0.	0.	0.

Problem 578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	326	326	255	13170	377	0	0	0
normalized size	1	1.	0.78	40.4	1.16	0.	0.	0.
time (sec)	N/A	0.614	1.852	0.641	1.718	0.	0.	0.

Problem 579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	294	294	226	6783	340	0	0	0
normalized size	1	1.	0.77	23.07	1.16	0.	0.	0.
time (sec)	N/A	0.546	1.226	0.531	1.751	0.	0.	0.

Problem 580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	276	276	221	6423	329	0	0	0
normalized size	1	1.	0.8	23.27	1.19	0.	0.	0.
time (sec)	N/A	0.443	0.843	0.429	1.744	0.	0.	0.

Problem 581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	283	283	226	3582	343	0	0	0
normalized size	1	1.	0.8	12.66	1.21	0.	0.	0.
time (sec)	N/A	0.434	0.542	0.478	1.589	0.	0.	0.

Problem 582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	317	317	255	3748	381	0	0	0
normalized size	1	1.	0.8	11.82	1.2	0.	0.	0.
time (sec)	N/A	0.489	1.144	0.521	1.572	0.	0.	0.

Problem 583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	421	421	326	18631	494	0	0	0
normalized size	1	1.	0.77	44.25	1.17	0.	0.	0.
time (sec)	N/A	0.862	3.747	1.012	1.55	0.	0.	0.

Problem 584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	380	380	286	17628	446	0	0	0
normalized size	1	1.	0.75	46.39	1.17	0.	0.	0.
time (sec)	N/A	0.769	2.339	0.796	1.705	0.	0.	0.

Problem 585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	374	374	270	9099	424	0	0	0
normalized size	1	1.	0.72	24.33	1.13	0.	0.	0.
time (sec)	N/A	0.77	2.104	0.577	1.67	0.	0.	0.

Problem 586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	372	372	270	8955	427	0	0	0
normalized size	1	1.	0.73	24.07	1.15	0.	0.	0.
time (sec)	N/A	0.695	2.074	0.63	1.533	0.	0.	0.

Problem 587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	380	380	287	4947	451	0	0	0
normalized size	1	1.	0.76	13.02	1.19	0.	0.	0.
time (sec)	N/A	0.714	1.268	0.702	1.622	0.	0.	0.

Problem 588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	421	421	327	5111	500	0	0	0
normalized size	1	1.	0.78	12.14	1.19	0.	0.	0.
time (sec)	N/A	0.783	2.53	0.781	1.598	0.	0.	0.

Problem 589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	325	325	272	22300	0	0	0	0
normalized size	1	1.	0.84	68.62	0.	0.	0.	0.
time (sec)	N/A	1.129	1.64	1.073	0.	0.	0.	0.

Problem 590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	297	297	249	20614	0	0	0	0
normalized size	1	1.	0.84	69.41	0.	0.	0.	0.
time (sec)	N/A	0.771	0.877	0.668	0.	0.	0.	0.

Problem 591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	215	4107	0	0	0	0
normalized size	1	1.	0.77	14.77	0.	0.	0.	0.
time (sec)	N/A	0.46	0.377	0.438	0.	0.	0.	0.

Problem 592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	278	278	215	3684	0	0	0	0
normalized size	1	1.	0.77	13.25	0.	0.	0.	0.
time (sec)	N/A	0.463	0.402	0.43	0.	0.	0.	0.

Problem 593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	297	297	251	9867	0	0	0	0
normalized size	1	1.	0.85	33.22	0.	0.	0.	0.
time (sec)	N/A	0.76	0.549	0.401	0.	0.	0.	0.

Problem 594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	325	325	272	12107	0	0	0	0
normalized size	1	1.	0.84	37.25	0.	0.	0.	0.
time (sec)	N/A	1.09	0.998	0.772	0.	0.	0.	0.

Problem 595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	438	438	383	57937	0	0	0	0
normalized size	1	1.	0.87	132.28	0.	0.	0.	0.
time (sec)	N/A	1.298	5.559	1.804	0.	0.	0.	0.

Problem 596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	392	392	341	36048	0	0	0	0
normalized size	1	1.	0.87	91.96	0.	0.	0.	0.
time (sec)	N/A	0.94	2.624	1.192	0.	0.	0.	0.

Problem 597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	390	390	336	40736	0	0	0	0
normalized size	1	1.	0.86	104.45	0.	0.	0.	0.
time (sec)	N/A	0.92	2.862	0.824	0.	0.	0.	0.

Problem 598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	392	392	342	40734	0	0	0	0
normalized size	1	1.	0.87	103.91	0.	0.	0.	0.
time (sec)	N/A	0.916	2.552	0.675	0.	0.	0.	0.

Problem 599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	437	437	390	42723	0	0	0	0
normalized size	1	1.	0.89	97.76	0.	0.	0.	0.
time (sec)	N/A	1.282	3.362	0.888	0.	0.	0.	0.

Problem 600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	601	601	602	159192	0	0	0	0
normalized size	1	1.	1.	264.88	0.	0.	0.	0.
time (sec)	N/A	1.845	6.469	4.692	0.	0.	0.	0.

Problem 601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	534	534	566	100786	0	0	0	0
normalized size	1	1.	1.06	188.74	0.	0.	0.	0.
time (sec)	N/A	1.365	6.382	2.611	0.	0.	0.	0.

Problem 602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	534	534	558	102181	0	0	0	0
normalized size	1	1.	1.04	191.35	0.	0.	0.	0.
time (sec)	N/A	1.388	6.342	1.905	0.	0.	0.	0.

Problem 603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	530	530	568	102237	0	0	0	0
normalized size	1	1.	1.07	192.9	0.	0.	0.	0.
time (sec)	N/A	1.425	6.393	1.521	0.	0.	0.	0.

Problem 604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	534	534	592	102109	0	0	0	0
normalized size	1	1.	1.11	191.22	0.	0.	0.	0.
time (sec)	N/A	1.379	6.445	1.564	0.	0.	0.	0.

Problem 605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	600	600	621	104911	0	0	0	0
normalized size	1	1.	1.03	174.85	0.	0.	0.	0.
time (sec)	N/A	1.825	6.458	2.065	0.	0.	0.	0.

Problem 606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	38	1275	171	0	0	0
normalized size	1	1.	0.24	8.17	1.1	0.	0.	0.
time (sec)	N/A	0.105	0.077	0.25	1.494	0.	0.	0.

Problem 607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	138	969	171	0	0	0
normalized size	1	1.	0.9	6.29	1.11	0.	0.	0.
time (sec)	N/A	0.103	0.157	0.243	1.497	0.	0.	0.

Problem 608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	36	324	153	0	0	0
normalized size	1	1.	0.26	2.35	1.11	0.	0.	0.
time (sec)	N/A	0.097	0.021	0.21	1.466	0.	0.	0.

Problem 609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	138	138	110	284	157	0	0	0
normalized size	1	1.	0.8	2.06	1.14	0.	0.	0.
time (sec)	N/A	0.092	0.032	0.261	1.496	0.	0.	0.

Problem 610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	154	154	34	658	170	0	0	0
normalized size	1	1.	0.22	4.27	1.1	0.	0.	0.
time (sec)	N/A	0.102	0.032	0.256	1.484	0.	0.	0.

Problem 611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	156	156	36	546	173	0	0	0
normalized size	1	1.	0.23	3.5	1.11	0.	0.	0.
time (sec)	N/A	0.102	0.032	0.263	1.516	0.	0.	0.

Problem 612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	354	354	291	43931	0	0	0	0
normalized size	1	1.	0.82	124.1	0.	0.	0.	0.
time (sec)	N/A	1.488	4.009	2.038	0.	0.	0.	0.

Problem 613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	290	290	251	42569	0	0	0	0
normalized size	1	1.	0.87	146.79	0.	0.	0.	0.
time (sec)	N/A	1.187	3.986	1.63	0.	0.	0.	0.

Problem 614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	239	239	216	21562	0	0	0	0
normalized size	1	1.	0.9	90.22	0.	0.	0.	0.
time (sec)	N/A	0.887	1.566	1.144	0.	0.	0.	0.

Problem 615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	194	194	188	21142	0	0	0	0
normalized size	1	1.	0.97	108.98	0.	0.	0.	0.
time (sec)	N/A	0.664	0.689	0.872	0.	0.	0.	0.

Problem 616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	256	8336	0	0	0	0
normalized size	1	1.	1.12	36.4	0.	0.	0.	0.
time (sec)	N/A	0.734	0.763	0.621	0.	0.	0.	0.

Problem 617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	295	23606	0	0	0	0
normalized size	1	1.	1.13	90.44	0.	0.	0.	0.
time (sec)	N/A	1.511	3.267	0.998	0.	0.	0.	0.

Problem 618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	324	324	356	28218	0	0	0	0
normalized size	1	1.	1.1	87.09	0.	0.	0.	0.
time (sec)	N/A	1.991	4.734	1.514	0.	0.	0.	0.

Problem 619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	422	422	495	74462	0	0	0	0
normalized size	1	1.	1.17	176.45	0.	0.	0.	0.
time (sec)	N/A	2.025	6.598	2.586	0.	0.	0.	0.

Problem 620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	351	351	346	49857	0	0	0	0
normalized size	1	1.	0.99	142.04	0.	0.	0.	0.
time (sec)	N/A	1.644	5.031	2.154	0.	0.	0.	0.

Problem 621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	299	299	286	48329	0	0	0	0
normalized size	1	1.	0.96	161.64	0.	0.	0.	0.
time (sec)	N/A	1.305	2.286	1.624	0.	0.	0.	0.

Problem 622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	236	236	244	24544	0	0	0	0
normalized size	1	1.	1.03	104.	0.	0.	0.	0.
time (sec)	N/A	1.097	0.985	1.155	0.	0.	0.	0.

Problem 623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	269	269	114092	41906	0	0	0	0
normalized size	1	1.	424.13	155.78	0.	0.	0.	0.
time (sec)	N/A	1.863	31.956	1.145	0.	0.	0.	0.

Problem 624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	264	264	263	27748	0	0	0	0
normalized size	1	1.	1.	105.11	0.	0.	0.	0.
time (sec)	N/A	1.837	1.18	1.099	0.	0.	0.	0.

Problem 625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	328	328	310	30720	0	0	0	0
normalized size	1	1.	0.95	93.66	0.	0.	0.	0.
time (sec)	N/A	2.393	3.084	1.454	0.	0.	0.	0.

Problem 626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	383	383	367	34370	0	0	0	0
normalized size	1	1.	0.96	89.74	0.	0.	0.	0.
time (sec)	N/A	2.532	5.614	2.793	0.	0.	0.	0.

Problem 627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	500	500	653	103896	0	0	0	0
normalized size	1	1.	1.31	207.79	0.	0.	0.	0.
time (sec)	N/A	2.47	6.986	3.986	0.	0.	0.	0.

Problem 628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	418	418	564	101204	0	0	0	0
normalized size	1	1.	1.35	242.11	0.	0.	0.	0.
time (sec)	N/A	2.035	6.747	3.115	0.	0.	0.	0.

Problem 629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	349	349	386	67683	0	0	0	0
normalized size	1	1.	1.11	193.93	0.	0.	0.	0.
time (sec)	N/A	1.653	5.178	2.56	0.	0.	0.	0.

Problem 630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	321	65903	0	0	0	0
normalized size	1	1.	1.12	229.63	0.	0.	0.	0.
time (sec)	N/A	1.305	3.319	2.023	0.	0.	0.	0.

Problem 631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	300	300	130606	46754	0	0	0	0
normalized size	1	1.	435.35	155.85	0.	0.	0.	0.
time (sec)	N/A	2.289	40.15	2.002	0.	0.	0.	0.

Problem 632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	301	301	196709	57755	0	0	0	0
normalized size	1	1.	653.52	191.88	0.	0.	0.	0.
time (sec)	N/A	2.446	40.635	2.99	0.	0.	0.	0.

Problem 633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	320	320	311	32501	0	0	0	0
normalized size	1	1.	0.97	101.57	0.	0.	0.	0.
time (sec)	N/A	2.175	3.328	1.924	0.	0.	0.	0.

Problem 634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	376	376	365	36039	0	0	0	0
normalized size	1	1.	0.97	95.85	0.	0.	0.	0.
time (sec)	N/A	2.97	4.955	2.418	0.	0.	0.	0.

Problem 635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	457	457	431	39339	0	0	0	0
normalized size	1	1.	0.94	86.08	0.	0.	0.	0.
time (sec)	N/A	3.011	5.329	3.753	0.	0.	0.	0.

Problem 636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	296	296	244	28811	0	0	0	0
normalized size	1	1.	0.82	97.33	0.	0.	0.	0.
time (sec)	N/A	1.157	5.918	1.385	0.	0.	0.	0.

Problem 637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	243	243	213	14642	0	0	0	0
normalized size	1	1.	0.88	60.26	0.	0.	0.	0.
time (sec)	N/A	0.862	2.288	0.957	0.	0.	0.	0.

Problem 638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	199	199	193	14212	0	0	0	0
normalized size	1	1.	0.97	71.42	0.	0.	0.	0.
time (sec)	N/A	0.63	1.405	0.749	0.	0.	0.	0.

Problem 639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	163	163	157	3483	0	0	0	0
normalized size	1	1.	0.96	21.37	0.	0.	0.	0.
time (sec)	N/A	0.48	0.362	0.604	0.	0.	0.	0.

Problem 640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	228	228	228	6696	0	0	0	0
normalized size	1	1.	1.	29.37	0.	0.	0.	0.
time (sec)	N/A	0.7	1.603	0.574	0.	0.	0.	0.

Problem 641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	266	266	263	21197	0	0	0	0
normalized size	1	1.	0.99	79.69	0.	0.	0.	0.
time (sec)	N/A	1.461	4.04	0.959	0.	0.	0.	0.

Problem 642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	316	316	301	19553	0	0	0	0
normalized size	1	1.	0.95	61.88	0.	0.	0.	0.
time (sec)	N/A	1.318	3.955	1.119	0.	0.	0.	0.

Problem 643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	256	256	256	18733	0	0	0	0
normalized size	1	1.	1.	73.18	0.	0.	0.	0.
time (sec)	N/A	0.97	2.64	0.802	0.	0.	0.	0.

Problem 644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	215	215	222	9704	0	0	0	0
normalized size	1	1.	1.03	45.13	0.	0.	0.	0.
time (sec)	N/A	0.716	1.167	0.773	0.	0.	0.	0.

Problem 645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	210	210	259	9576	0	0	0	0
normalized size	1	1.	1.23	45.6	0.	0.	0.	0.
time (sec)	N/A	0.742	2.033	0.705	0.	0.	0.	0.

Problem 646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	279	279	167374	21787	0	0	0	0
normalized size	1	1.	599.91	78.09	0.	0.	0.	0.
time (sec)	N/A	1.905	40.023	0.937	0.	0.	0.	0.

Problem 647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	399	399	385	80979	0	0	0	0
normalized size	1	1.	0.96	202.95	0.	0.	0.	0.
time (sec)	N/A	1.745	3.915	3.816	0.	0.	0.	0.

Problem 648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	341	341	334	54573	0	0	0	0
normalized size	1	1.	0.98	160.04	0.	0.	0.	0.
time (sec)	N/A	1.335	3.879	2.572	0.	0.	0.	0.

Problem 649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	293	40999	0	0	0	0
normalized size	1	1.	1.02	142.85	0.	0.	0.	0.
time (sec)	N/A	1.076	3.486	2.378	0.	0.	0.	0.

Problem 650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	340	40367	0	0	0	0
normalized size	1	1.	1.2	142.14	0.	0.	0.	0.
time (sec)	N/A	1.125	4.246	2.156	0.	0.	0.	0.

Problem 651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	328	40379	0	0	0	0
normalized size	1	1.	1.15	142.18	0.	0.	0.	0.
time (sec)	N/A	1.116	3.57	2.073	0.	0.	0.	0.

Problem 652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	C	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	342	342	250233	76827	0	0	0	0
normalized size	1	1.	731.68	224.64	0.	0.	0.	0.
time (sec)	N/A	2.458	32.68	3.756	0.	0.	0.	0.

Problem 653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	151	151	145	2054	0	0	0	0
normalized size	1	1.	0.96	13.6	0.	0.	0.	0.
time (sec)	N/A	0.215	0.194	0.593	0.	0.	0.	0.

Problem 654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	144	1631	0	0	0	0
normalized size	1	1.	0.92	10.39	0.	0.	0.	0.
time (sec)	N/A	0.218	0.174	0.572	0.	0.	0.	0.

Problem 655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	215	215	213	4640	0	0	0	0
normalized size	1	1.	0.99	21.58	0.	0.	0.	0.
time (sec)	N/A	0.259	1.105	0.498	0.	0.	0.	0.

Problem 656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	195	195	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.44	6.242	0.397	0.	0.	0.	0.

Problem 657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	169	169	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.488	8.403	0.4	0.	0.	0.	0.

Problem 658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	167	167	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.432	9.532	0.419	0.	0.	0.	0.

Problem 659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	173	173	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.463	15.196	0.438	0.	0.	0.	0.

Problem 660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	173	173	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.462	15.406	0.394	0.	0.	0.	0.

Problem 661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	173	173	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.367	2.621	0.371	0.	0.	0.	0.

Problem 662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F	F	F(-1)	F(-2)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	173	173	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.363	1.912	0.399	0.	0.	0.	0.

Problem 663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-1)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	167	167	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.331	1.355	0.405	0.	0.	0.	0.

Problem 664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-1)	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	169	169	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.375	2.389	0.373	0.	0.	0.	0.

Problem 665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	63	63	75	128	420	225	0	0
normalized size	1	1.	1.19	2.03	6.67	3.57	0.	0.
time (sec)	N/A	0.094	3.825	0.347	2.099	1.401	0.	0.

Problem 666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	59	59	226	99	131	282	148	161
normalized size	1	1.	3.83	1.68	2.22	4.78	2.51	2.73
time (sec)	N/A	0.084	3.473	0.012	2.183	1.295	15.063	1.726

Problem 667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	59	59	161	75	99	236	133	143
normalized size	1	1.	2.73	1.27	1.68	4.	2.25	2.42
time (sec)	N/A	0.093	3.471	0.011	1.703	1.366	9.018	1.597

Problem 668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	66	66	109	53	74	201	114	126
normalized size	1	1.	1.65	0.8	1.12	3.05	1.73	1.91
time (sec)	N/A	0.085	2.346	0.012	1.722	1.289	5.578	1.5

Problem 669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	C	C	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	39	144	82	153
normalized size	1	1.	1.	0.84	1.22	4.5	2.56	4.78
time (sec)	N/A	0.04	0.041	0.011	1.747	1.312	2.802	1.42

Problem 670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	46	46	66	81	68	161	58	149
normalized size	1	1.	1.43	1.76	1.48	3.5	1.26	3.24
time (sec)	N/A	0.031	0.033	0.013	1.733	1.371	2.495	1.334

Problem 671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	54	54	123	64	0	112	90	184
normalized size	1	1.	2.28	1.19	0.	2.07	1.67	3.41
time (sec)	N/A	0.088	1.745	0.038	0.	1.451	1.529	1.542

Problem 672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	46	46	62	46	0	117	155	113
normalized size	1	1.	1.35	1.	0.	2.54	3.37	2.46
time (sec)	N/A	0.075	1.834	0.043	0.	1.368	1.493	1.401

Problem 673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	55	55	72	43	0	159	202	201
normalized size	1	1.	1.31	0.78	0.	2.89	3.67	3.65
time (sec)	N/A	0.087	1.293	0.043	0.	1.404	1.948	1.378

Problem 674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	97	44	0	236	306	288
normalized size	1	1.	1.7	0.77	0.	4.14	5.37	5.05
time (sec)	N/A	0.088	1.532	0.045	0.	1.42	2.753	1.391

Problem 675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	55	55	124	45	0	282	350	374
normalized size	1	1.	2.25	0.82	0.	5.13	6.36	6.8
time (sec)	N/A	0.089	2.842	0.047	0.	1.342	2.18	1.498

Problem 676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	109	109	146	280	902	498	0	0
normalized size	1	1.	1.34	2.57	8.28	4.57	0.	0.
time (sec)	N/A	0.164	6.627	0.49	2.426	1.431	0.	0.

Problem 677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	254	147	201	441	231	258
normalized size	1	1.	2.57	1.48	2.03	4.45	2.33	2.61
time (sec)	N/A	0.168	9.043	0.011	1.726	1.277	71.334	2.178

Problem 678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	177	101	158	393	212	240
normalized size	1	1.	1.79	1.02	1.6	3.97	2.14	2.42
time (sec)	N/A	0.155	5.808	0.011	2.431	1.408	40.726	1.856

Problem 679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	146	101	139	351	197	223
normalized size	1	1.	1.47	1.02	1.4	3.55	1.99	2.25
time (sec)	N/A	0.15	5.699	0.012	1.91	1.385	18.053	1.699

Problem 680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	C	C	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	53	53	97	284	158	555
normalized size	1	1.	0.85	0.85	1.56	4.58	2.55	8.95
time (sec)	N/A	0.109	0.156	0.011	1.654	1.357	10.588	1.685

Problem 681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	64	64	109	53	72	262	150	171
normalized size	1	1.	1.7	0.83	1.12	4.09	2.34	2.67
time (sec)	N/A	0.082	2.613	0.01	1.593	1.252	6.421	1.482

Problem 682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	263	123	100	339	121	309
normalized size	1	1.	3.29	1.54	1.25	4.24	1.51	3.86
time (sec)	N/A	0.07	2.201	0.011	1.612	1.467	3.558	1.484

Problem 683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	93	93	418	113	0	275	144	385
normalized size	1	1.	4.49	1.22	0.	2.96	1.55	4.14
time (sec)	N/A	0.156	5.079	0.04	0.	1.478	1.775	1.442

Problem 684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	184	116	0	161	162	275
normalized size	1	1.	2.02	1.27	0.	1.77	1.78	3.02
time (sec)	N/A	0.151	3.169	0.044	0.	1.501	1.133	1.535

Problem 685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	93	93	81	69	0	130	168	223
normalized size	1	1.	0.87	0.74	0.	1.4	1.81	2.4
time (sec)	N/A	0.152	2.687	0.047	0.	1.415	1.366	1.553

Problem 686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	91	68	0	173	219	271
normalized size	1	1.	1.	0.75	0.	1.9	2.41	2.98
time (sec)	N/A	0.15	2.794	0.047	0.	1.35	1.835	1.482

Problem 687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	95	95	116	69	0	255	333	417
normalized size	1	1.	1.22	0.73	0.	2.68	3.51	4.39
time (sec)	N/A	0.152	3.629	0.051	0.	1.427	1.811	1.563

Problem 688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	91	91	143	66	0	300	381	514
normalized size	1	1.	1.57	0.73	0.	3.3	4.19	5.65
time (sec)	N/A	0.15	4.827	0.048	0.	1.328	2.279	1.626

Problem 689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	C	B	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	151	151	822	4339	1435	830	0	0
normalized size	1	1.	5.44	28.74	9.5	5.5	0.	0.
time (sec)	N/A	0.191	13.129	0.656	2.707	1.556	0.	0.

Problem 690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	262	193	266	586	0	344
normalized size	1	1.	1.94	1.43	1.97	4.34	0.	2.55
time (sec)	N/A	0.203	11.34	0.012	1.686	1.289	0.	2.648

Problem 691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	215	169	230	547	0	327
normalized size	1	1.	1.59	1.25	1.7	4.05	0.	2.42
time (sec)	N/A	0.19	10.474	0.012	1.703	1.296	0.	2.416

Problem 692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	132	132	172	147	204	506	270	309
normalized size	1	1.	1.3	1.11	1.55	3.83	2.05	2.34
time (sec)	N/A	0.178	7.026	0.012	1.676	1.285	107.986	2.083

Problem 693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	C	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	84	84	65	75	143	420	0	1071
normalized size	1	1.	0.77	0.89	1.7	5.	0.	12.75
time (sec)	N/A	0.126	0.259	0.012	1.673	1.352	0.	2.647

Problem 694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	146	101	143	417	236	274
normalized size	1	1.	1.45	1.	1.42	4.13	2.34	2.71
time (sec)	N/A	0.148	5.126	0.011	1.61	1.383	36.393	1.713

Problem 695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	61	61	161	75	99	358	204	235
normalized size	1	1.	2.64	1.23	1.62	5.87	3.34	3.85
time (sec)	N/A	0.087	3.611	0.012	1.652	1.329	50.146	1.603

Problem 696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	331	160	131	509	172	450
normalized size	1	1.	3.01	1.45	1.19	4.63	1.56	4.09
time (sec)	N/A	0.093	3.92	0.013	1.637	1.319	10.504	1.473

Problem 697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	119	119	944	150	0	439	209	437
normalized size	1	1.	7.93	1.26	0.	3.69	1.76	3.67
time (sec)	N/A	0.172	9.462	0.044	0.	1.26	5.587	1.682

Problem 698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	123	123	1063	160	0	352	228	485
normalized size	1	1.	8.64	1.3	0.	2.86	1.85	3.94
time (sec)	N/A	0.178	9.544	0.043	0.	1.423	4.134	1.578

Problem 699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	129	129	167	164	0	201	214	348
normalized size	1	1.	1.29	1.27	0.	1.56	1.66	2.7
time (sec)	N/A	0.154	4.284	0.052	0.	1.454	2.661	1.637

Problem 700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	81	90	0	130	168	320
normalized size	1	1.	0.82	0.91	0.	1.31	1.7	3.23
time (sec)	N/A	0.138	3.247	0.056	0.	1.327	2.022	1.633

Problem 701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	122	122	91	87	0	181	219	417
normalized size	1	1.	0.75	0.71	0.	1.48	1.8	3.42
time (sec)	N/A	0.175	3.916	0.052	0.	1.278	2.515	1.67

Problem 702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	112	90	0	258	333	466
normalized size	1	1.	0.88	0.71	0.	2.03	2.62	3.67
time (sec)	N/A	0.176	6.059	0.052	0.	1.386	3.601	1.641

Problem 703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	125	125	143	89	0	312	381	612
normalized size	1	1.	1.14	0.71	0.	2.5	3.05	4.9
time (sec)	N/A	0.174	7.546	0.053	0.	1.388	4.89	1.655

Problem 704	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	127	127	182	90	0	402	498	709
normalized size	1	1.	1.43	0.71	0.	3.17	3.92	5.58
time (sec)	N/A	0.182	9.599	0.051	0.	1.424	6.148	1.669

Problem 705	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	115	115	111	0	0	0	0	0
normalized size	1	1.	0.97	0.	0.	0.	0.	0.
time (sec)	N/A	0.179	63.264	0.823	0.	0.	0.	0.

Problem 706	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	260	193	0	817	301	602
normalized size	1	1.	1.66	1.23	0.	5.2	1.92	3.83
time (sec)	N/A	0.216	3.76	0.046	0.	1.444	11.418	1.536

Problem 707	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	121	121	212	150	0	587	248	437
normalized size	1	1.	1.75	1.24	0.	4.85	2.05	3.61
time (sec)	N/A	0.183	5.753	0.042	0.	1.418	6.182	1.522

Problem 708	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	96	96	184	113	0	387	184	385
normalized size	1	1.	1.92	1.18	0.	4.03	1.92	4.01
time (sec)	N/A	0.159	3.611	0.04	0.	1.746	5.186	1.336

Problem 709	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	57	57	124	64	0	186	114	184
normalized size	1	1.	2.18	1.12	0.	3.26	2.	3.23
time (sec)	N/A	0.091	1.395	0.042	0.	1.728	1.487	1.387

Problem 710	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	47	47	102	121	0	108	88	122
normalized size	1	1.	2.17	2.57	0.	2.3	1.87	2.6
time (sec)	N/A	0.045	0.454	0.04	0.	1.574	0.732	1.353

Problem 711	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	C	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	45	45	43	142	0	144	167	72
normalized size	1	1.	0.96	3.16	0.	3.2	3.71	1.6
time (sec)	N/A	0.128	0.081	0.062	0.	1.696	0.933	1.45

Problem 712	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	113	113	166	209	0	217	286	228
normalized size	1	1.	1.47	1.85	0.	1.92	2.53	2.02
time (sec)	N/A	0.19	2.234	0.07	0.	1.724	1.633	1.432

Problem 713	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	149	149	203	257	0	258	330	259
normalized size	1	1.	1.36	1.72	0.	1.73	2.21	1.74
time (sec)	N/A	0.216	2.4	0.068	0.	1.117	2.751	1.504

Problem 714	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	181	181	221	303	0	343	440	298
normalized size	1	1.	1.22	1.67	0.	1.9	2.43	1.65
time (sec)	N/A	0.24	2.6	0.073	0.	1.06	3.737	1.439

Problem 715	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	115	115	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.173	180.002	1.252	0.	0.	0.	0.

Problem 716	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	194	194	1357	240	0	898	389	698
normalized size	1	1.	6.99	1.24	0.	4.63	2.01	3.6
time (sec)	N/A	0.249	11.138	0.06	0.	1.168	14.686	1.881

Problem 717	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	158	158	1079	198	0	651	332	601
normalized size	1	1.	6.83	1.25	0.	4.12	2.1	3.8
time (sec)	N/A	0.21	9.059	0.043	0.	1.065	8.284	2.095

Problem 718	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	128	128	413	160	0	460	269	485
normalized size	1	1.	3.23	1.25	0.	3.59	2.1	3.79
time (sec)	N/A	0.18	6.79	0.044	0.	1.113	8.065	1.949

Problem 719	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	97	97	140	116	0	236	207	275
normalized size	1	1.	1.44	1.2	0.	2.43	2.13	2.84
time (sec)	N/A	0.152	2.454	0.044	0.	1.11	1.762	1.246

Problem 720	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	48	48	58	46	0	116	160	113
normalized size	1	1.	1.21	0.96	0.	2.42	3.33	2.35
time (sec)	N/A	0.081	1.442	0.043	0.	1.157	1.523	1.293

Problem 721	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	80	80	94	162	0	150	163	158
normalized size	1	1.	1.18	2.02	0.	1.88	2.04	1.98
time (sec)	N/A	0.065	0.504	0.042	0.	1.033	1.183	1.347

Problem 722	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	117	117	129	209	0	216	298	228
normalized size	1	1.	1.1	1.79	0.	1.85	2.55	1.95
time (sec)	N/A	0.187	2.034	0.089	0.	1.071	2.548	1.384

Problem 723	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	C	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	71	71	53	236	0	251	362	90
normalized size	1	1.	0.75	3.32	0.	3.54	5.1	1.27
time (sec)	N/A	0.138	0.124	0.06	0.	1.167	3.356	1.33

Problem 724	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	183	183	217	303	0	336	456	296
normalized size	1	1.	1.19	1.66	0.	1.84	2.49	1.62
time (sec)	N/A	0.239	2.167	0.075	0.	1.112	4.876	1.4

Problem 725	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	221	221	232	351	0	383	500	328
normalized size	1	1.	1.05	1.59	0.	1.73	2.26	1.48
time (sec)	N/A	0.268	2.576	0.073	0.	1.089	5.562	1.237

Problem 726	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	251	251	274	397	0	464	607	363
normalized size	1	1.	1.09	1.58	0.	1.85	2.42	1.45
time (sec)	N/A	0.305	3.247	0.088	0.	1.108	6.268	1.318

Problem 727	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	115	115	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.171	180.005	2.055	0.	0.	0.	0.

Problem 728	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	191	191	1496	244	0	736	415	698
normalized size	1	1.	7.83	1.28	0.	3.85	2.17	3.65
time (sec)	N/A	0.245	11.33	0.066	0.	1.116	12.514	1.702

Problem 729	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	164	164	1239	207	0	527	348	582
normalized size	1	1.	7.55	1.26	0.	3.21	2.12	3.55
time (sec)	N/A	0.21	9.209	0.048	0.	1.095	10.747	1.592

Problem 730	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	135	135	145	164	0	279	260	348
normalized size	1	1.	1.07	1.21	0.	2.07	1.93	2.58
time (sec)	N/A	0.157	3.605	0.053	0.	1.107	3.609	1.543

Problem 731	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	79	69	0	128	173	223
normalized size	1	1.	0.8	0.7	0.	1.29	1.75	2.25
time (sec)	N/A	0.157	2.756	0.049	0.	1.051	2.766	1.488

Problem 732	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	59	59	81	43	0	158	207	201
normalized size	1	1.	1.37	0.73	0.	2.68	3.51	3.41
time (sec)	N/A	0.088	1.21	0.05	0.	1.035	1.4	1.341

Problem 733	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	112	112	150	203	0	217	260	189
normalized size	1	1.	1.34	1.81	0.	1.94	2.32	1.69
time (sec)	N/A	0.085	0.713	0.046	0.	1.072	4.469	1.227

Problem 734	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	153	153	164	257	0	257	342	259
normalized size	1	1.	1.07	1.68	0.	1.68	2.24	1.69
time (sec)	N/A	0.213	2.09	0.069	0.	1.055	4.523	1.307

Problem 735	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	185	185	217	303	0	335	454	296
normalized size	1	1.	1.17	1.64	0.	1.81	2.45	1.6
time (sec)	N/A	0.239	2.387	0.073	0.	1.068	6.115	1.274

Problem 736	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	C	F(-2)	C	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	99	99	63	330	0	363	510	107
normalized size	1	1.	0.64	3.33	0.	3.67	5.15	1.08
time (sec)	N/A	0.146	0.145	0.07	0.	1.1	5.929	1.336

Problem 737	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	251	251	267	397	0	455	607	366
normalized size	1	1.	1.06	1.58	0.	1.81	2.42	1.46
time (sec)	N/A	0.306	3.214	0.076	0.	1.054	7.965	1.5

Problem 738	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	280	445	0	508	648	393
normalized size	1	1.	0.98	1.55	0.	1.77	2.26	1.37
time (sec)	N/A	0.338	4.368	0.078	0.	1.064	10.008	1.433

Problem 739	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	319	319	321	491	0	586	755	431
normalized size	1	1.	1.01	1.54	0.	1.84	2.37	1.35
time (sec)	N/A	0.38	5.024	0.078	0.	1.077	10.469	1.425

Problem 740	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	B	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	90	55	66	304	0	0
normalized size	1	1.	1.45	0.89	1.06	4.9	0.	0.
time (sec)	N/A	0.107	6.537	0.066	1.412	1.798	0.	0.

Problem 741	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	88	55	66	265	0	0
normalized size	1	1.	1.42	0.89	1.06	4.27	0.	0.
time (sec)	N/A	0.108	4.418	0.059	1.501	1.41	0.	0.

Problem 742	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	97	55	66	223	0	0
normalized size	1	1.	1.56	0.89	1.06	3.6	0.	0.
time (sec)	N/A	0.107	3.209	0.062	1.183	1.152	0.	0.

Problem 743	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	60	60	45	66	66	177	0	0
normalized size	1	1.	0.75	1.1	1.1	2.95	0.	0.
time (sec)	N/A	0.099	2.364	0.069	1.195	1.107	0.	0.

Problem 744	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	58	58	82	53	65	136	0	0
normalized size	1	1.	1.41	0.91	1.12	2.34	0.	0.
time (sec)	N/A	0.1	2.525	0.133	1.162	1.064	0.	0.

Problem 745	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	60	60	98	53	61	197	0	0
normalized size	1	1.	1.63	0.88	1.02	3.28	0.	0.
time (sec)	N/A	0.107	4.474	0.067	1.153	1.085	0.	0.

Problem 746	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	100	53	63	258	0	0
normalized size	1	1.	1.61	0.85	1.02	4.16	0.	0.
time (sec)	N/A	0.106	7.858	0.069	1.147	1.172	0.	0.

Problem 747	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	62	62	100	53	63	320	0	0
normalized size	1	1.	1.61	0.85	1.02	5.16	0.	0.
time (sec)	N/A	0.104	11.277	0.071	1.126	1.404	0.	0.

Problem 748	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	119	83	109	423	0	0
normalized size	1	1.	1.13	0.79	1.04	4.03	0.	0.
time (sec)	N/A	0.183	11.135	0.067	1.129	2.336	0.	0.

Problem 749	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	112	83	109	379	0	0
normalized size	1	1.	1.07	0.79	1.04	3.61	0.	0.
time (sec)	N/A	0.181	7.136	0.07	1.192	1.619	0.	0.

Problem 750	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	116	83	109	331	0	0
normalized size	1	1.	1.1	0.79	1.04	3.15	0.	0.
time (sec)	N/A	0.181	5.706	0.066	1.117	1.304	0.	0.

Problem 751	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	83	83	109	282	0	0
normalized size	1	1.	0.81	0.81	1.06	2.74	0.	0.
time (sec)	N/A	0.164	4.498	0.072	1.169	1.155	0.	0.

Problem 752	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	138	93	113	251	0	0
normalized size	1	1.	1.37	0.92	1.12	2.49	0.	0.
time (sec)	N/A	0.168	4.867	0.117	1.817	1.115	0.	0.

Problem 753	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	101	101	112	80	111	204	0	0
normalized size	1	1.	1.11	0.79	1.1	2.02	0.	0.
time (sec)	N/A	0.18	8.503	0.075	1.553	1.136	0.	0.

Problem 754	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	103	103	118	80	107	266	0	0
normalized size	1	1.	1.15	0.78	1.04	2.58	0.	0.
time (sec)	N/A	0.179	11.961	0.081	1.16	1.188	0.	0.

Problem 755	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	105	105	122	80	107	333	0	0
normalized size	1	1.	1.16	0.76	1.02	3.17	0.	0.
time (sec)	N/A	0.186	13.199	0.077	1.154	1.373	0.	0.

Problem 756	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	127	121	146	539	0	0
normalized size	1	1.	0.88	0.84	1.01	3.74	0.	0.
time (sec)	N/A	0.21	13.205	0.075	1.212	3.026	0.	0.

Problem 757	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	139	121	146	498	0	0
normalized size	1	1.	0.97	0.84	1.01	3.46	0.	0.
time (sec)	N/A	0.2	11.825	0.071	1.146	2.058	0.	0.

Problem 758	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	144	144	130	121	146	437	0	0
normalized size	1	1.	0.9	0.84	1.01	3.03	0.	0.
time (sec)	N/A	0.2	8.495	0.074	1.194	1.491	0.	0.

Problem 759	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	142	124	121	146	390	0	0
normalized size	1	1.	0.87	0.85	1.03	2.75	0.	0.
time (sec)	N/A	0.182	6.784	0.085	1.137	1.201	0.	0.

Problem 760	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	140	140	152	135	153	359	0	0
normalized size	1	1.	1.09	0.96	1.09	2.56	0.	0.
time (sec)	N/A	0.185	7.092	0.115	1.209	1.136	0.	0.

Problem 761	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	140	140	168	118	146	309	0	0
normalized size	1	1.	1.2	0.84	1.04	2.21	0.	0.
time (sec)	N/A	0.199	12.17	0.076	1.114	1.187	0.	0.

Problem 762	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	140	140	135	105	150	270	0	0
normalized size	1	1.	0.96	0.75	1.07	1.93	0.	0.
time (sec)	N/A	0.201	13.103	0.076	1.238	1.169	0.	0.

Problem 763	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	142	142	141	105	143	333	0	0
normalized size	1	1.	0.99	0.74	1.01	2.35	0.	0.
time (sec)	N/A	0.205	13.383	0.08	1.176	1.176	0.	0.

Problem 764	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	220	220	0	192	0	1261	0	0
normalized size	1	1.	0.	0.87	0.	5.73	0.	0.
time (sec)	N/A	0.276	180.005	0.097	0.	1.282	0.	0.

Problem 765	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	180	180	0	150	0	1057	0	0
normalized size	1	1.	0.	0.83	0.	5.87	0.	0.
time (sec)	N/A	0.24	180.007	0.101	0.	1.165	0.	0.

Problem 766	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	144	144	0	109	0	855	0	0
normalized size	1	1.	0.	0.76	0.	5.94	0.	0.
time (sec)	N/A	0.22	180.002	0.101	0.	1.128	0.	0.

Problem 767	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	109	109	168	88	0	841	0	0
normalized size	1	1.	1.54	0.81	0.	7.72	0.	0.
time (sec)	N/A	0.185	2.468	0.136	0.	1.1	0.	0.

Problem 768	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	141	141	160	121	0	903	0	0
normalized size	1	1.	1.13	0.86	0.	6.4	0.	0.
time (sec)	N/A	0.219	3.63	0.16	0.	1.117	0.	0.

Problem 769	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	184	184	239	141	0	1017	0	0
normalized size	1	1.	1.3	0.77	0.	5.53	0.	0.
time (sec)	N/A	0.268	6.111	0.1	0.	1.219	0.	0.

Problem 770	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	223	223	213	168	0	1112	0	0
normalized size	1	1.	0.96	0.75	0.	4.99	0.	0.
time (sec)	N/A	0.289	7.559	0.103	0.	1.369	0.	0.

Problem 771	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	275	275	0	221	0	1382	0	0
normalized size	1	1.	0.	0.8	0.	5.03	0.	0.
time (sec)	N/A	0.301	180.005	0.104	0.	1.689	0.	0.

Problem 772	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	238	238	0	179	0	1215	0	0
normalized size	1	1.	0.	0.75	0.	5.11	0.	0.
time (sec)	N/A	0.272	180.005	0.112	0.	1.644	0.	0.

Problem 773	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	199	199	0	138	0	1011	0	0
normalized size	1	1.	0.	0.69	0.	5.08	0.	0.
time (sec)	N/A	0.245	180.004	0.108	0.	1.416	0.	0.

Problem 774	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	160	160	205	117	0	973	0	0
normalized size	1	1.	1.28	0.73	0.	6.08	0.	0.
time (sec)	N/A	0.226	3.866	0.099	0.	1.449	0.	0.

Problem 775	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	159	159	206	121	0	961	0	0
normalized size	1	1.	1.3	0.76	0.	6.04	0.	0.
time (sec)	N/A	0.212	2.848	0.144	0.	1.436	0.	0.

Problem 776	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	195	195	160	152	0	1031	0	0
normalized size	1	1.	0.82	0.78	0.	5.29	0.	0.
time (sec)	N/A	0.248	4.748	0.161	0.	1.55	0.	0.

Problem 777	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	226	226	204	179	0	1139	0	0
normalized size	1	1.	0.9	0.79	0.	5.04	0.	0.
time (sec)	N/A	0.29	5.916	0.109	0.	1.537	0.	0.

Problem 778	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	273	273	209	199	0	1233	0	0
normalized size	1	1.	0.77	0.73	0.	4.52	0.	0.
time (sec)	N/A	0.316	9.125	0.118	0.	1.824	0.	0.

Problem 779	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	291	291	0	206	0	1305	0	0
normalized size	1	1.	0.	0.71	0.	4.48	0.	0.
time (sec)	N/A	0.305	180.006	0.116	0.	1.603	0.	0.

Problem 780	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	F	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD
size	252	252	0	167	0	1092	0	0
normalized size	1	1.	0.	0.66	0.	4.33	0.	0.
time (sec)	N/A	0.271	180.003	0.119	0.	1.582	0.	0.

Problem 781	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	227	146	0	1054	0	0
normalized size	1	1.	1.07	0.69	0.	4.95	0.	0.
time (sec)	N/A	0.249	7.381	0.11	0.	1.475	0.	0.

Problem 782	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	211	211	224	140	0	1030	0	0
normalized size	1	1.	1.06	0.66	0.	4.88	0.	0.
time (sec)	N/A	0.25	5.541	0.111	0.	1.466	0.	0.

Problem 783	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	209	209	225	148	0	1035	0	0
normalized size	1	1.	1.08	0.71	0.	4.95	0.	0.
time (sec)	N/A	0.24	3.701	0.146	0.	1.498	0.	0.

Problem 784	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	245	245	181	179	0	1118	0	0
normalized size	1	1.	0.74	0.73	0.	4.56	0.	0.
time (sec)	N/A	0.274	5.547	0.165	0.	1.592	0.	0.

Problem 785	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	274	274	206	206	0	1233	0	0
normalized size	1	1.	0.75	0.75	0.	4.5	0.	0.
time (sec)	N/A	0.31	7.996	0.115	0.	1.516	0.	0.

Problem 786	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	311	311	256	233	0	1319	0	0
normalized size	1	1.	0.82	0.75	0.	4.24	0.	0.
time (sec)	N/A	0.35	12.201	0.117	0.	1.802	0.	0.

Problem 787	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	272	272	257	349	1798	1628	0	0
normalized size	1	1.	0.94	1.28	6.61	5.99	0.	0.
time (sec)	N/A	0.329	9.309	0.173	7.75	1.617	0.	0.

Problem 788	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	217	217	226	285	1455	1413	0	0
normalized size	1	1.	1.04	1.31	6.71	6.51	0.	0.
time (sec)	N/A	0.296	6.649	0.154	3.483	1.687	0.	0.

Problem 789	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	164	164	159	223	1040	1179	0	0
normalized size	1	1.	0.97	1.36	6.34	7.19	0.	0.
time (sec)	N/A	0.259	5.749	0.202	2.516	1.618	0.	0.

Problem 790	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	102	121	609	751	0	0
normalized size	1	1.	0.98	1.16	5.86	7.22	0.	0.
time (sec)	N/A	0.208	3.318	0.131	2.254	1.486	0.	0.

Problem 791	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	109	109	127	321	0	830	0	0
normalized size	1	1.	1.17	2.94	0.	7.61	0.	0.
time (sec)	N/A	0.22	4.011	0.233	0.	1.534	0.	0.

Problem 792	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	101	100	0	244	0	0
normalized size	1	1.	0.99	0.98	0.	2.39	0.	0.
time (sec)	N/A	0.218	5.578	0.132	0.	1.396	0.	0.

Problem 793	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	114	125	0	308	0	0
normalized size	1	1.	0.74	0.81	0.	1.99	0.	0.
time (sec)	N/A	0.247	9.359	0.122	0.	1.366	0.	0.

Problem 794	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	208	208	136	147	0	373	0	0
normalized size	1	1.	0.65	0.71	0.	1.79	0.	0.
time (sec)	N/A	0.276	12.329	0.129	0.	1.429	0.	0.

Problem 795	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	279	279	257	412	2215	1802	0	0
normalized size	1	1.	0.92	1.48	7.94	6.46	0.	0.
time (sec)	N/A	0.337	13.189	0.115	13.988	1.654	0.	0.

Problem 796	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	226	226	241	350	1843	1594	0	0
normalized size	1	1.	1.07	1.55	8.15	7.05	0.	0.
time (sec)	N/A	0.306	10.498	0.094	6.47	1.695	0.	0.

Problem 797	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	109	186	1156	1127	0	0
normalized size	1	1.	0.69	1.18	7.36	7.18	0.	0.
time (sec)	N/A	0.257	7.026	0.099	2.468	1.508	0.	0.

Problem 798	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	160	160	220	223	1038	1165	0	0
normalized size	1	1.	1.38	1.39	6.49	7.28	0.	0.
time (sec)	N/A	0.261	6.452	0.098	2.287	1.562	0.	0.

Problem 799	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	190	497	829	1112	0	0
normalized size	1	1.	1.12	2.94	4.91	6.58	0.	0.
time (sec)	N/A	0.269	6.422	0.181	2.133	1.641	0.	0.

Problem 800	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	123	406	232	946	0	0
normalized size	1	1.	0.79	2.62	1.5	6.1	0.	0.
time (sec)	N/A	0.265	8.488	0.116	2.209	1.597	0.	0.

Problem 801	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	117	90	209	290	0	0
normalized size	1	1.	1.15	0.88	2.05	2.84	0.	0.
time (sec)	N/A	0.234	11.656	0.106	2.29	1.44	0.	0.

Problem 802	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	131	113	254	355	0	0
normalized size	1	1.	0.85	0.73	1.64	2.29	0.	0.
time (sec)	N/A	0.263	12.832	0.111	2.516	1.277	0.	0.

Problem 803	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	208	208	148	136	351	423	0	0
normalized size	1	1.	0.71	0.65	1.69	2.03	0.	0.
time (sec)	N/A	0.282	8.816	0.117	2.395	1.333	0.	0.

Problem 804	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	179	158	421	502	0	0
normalized size	1	1.	0.69	0.61	1.61	1.92	0.	0.
time (sec)	N/A	0.321	12.729	0.114	2.321	1.407	0.	0.

Problem 805	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	288	288	568	478	2722	2005	0	0
normalized size	1	1.	1.97	1.66	9.45	6.96	0.	0.
time (sec)	N/A	0.33	16.795	0.102	31.298	1.621	0.	0.

Problem 806	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	459	252	1955	1523	0	0
normalized size	1	1.	2.15	1.18	9.18	7.15	0.	0.
time (sec)	N/A	0.275	13.92	0.095	5.693	1.609	0.	0.

Problem 807	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	222	222	460	350	1845	1581	0	0
normalized size	1	1.	2.07	1.58	8.31	7.12	0.	0.
time (sec)	N/A	0.304	11.928	0.098	6.784	1.648	0.	0.

Problem 808	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	217	217	253	285	1457	1399	0	0
normalized size	1	1.	1.17	1.31	6.71	6.45	0.	0.
time (sec)	N/A	0.29	8.352	0.102	3.487	1.6	0.	0.

Problem 809	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	227	227	239	565	1342	1347	0	0
normalized size	1	1.	1.05	2.49	5.91	5.93	0.	0.
time (sec)	N/A	0.305	10.19	0.183	2.814	1.618	0.	0.

Problem 810	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	226	226	227	667	1114	1237	0	0
normalized size	1	1.	1.	2.95	4.93	5.47	0.	0.
time (sec)	N/A	0.315	13.928	0.178	2.155	1.59	0.	0.

Problem 811	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	203	203	203	555	290	1023	0	0
normalized size	1	1.	1.	2.73	1.43	5.04	0.	0.
time (sec)	N/A	0.289	15.564	0.131	2.36	1.689	0.	0.

Problem 812	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	121	115	225	300	0	0
normalized size	1	1.	1.19	1.13	2.21	2.94	0.	0.
time (sec)	N/A	0.231	12.131	0.108	2.455	1.392	0.	0.

Problem 813	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	135	138	270	373	0	0
normalized size	1	1.	0.87	0.89	1.74	2.41	0.	0.
time (sec)	N/A	0.259	10.031	0.119	2.165	1.41	0.	0.

Problem 814	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	208	208	156	161	373	451	0	0
normalized size	1	1.	0.75	0.77	1.79	2.17	0.	0.
time (sec)	N/A	0.291	13.484	0.158	2.46	1.417	0.	0.

Problem 815	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	577	183	448	531	0	0
normalized size	1	1.	2.21	0.7	1.72	2.03	0.	0.
time (sec)	N/A	0.321	17.054	0.11	2.536	1.413	0.	0.

Problem 816	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	350	350	666	604	3482	2461	0	0
normalized size	1	1.	1.9	1.73	9.95	7.03	0.	0.
time (sec)	N/A	0.369	17.526	0.111	124.471	1.801	0.	0.

Problem 817	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	267	267	535	314	2570	1883	0	0
normalized size	1	1.	2.	1.18	9.63	7.05	0.	0.
time (sec)	N/A	0.297	17.073	0.105	19.374	1.568	0.	0.

Problem 818	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	572	478	2724	1991	0	0
normalized size	1	1.	2.01	1.68	9.59	7.01	0.	0.
time (sec)	N/A	0.327	15.958	0.1	33.223	1.817	0.	0.

Problem 819	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	279	279	507	412	2222	1787	0	0
normalized size	1	1.	1.82	1.48	7.96	6.41	0.	0.
time (sec)	N/A	0.329	13.191	0.099	14.752	1.711	0.	0.

Problem 820	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	272	272	465	349	1800	1612	0	0
normalized size	1	1.	1.71	1.28	6.62	5.93	0.	0.
time (sec)	N/A	0.32	11.427	0.102	6.579	1.737	0.	0.

Problem 821	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	283	283	481	627	1794	1557	0	0
normalized size	1	1.	1.7	2.22	6.34	5.5	0.	0.
time (sec)	N/A	0.336	13.468	0.175	4.649	1.542	0.	0.

Problem 822	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	285	285	517	731	1598	1477	0	0
normalized size	1	1.	1.81	2.56	5.61	5.18	0.	0.
time (sec)	N/A	0.344	17.47	0.115	3.244	1.657	0.	0.

Problem 823	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	283	283	528	833	1315	1311	0	0
normalized size	1	1.	1.87	2.94	4.65	4.63	0.	0.
time (sec)	N/A	0.348	17.577	0.121	2.681	1.69	0.	0.

Problem 824	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	B	A	B	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	251	251	570	638	335	1075	0	0
normalized size	1	1.	2.27	2.54	1.33	4.28	0.	0.
time (sec)	N/A	0.315	17.583	0.117	2.571	1.467	0.	0.

Problem 825	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	102	102	335	134	225	304	0	0
normalized size	1	1.	3.28	1.31	2.21	2.98	0.	0.
time (sec)	N/A	0.228	13.766	0.114	2.767	1.414	0.	0.

Problem 826	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	155	155	417	161	270	375	0	0
normalized size	1	1.	2.69	1.04	1.74	2.42	0.	0.
time (sec)	N/A	0.264	15.722	0.11	3.054	1.418	0.	0.

Problem 827	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	208	208	495	184	373	458	0	0
normalized size	1	1.	2.38	0.88	1.79	2.2	0.	0.
time (sec)	N/A	0.286	17.067	0.114	3.119	1.3	0.	0.

Problem 828	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	261	261	577	206	448	537	0	0
normalized size	1	1.	2.21	0.79	1.72	2.06	0.	0.
time (sec)	N/A	0.316	17.317	0.122	3.281	1.41	0.	0.

Problem 829	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	B	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	314	314	655	230	554	635	0	0
normalized size	1	1.	2.09	0.73	1.76	2.02	0.	0.
time (sec)	N/A	0.354	17.723	0.124	3.408	1.432	0.	0.

Problem 830	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	228	228	185	566	1779	1593	0	0
normalized size	1	1.	0.81	2.48	7.8	6.99	0.	0.
time (sec)	N/A	0.297	8.249	0.196	4.107	1.747	0.	0.

Problem 831	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	169	169	161	499	1229	1308	0	0
normalized size	1	1.	0.95	2.95	7.27	7.74	0.	0.
time (sec)	N/A	0.264	6.356	0.219	2.756	1.683	0.	0.

Problem 832	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	110	110	152	323	189	1013	0	0
normalized size	1	1.	1.38	2.94	1.72	9.21	0.	0.
time (sec)	N/A	0.219	3.987	0.18	2.375	1.594	0.	0.

Problem 833	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	92	92	77	99	170	290	0	0
normalized size	1	1.	0.84	1.08	1.85	3.15	0.	0.
time (sec)	N/A	0.2	3.772	0.193	2.525	1.31	0.	0.

Problem 834	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	103	151	0	389	0	0
normalized size	1	1.	0.66	0.96	0.	2.48	0.	0.
time (sec)	N/A	0.251	7.038	0.19	0.	1.442	0.	0.

Problem 835	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	213	213	128	184	0	447	0	0
normalized size	1	1.	0.6	0.86	0.	2.1	0.	0.
time (sec)	N/A	0.275	10.835	0.188	0.	1.412	0.	0.

Problem 836	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	287	287	255	733	1854	1729	0	0
normalized size	1	1.	0.89	2.55	6.46	6.02	0.	0.
time (sec)	N/A	0.343	13.365	0.137	5.964	1.752	0.	0.

Problem 837	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	229	229	174	669	0	1447	0	0
normalized size	1	1.	0.76	2.92	0.	6.32	0.	0.
time (sec)	N/A	0.308	11.283	0.125	0.	1.78	0.	0.

Problem 838	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	114	408	228	1143	0	0
normalized size	1	1.	0.73	2.6	1.45	7.28	0.	0.
time (sec)	N/A	0.265	7.365	0.119	2.844	1.658	0.	0.

Problem 839	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	81	103	0	348	0	0
normalized size	1	1.	0.78	0.99	0.	3.35	0.	0.
time (sec)	N/A	0.215	4.14	0.114	0.	1.325	0.	0.

Problem 840	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	152	152	85	152	0	400	0	0
normalized size	1	1.	0.56	1.	0.	2.63	0.	0.
time (sec)	N/A	0.246	4.816	0.187	0.	1.374	0.	0.

Problem 841	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	150	150	120	113	267	409	0	0
normalized size	1	1.	0.8	0.75	1.78	2.73	0.	0.
time (sec)	N/A	0.245	8.565	0.125	2.551	1.383	0.	0.

Problem 842	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	269	269	170	199	0	531	0	0
normalized size	1	1.	0.63	0.74	0.	1.97	0.	0.
time (sec)	N/A	0.317	11.899	0.138	0.	1.463	0.	0.

Problem 843	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	343	343	247	899	0	1820	0	0
normalized size	1	1.	0.72	2.62	0.	5.31	0.	0.
time (sec)	N/A	0.381	15.177	0.125	0.	1.918	0.	0.

Problem 844	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	B	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	284	284	205	835	1416	1531	0	0
normalized size	1	1.	0.72	2.94	4.99	5.39	0.	0.
time (sec)	N/A	0.343	14.297	0.121	3.93	1.739	0.	0.

Problem 845	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	A	B	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	205	205	129	557	294	1223	0	0
normalized size	1	1.	0.63	2.72	1.43	5.97	0.	0.
time (sec)	N/A	0.289	12.706	0.119	3.223	1.707	0.	0.

Problem 846	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	92	92	207	371	0	0
normalized size	1	1.	0.88	0.88	1.99	3.57	0.	0.
time (sec)	N/A	0.229	7.774	0.11	2.991	1.359	0.	0.

Problem 847	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	157	157	106	127	0	416	0	0
normalized size	1	1.	0.68	0.81	0.	2.65	0.	0.
time (sec)	N/A	0.244	4.662	0.126	0.	1.421	0.	0.

Problem 848	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	212	212	132	186	0	458	0	0
normalized size	1	1.	0.62	0.88	0.	2.16	0.	0.
time (sec)	N/A	0.278	6.337	0.183	0.	1.353	0.	0.

Problem 849	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	216	216	133	199	0	531	0	0
normalized size	1	1.	0.62	0.92	0.	2.46	0.	0.
time (sec)	N/A	0.294	11.907	0.125	0.	1.485	0.	0.

Problem 850	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	B	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	204	204	151	124	446	540	0	0
normalized size	1	1.	0.74	0.61	2.19	2.65	0.	0.
time (sec)	N/A	0.275	11.534	0.131	2.648	1.508	0.	0.

Problem 851	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD
size	150	150	197	0	0	0	0	0
normalized size	1	1.	1.31	0.	0.	0.	0.	0.
time (sec)	N/A	0.227	33.303	1.095	0.	0.	0.	0.

Problem 852	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	147	147	177	0	0	0	0	0
normalized size	1	1.	1.2	0.	0.	0.	0.	0.
time (sec)	N/A	0.225	84.184	1.369	0.	0.	0.	0.

Problem 853	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	F	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	33	33	56	0	0	153	0	0
normalized size	1	1.	1.7	0.	0.	4.64	0.	0.
time (sec)	N/A	0.106	3.702	0.713	0.	1.372	0.	0.

Problem 854	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	B	F(-2)	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	104	104	201	338	0	224	298	270
normalized size	1	1.	1.93	3.25	0.	2.15	2.87	2.6
time (sec)	N/A	0.238	1.689	0.045	0.	1.347	1.876	1.23

Problem 855	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac
grade	A	A	A	A	F(-2)	B	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD
size	147	147	206	131	0	1629	0	0
normalized size	1	1.	1.4	0.89	0.	11.08	0.	0.
time (sec)	N/A	0.295	5.31	0.074	0.	1.741	0.	0.

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [600] had the largest ratio of [0.4545]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	4	4	1.	32	0.125
2	A	3	3	1.	30	0.1
3	A	2	2	1.	24	0.083
4	A	4	3	1.	30	0.1
5	A	3	3	1.	32	0.094
6	A	4	4	1.	32	0.125
7	A	5	4	1.	32	0.125
8	A	6	4	1.	32	0.125
9	A	5	5	1.	34	0.147
10	A	4	4	1.	32	0.125
11	A	3	3	1.	26	0.115
12	A	5	4	1.	32	0.125
13	A	5	4	1.	34	0.118
14	A	4	4	1.	34	0.118
15	A	5	5	1.	34	0.147

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
16	A	6	5	1.	34	0.147
17	A	6	5	1.	34	0.147
18	A	5	5	1.	32	0.156
19	A	4	4	1.	26	0.154
20	A	6	4	1.	32	0.125
21	A	6	5	1.	34	0.147
22	A	6	4	1.	34	0.118
23	A	5	4	1.	34	0.118
24	A	6	5	1.	34	0.147
25	A	7	5	1.	34	0.147
26	A	7	5	1.	34	0.147
27	A	6	5	1.	32	0.156
28	A	5	4	1.	26	0.154
29	A	7	4	1.	32	0.125
30	A	7	5	1.	34	0.147
31	A	7	5	1.	34	0.147
32	A	7	4	1.	34	0.118
33	A	6	4	1.	34	0.118
34	A	7	5	1.	34	0.147
35	A	8	5	1.	34	0.147
36	A	4	4	1.	34	0.118
37	A	3	3	1.	34	0.088
38	A	5	5	1.	32	0.156
39	A	2	2	1.	26	0.077
40	A	3	3	1.	32	0.094
41	A	4	4	1.	34	0.118
42	A	5	4	1.	34	0.118
43	A	6	4	1.	34	0.118
44	A	4	3	1.	34	0.088
45	A	6	6	1.	34	0.176
46	A	3	3	1.	32	0.094
47	A	3	3	1.	26	0.115

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
48	A	4	3	1.	32	0.094
49	A	5	4	1.	34	0.118
50	A	6	4	1.	34	0.118
51	A	5	3	1.	34	0.088
52	A	7	6	1.	34	0.176
53	A	4	4	1.	34	0.118
54	A	4	4	1.	32	0.125
55	A	4	3	1.	26	0.115
56	A	5	3	1.	32	0.094
57	A	6	4	1.	34	0.118
58	A	7	4	1.	34	0.118
59	A	8	6	1.	34	0.176
60	A	5	4	1.	34	0.118
61	A	5	5	1.	34	0.147
62	A	5	4	1.	32	0.125
63	A	5	3	1.	26	0.115
64	A	6	3	1.	32	0.094
65	A	7	4	1.	34	0.118
66	A	8	4	1.	34	0.118
67	A	6	5	1.	36	0.139
68	A	5	5	1.	36	0.139
69	A	4	4	1.	34	0.118
70	A	3	3	1.	28	0.107
71	A	6	6	1.	34	0.176
72	A	7	7	1.	36	0.194
73	A	8	7	1.	36	0.194
74	A	9	7	1.	36	0.194
75	A	6	6	1.	36	0.167
76	A	5	5	1.	34	0.147
77	A	4	4	1.	28	0.143
78	A	7	7	1.	34	0.206
79	A	7	7	1.	36	0.194

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
80	A	8	8	1.	36	0.222
81	A	9	8	1.	36	0.222
82	A	7	6	1.	36	0.167
83	A	6	5	1.	34	0.147
84	A	5	4	1.	28	0.143
85	A	8	7	1.	34	0.206
86	A	8	8	1.	36	0.222
87	A	8	7	1.	36	0.194
88	A	9	8	1.	36	0.222
89	A	10	8	1.	36	0.222
90	A	6	6	1.	36	0.167
91	A	5	5	1.	36	0.139
92	A	4	4	1.	34	0.118
93	A	3	3	1.	28	0.107
94	A	7	7	1.	34	0.206
95	A	8	8	1.	36	0.222
96	A	9	8	1.	36	0.222
97	A	6	5	1.	36	0.139
98	A	5	5	1.	36	0.139
99	A	4	4	1.	34	0.118
100	A	4	4	1.	28	0.143
101	A	8	7	1.	34	0.206
102	A	9	8	1.	36	0.222
103	A	10	8	1.	36	0.222
104	A	7	5	1.	36	0.139
105	A	6	5	1.	36	0.139
106	A	5	5	1.	36	0.139
107	A	5	5	1.	34	0.147
108	A	5	4	1.	28	0.143
109	A	9	7	1.	34	0.206
110	A	10	8	1.	36	0.222
111	A	11	8	1.	36	0.222

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
112	A	6	4	1.	34	0.118
113	A	5	4	1.	34	0.118
114	A	4	4	1.	34	0.118
115	A	3	3	1.	34	0.088
116	A	3	3	1.	34	0.088
117	A	4	4	1.	34	0.118
118	A	5	4	1.	34	0.118
119	A	7	5	1.	36	0.139
120	A	6	5	1.	36	0.139
121	A	5	5	1.	36	0.139
122	A	4	4	1.	36	0.111
123	A	4	4	1.	36	0.111
124	A	4	4	1.	36	0.111
125	A	5	5	1.	36	0.139
126	A	6	5	1.	36	0.139
127	A	7	5	1.	36	0.139
128	A	6	5	1.	36	0.139
129	A	5	4	1.	36	0.111
130	A	5	5	1.	36	0.139
131	A	5	4	1.	36	0.111
132	A	5	4	1.	36	0.111
133	A	6	5	1.	36	0.139
134	A	13	9	1.	36	0.25
135	A	12	9	1.	36	0.25
136	A	11	8	1.	36	0.222
137	A	11	8	1.	36	0.222
138	A	12	9	1.	36	0.25
139	A	13	9	1.	36	0.25
140	A	13	9	1.	36	0.25
141	A	12	8	1.	36	0.222
142	A	12	9	1.	36	0.25
143	A	12	8	1.	36	0.222

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
144	A	13	9	1.	36	0.25
145	A	14	9	1.	36	0.25
146	A	15	9	1.	36	0.25
147	A	14	9	1.	36	0.25
148	A	13	8	1.	36	0.222
149	A	13	9	1.	36	0.25
150	A	13	9	1.	36	0.25
151	A	13	8	1.	36	0.222
152	A	14	9	1.	36	0.25
153	A	15	9	1.	36	0.25
154	A	9	8	1.	38	0.21
155	A	8	8	1.	38	0.21
156	A	7	7	1.	38	0.184
157	A	4	4	1.	38	0.105
158	A	5	4	1.	38	0.105
159	A	6	4	1.	38	0.105
160	A	7	4	1.	38	0.105
161	A	10	9	1.	38	0.237
162	A	9	9	1.	38	0.237
163	A	8	8	1.	38	0.21
164	A	8	8	1.	38	0.21
165	A	5	5	1.	38	0.132
166	A	6	5	1.	38	0.132
167	A	7	5	1.	38	0.132
168	A	8	5	1.	38	0.132
169	A	11	9	1.	38	0.237
170	A	10	9	1.	38	0.237
171	A	9	8	1.	38	0.21
172	A	9	9	1.	38	0.237
173	A	9	8	1.	38	0.21
174	A	6	5	1.	38	0.132
175	A	7	5	1.	38	0.132

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
176	A	8	5	1.	38	0.132
177	A	9	5	1.	38	0.132
178	A	9	8	1.	46	0.174
179	A	9	9	1.	38	0.237
180	A	8	8	1.	38	0.21
181	A	4	4	1.	38	0.105
182	A	5	5	1.	38	0.132
183	A	6	5	1.	38	0.132
184	A	7	5	1.	38	0.132
185	A	9	8	1.	38	0.21
186	A	5	5	1.	38	0.132
187	A	5	4	1.	38	0.105
188	A	6	5	1.	38	0.132
189	A	7	5	1.	38	0.132
190	A	10	8	1.	38	0.21
191	A	6	5	1.	38	0.132
192	A	6	5	1.	38	0.132
193	A	6	4	1.	38	0.105
194	A	7	5	1.	38	0.132
195	A	8	5	1.	38	0.132
196	A	6	6	1.	28	0.214
197	A	8	8	1.	36	0.222
198	A	7	7	1.	34	0.206
199	A	6	6	1.	28	0.214
200	A	11	7	1.	34	0.206
201	A	12	8	1.	36	0.222
202	A	6	6	1.	28	0.214
203	A	6	6	1.	28	0.214
204	A	7	5	1.	34	0.147
205	A	6	5	1.	34	0.147
206	A	5	5	1.	34	0.147
207	A	3	3	1.	32	0.094

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
208	A	6	4	1.	34	0.118
209	A	7	4	1.	34	0.118
210	A	8	4	1.	34	0.118
211	A	9	4	1.	34	0.118
212	A	9	8	1.	36	0.222
213	A	8	8	1.	36	0.222
214	A	7	7	1.	36	0.194
215	A	8	8	1.	36	0.222
216	A	9	8	1.	36	0.222
217	A	10	8	1.	36	0.222
218	A	7	7	1.	34	0.206
219	A	6	5	1.	34	0.147
220	A	5	5	1.	34	0.147
221	A	4	4	1.	32	0.125
222	A	3	3	1.	26	0.115
223	A	5	5	1.	32	0.156
224	A	6	6	1.	34	0.176
225	A	7	6	1.	34	0.176
226	A	11	9	1.	36	0.25
227	A	10	9	1.	36	0.25
228	A	9	9	1.	36	0.25
229	A	8	8	1.	36	0.222
230	A	9	9	1.	36	0.25
231	A	10	9	1.	36	0.25
232	A	4	4	1.	29	0.138
233	A	3	3	1.	27	0.111
234	A	2	2	1.	21	0.095
235	A	4	3	1.	27	0.111
236	A	3	3	1.	29	0.103
237	A	4	4	1.	29	0.138
238	A	5	4	1.	29	0.138
239	A	6	4	1.	29	0.138

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
240	A	5	5	1.	31	0.161
241	A	4	4	1.	29	0.138
242	A	3	3	1.	23	0.13
243	A	4	3	1.	29	0.103
244	A	4	3	1.	31	0.097
245	A	4	4	1.	31	0.129
246	A	5	5	1.	31	0.161
247	A	6	5	1.	31	0.161
248	A	6	5	1.	31	0.161
249	A	5	4	1.	29	0.138
250	A	4	3	1.	23	0.13
251	A	5	4	1.	29	0.138
252	A	5	4	1.	31	0.129
253	A	5	4	1.	31	0.129
254	A	5	5	1.	31	0.161
255	A	6	6	1.	31	0.194
256	A	7	6	1.	31	0.194
257	A	7	5	1.	31	0.161
258	A	6	4	1.	29	0.138
259	A	5	3	1.	23	0.13
260	A	6	5	1.	29	0.172
261	A	6	5	1.	31	0.161
262	A	6	5	1.	31	0.161
263	A	6	5	1.	31	0.161
264	A	6	6	1.	31	0.194
265	A	7	7	1.	31	0.226
266	A	8	7	1.	31	0.226
267	A	6	6	1.	31	0.194
268	A	5	5	1.	31	0.161
269	A	5	5	1.	29	0.172
270	A	2	2	1.	23	0.087
271	A	3	3	1.	29	0.103

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
272	A	4	4	1.	31	0.129
273	A	5	5	1.	31	0.161
274	A	6	5	1.	31	0.161
275	A	6	6	1.	31	0.194
276	A	5	5	1.	31	0.161
277	A	3	3	1.	29	0.103
278	A	3	3	1.	23	0.13
279	A	4	4	1.	29	0.138
280	A	5	5	1.	31	0.161
281	A	6	5	1.	31	0.161
282	A	7	7	1.	31	0.226
283	A	6	6	1.	31	0.194
284	A	4	4	1.	31	0.129
285	A	4	4	1.	29	0.138
286	A	4	3	1.	23	0.13
287	A	5	5	1.	29	0.172
288	A	6	5	1.	31	0.161
289	A	7	5	1.	31	0.161
290	A	7	7	1.	31	0.226
291	A	5	5	1.	31	0.161
292	A	5	5	1.	31	0.161
293	A	5	4	1.	29	0.138
294	A	5	3	1.	23	0.13
295	A	6	5	1.	29	0.172
296	A	7	5	1.	31	0.161
297	A	8	5	1.	31	0.161
298	A	3	3	1.	34	0.088
299	A	3	3	1.	34	0.088
300	A	2	2	1.	32	0.062
301	A	2	2	1.	26	0.077
302	A	2	2	1.	32	0.062
303	A	3	3	1.	34	0.088

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
304	A	3	3	1.	34	0.088
305	A	4	3	1.	34	0.088
306	A	7	7	1.	34	0.206
307	A	6	6	1.	34	0.176
308	A	5	5	1.	34	0.147
309	A	3	3	1.	32	0.094
310	A	3	3	1.	26	0.115
311	A	4	4	1.	32	0.125
312	A	5	5	1.	34	0.147
313	A	6	6	1.	34	0.176
314	A	2	2	1.	21	0.095
315	A	2	2	1.	28	0.071
316	A	3	3	1.	23	0.13
317	A	11	8	1.	33	0.242
318	A	10	7	1.	33	0.212
319	A	9	6	1.	31	0.194
320	A	8	5	1.	25	0.2
321	A	11	6	1.	31	0.194
322	A	12	7	1.	33	0.212
323	A	13	8	1.	33	0.242
324	A	14	8	1.	33	0.242
325	A	11	7	1.	33	0.212
326	A	10	6	1.	31	0.194
327	A	9	5	1.	25	0.2
328	A	12	7	1.	31	0.226
329	A	12	7	1.	33	0.212
330	A	13	8	1.	33	0.242
331	A	14	8	1.	33	0.242
332	A	12	7	1.	33	0.212
333	A	11	6	1.	31	0.194
334	A	10	5	1.	25	0.2
335	A	13	8	1.	31	0.258

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
336	A	13	8	1.	33	0.242
337	A	13	8	1.	33	0.242
338	A	14	9	1.	33	0.273
339	A	15	9	1.	33	0.273
340	A	10	7	1.	27	0.259
341	A	13	9	1.	27	0.333
342	A	13	9	1.	27	0.333
343	A	10	7	1.	33	0.212
344	A	9	6	1.	33	0.182
345	A	8	5	1.	31	0.161
346	A	7	4	1.	25	0.16
347	A	11	6	1.	31	0.194
348	A	12	7	1.	33	0.212
349	A	13	8	1.	33	0.242
350	A	10	7	1.	33	0.212
351	A	9	6	1.	33	0.182
352	A	8	5	1.	31	0.161
353	A	8	5	1.	25	0.2
354	A	12	7	1.	31	0.226
355	A	13	8	1.	33	0.242
356	A	14	8	1.	33	0.242
357	A	11	8	1.	33	0.242
358	A	10	7	1.	33	0.212
359	A	9	6	1.	33	0.182
360	A	9	6	1.	31	0.194
361	A	9	5	1.	25	0.2
362	A	13	8	1.	31	0.258
363	A	14	8	1.	33	0.242
364	A	15	8	1.	33	0.242
365	A	12	8	1.	28	0.286
366	A	12	8	1.	28	0.286
367	A	12	7	1.	34	0.206

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
368	A	9	6	1.	28	0.214
369	A	13	8	1.	34	0.235
370	A	7	4	1.	27	0.148
371	A	8	5	1.	27	0.185
372	A	9	5	1.	27	0.185
373	A	3	3	1.	27	0.111
374	A	3	3	1.	27	0.111
375	A	2	2	1.	15	0.133
376	A	2	2	1.	17	0.118
377	A	5	4	1.	25	0.16
378	A	14	9	1.	31	0.29
379	A	13	9	1.	31	0.29
380	A	12	9	1.	31	0.29
381	A	11	8	1.	31	0.258
382	A	11	8	1.	31	0.258
383	A	12	9	1.	31	0.29
384	A	13	9	1.	31	0.29
385	A	15	10	1.	33	0.303
386	A	14	10	1.	33	0.303
387	A	13	10	1.	33	0.303
388	A	12	9	1.	33	0.273
389	A	12	9	1.	33	0.273
390	A	12	9	1.	33	0.273
391	A	13	10	1.	33	0.303
392	A	15	11	1.	33	0.333
393	A	14	11	1.	33	0.333
394	A	13	10	1.	33	0.303
395	A	13	10	1.	33	0.303
396	A	13	10	1.	33	0.303
397	A	13	10	1.	33	0.303
398	A	16	13	1.	33	0.394
399	A	15	12	1.	33	0.364

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
400	A	14	11	1.	33	0.333
401	A	14	11	1.	33	0.333
402	A	15	12	1.	33	0.364
403	A	16	13	1.	33	0.394
404	A	16	13	1.	33	0.394
405	A	15	12	1.	33	0.364
406	A	15	12	1.	33	0.364
407	A	15	12	1.	33	0.364
408	A	16	13	1.	33	0.394
409	A	17	13	1.	33	0.394
410	A	17	14	1.	33	0.424
411	A	16	13	1.	33	0.394
412	A	16	13	1.	33	0.394
413	A	16	13	1.	33	0.394
414	A	16	13	1.	33	0.394
415	A	17	13	1.	33	0.394
416	A	13	10	1.	36	0.278
417	A	13	10	1.	36	0.278
418	A	12	9	1.	36	0.25
419	A	12	9	1.	36	0.25
420	A	13	10	1.	36	0.278
421	A	13	10	1.	36	0.278
422	A	16	13	1.	36	0.361
423	A	15	12	1.	36	0.333
424	A	15	12	1.	36	0.333
425	A	15	12	1.	36	0.333
426	A	16	13	1.	36	0.361
427	A	14	10	1.	35	0.286
428	A	13	9	1.	35	0.257
429	A	12	9	1.	35	0.257
430	A	8	6	1.	35	0.171
431	A	9	7	1.	35	0.2

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
432	A	10	7	1.	35	0.2
433	A	11	7	1.	35	0.2
434	A	15	10	1.	35	0.286
435	A	14	10	1.	35	0.286
436	A	13	9	1.	35	0.257
437	A	13	9	1.	35	0.257
438	A	9	7	1.	35	0.2
439	A	10	7	1.	35	0.2
440	A	11	7	1.	35	0.2
441	A	12	7	1.	35	0.2
442	A	16	10	1.	35	0.286
443	A	15	10	1.	35	0.286
444	A	14	10	1.	35	0.286
445	A	14	10	1.	35	0.286
446	A	14	10	1.	35	0.286
447	A	10	8	1.	35	0.229
448	A	11	8	1.	35	0.229
449	A	12	8	1.	35	0.229
450	A	13	8	1.	35	0.229
451	A	14	10	1.	43	0.233
452	A	13	9	1.	35	0.257
453	A	12	9	1.	35	0.257
454	A	7	5	1.	35	0.143
455	A	8	6	1.	35	0.171
456	A	9	7	1.	35	0.2
457	A	10	7	1.	35	0.2
458	A	13	9	1.	35	0.257
459	A	8	6	1.	35	0.171
460	A	8	6	1.	35	0.171
461	A	9	7	1.	35	0.2
462	A	10	7	1.	35	0.2
463	A	14	10	1.	35	0.286

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
464	A	9	7	1.	35	0.2
465	A	9	7	1.	35	0.2
466	A	9	7	1.	35	0.2
467	A	10	7	1.	35	0.2
468	A	11	7	1.	35	0.2
469	A	13	10	1.	38	0.263
470	A	8	6	1.	38	0.158
471	A	8	6	1.	38	0.158
472	A	10	8	1.	38	0.21
473	A	12	7	1.	25	0.28
474	A	12	7	1.	25	0.28
475	A	11	6	1.	25	0.24
476	A	11	6	1.	25	0.24
477	A	5	5	1.	27	0.185
478	A	11	6	1.	26	0.231
479	A	9	7	1.	31	0.226
480	A	8	6	1.	31	0.194
481	A	7	5	1.	31	0.161
482	A	6	4	1.	29	0.138
483	A	8	6	1.	31	0.194
484	A	9	7	1.	31	0.226
485	A	10	8	1.	31	0.258
486	A	11	8	1.	31	0.258
487	A	7	4	1.	33	0.121
488	A	7	4	1.	33	0.121
489	A	7	4	1.	33	0.121
490	A	7	4	1.	33	0.121
491	A	7	4	1.	33	0.121
492	A	7	4	1.	33	0.121
493	A	7	4	1.	31	0.129
494	A	9	6	0.99	31	0.194
495	A	8	6	0.99	31	0.194

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
496	A	7	5	1.	31	0.161
497	A	6	4	1.	29	0.138
498	A	5	3	1.	23	0.13
499	A	8	6	1.	29	0.207
500	A	9	7	1.	31	0.226
501	A	10	8	1.	31	0.258
502	A	6	5	1.	34	0.147
503	A	5	5	1.	34	0.147
504	A	4	4	1.	34	0.118
505	A	4	4	1.	34	0.118
506	A	5	5	1.	34	0.147
507	A	6	5	1.	34	0.147
508	A	6	6	1.	36	0.167
509	A	5	5	1.	36	0.139
510	A	5	5	1.	36	0.139
511	A	5	5	1.	36	0.139
512	A	6	6	1.	36	0.167
513	A	7	6	1.	36	0.167
514	A	6	5	1.	36	0.139
515	A	6	6	1.	36	0.167
516	A	6	5	1.	36	0.139
517	A	6	5	1.	36	0.139
518	A	7	6	1.	36	0.167
519	A	14	10	1.	36	0.278
520	A	13	10	1.	36	0.278
521	A	12	9	1.	36	0.25
522	A	12	9	1.	36	0.25
523	A	13	10	1.	36	0.278
524	A	14	10	1.	36	0.278
525	A	14	10	1.	36	0.278
526	A	13	9	1.	36	0.25
527	A	13	10	1.	36	0.278

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
528	A	13	9	1.	36	0.25
529	A	14	10	1.	36	0.278
530	A	15	10	1.	36	0.278
531	A	14	9	1.	36	0.25
532	A	14	10	1.	36	0.278
533	A	14	10	1.	36	0.278
534	A	14	9	1.	36	0.25
535	A	15	10	1.	36	0.278
536	A	7	5	1.	38	0.132
537	A	6	5	1.	38	0.132
538	A	5	5	1.	38	0.132
539	A	8	8	1.	38	0.21
540	A	9	9	1.	38	0.237
541	A	8	6	1.	38	0.158
542	A	7	6	1.	38	0.158
543	A	6	6	1.	38	0.158
544	A	9	9	1.	38	0.237
545	A	9	9	1.	38	0.237
546	A	10	10	1.	38	0.263
547	A	9	6	1.	38	0.158
548	A	8	6	1.	38	0.158
549	A	7	6	1.	38	0.158
550	A	10	9	1.	38	0.237
551	A	10	10	1.	38	0.263
552	A	10	9	1.	38	0.237
553	A	11	10	1.	38	0.263
554	A	7	6	1.	38	0.158
555	A	6	6	1.	38	0.158
556	A	5	5	1.	38	0.132
557	A	9	9	1.	38	0.237
558	A	7	6	1.	38	0.158
559	A	6	5	1.	38	0.132

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
560	A	6	6	1.	38	0.158
561	A	10	9	1.	38	0.237
562	A	8	6	1.	38	0.158
563	A	7	5	1.	38	0.132
564	A	7	6	1.	38	0.158
565	A	7	6	1.	38	0.158
566	A	11	9	1.	38	0.237
567	A	8	8	1.	34	0.235
568	A	11	10	1.	36	0.278
569	A	10	10	1.	36	0.278
570	A	9	9	1.	36	0.25
571	A	10	10	1.	36	0.278
572	A	11	10	1.	36	0.278
573	A	12	10	1.	36	0.278
574	A	13	10	1.	31	0.323
575	A	12	9	1.	31	0.29
576	A	12	9	1.	31	0.29
577	A	13	10	1.	31	0.323
578	A	14	11	1.	33	0.333
579	A	13	10	1.	33	0.303
580	A	13	10	1.	33	0.303
581	A	13	10	1.	33	0.303
582	A	14	11	1.	33	0.333
583	A	15	12	1.	33	0.364
584	A	14	11	1.	33	0.333
585	A	14	11	1.	33	0.333
586	A	14	11	1.	33	0.333
587	A	14	11	1.	33	0.333
588	A	15	12	1.	33	0.364
589	A	17	14	1.	33	0.424
590	A	16	13	1.	33	0.394
591	A	15	12	1.	33	0.364

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
592	A	15	12	1.	33	0.364
593	A	16	13	1.	33	0.394
594	A	17	14	1.	33	0.424
595	A	17	14	1.	33	0.424
596	A	16	13	1.	33	0.394
597	A	16	13	1.	33	0.394
598	A	16	13	1.	33	0.394
599	A	17	14	1.	33	0.424
600	A	18	15	1.	33	0.454
601	A	17	14	1.	33	0.424
602	A	17	14	1.	33	0.424
603	A	17	14	1.	33	0.424
604	A	17	14	1.	33	0.424
605	A	18	14	1.	33	0.424
606	A	13	10	1.	36	0.278
607	A	13	10	1.	36	0.278
608	A	12	9	1.	36	0.25
609	A	12	9	1.	36	0.25
610	A	13	10	1.	36	0.278
611	A	13	10	1.	36	0.278
612	A	12	8	1.	35	0.229
613	A	11	8	1.	35	0.229
614	A	10	8	1.	35	0.229
615	A	9	7	1.	35	0.2
616	A	13	10	1.	35	0.286
617	A	14	10	1.	35	0.286
618	A	15	11	1.	35	0.314
619	A	13	8	1.	35	0.229
620	A	12	8	1.	35	0.229
621	A	11	8	1.	35	0.229
622	A	10	8	1.	35	0.229
623	A	14	10	1.	35	0.286

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
624	A	14	10	1.	35	0.286
625	A	15	11	1.	35	0.314
626	A	16	11	1.	35	0.314
627	A	14	9	1.	35	0.257
628	A	13	9	1.	35	0.257
629	A	12	9	1.	35	0.257
630	A	11	9	1.	35	0.257
631	A	15	11	1.	35	0.314
632	A	15	11	1.	35	0.314
633	A	15	11	1.	35	0.314
634	A	16	11	1.	35	0.314
635	A	17	11	1.	35	0.314
636	A	11	8	1.	35	0.229
637	A	10	8	1.	35	0.229
638	A	9	7	1.	35	0.2
639	A	8	6	1.	35	0.171
640	A	13	10	1.	35	0.286
641	A	14	10	1.	35	0.286
642	A	11	8	1.	35	0.229
643	A	10	8	1.	35	0.229
644	A	9	7	1.	35	0.2
645	A	9	7	1.	35	0.2
646	A	14	10	1.	35	0.286
647	A	12	8	1.	35	0.229
648	A	11	8	1.	35	0.229
649	A	10	8	1.	35	0.229
650	A	10	8	1.	35	0.229
651	A	10	8	1.	35	0.229
652	A	15	11	1.	35	0.314
653	A	9	7	1.	38	0.184
654	A	9	7	1.	38	0.184
655	A	14	11	1.	38	0.29

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
656	A	8	5	1.	31	0.161
657	A	10	6	1.	33	0.182
658	A	10	6	1.	33	0.182
659	A	10	6	1.	33	0.182
660	A	10	6	1.	33	0.182
661	A	9	5	1.	33	0.152
662	A	9	5	1.	33	0.152
663	A	9	5	1.	33	0.152
664	A	9	5	1.	33	0.152
665	A	3	2	1.	39	0.051
666	A	3	2	1.	39	0.051
667	A	3	2	1.	39	0.051
668	A	3	2	1.	39	0.051
669	A	2	1	1.	37	0.027
670	A	2	2	1.	24	0.083
671	A	3	2	1.	39	0.051
672	A	2	2	1.	39	0.051
673	A	3	2	1.	39	0.051
674	A	3	2	1.	39	0.051
675	A	3	2	1.	39	0.051
676	A	3	2	1.	41	0.049
677	A	3	2	1.	41	0.049
678	A	3	2	1.	41	0.049
679	A	3	2	1.	41	0.049
680	A	4	3	1.	41	0.073
681	A	3	2	1.	39	0.051
682	A	3	3	1.	26	0.115
683	A	3	2	1.	41	0.049
684	A	3	2	1.	41	0.049
685	A	3	2	1.	41	0.049
686	A	3	2	1.	41	0.049
687	A	3	2	1.	41	0.049

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
688	A	3	2	1.	41	0.049
689	A	3	2	1.	41	0.049
690	A	3	2	1.	41	0.049
691	A	3	2	1.	41	0.049
692	A	3	2	1.	41	0.049
693	A	5	4	1.	41	0.098
694	A	3	2	1.	41	0.049
695	A	3	2	1.	39	0.051
696	A	4	4	1.	26	0.154
697	A	3	2	1.	41	0.049
698	A	3	2	1.	41	0.049
699	A	4	3	1.	41	0.073
700	A	3	3	1.	41	0.073
701	A	3	2	1.	41	0.049
702	A	3	2	1.	41	0.049
703	A	3	2	1.	41	0.049
704	A	3	2	1.	41	0.049
705	A	3	3	1.	41	0.073
706	A	3	2	1.	41	0.049
707	A	3	2	1.	41	0.049
708	A	3	2	1.	41	0.049
709	A	3	2	1.	39	0.051
710	A	2	2	1.	26	0.077
711	A	4	4	1.	41	0.098
712	A	4	3	1.	41	0.073
713	A	4	3	1.	41	0.073
714	A	4	3	1.	41	0.073
715	A	3	3	1.	41	0.073
716	A	3	2	1.	41	0.049
717	A	3	2	1.	41	0.049
718	A	3	2	1.	41	0.049
719	A	3	2	1.	41	0.049

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
720	A	2	2	1.	39	0.051
721	A	3	3	1.	26	0.115
722	A	4	3	1.	41	0.073
723	A	5	5	1.	41	0.122
724	A	4	3	1.	41	0.073
725	A	4	3	1.	41	0.073
726	A	4	3	1.	41	0.073
727	A	3	3	1.	41	0.073
728	A	3	2	1.	41	0.049
729	A	3	2	1.	41	0.049
730	A	4	3	1.	41	0.073
731	A	3	2	1.	41	0.049
732	A	3	2	1.	39	0.051
733	A	4	3	1.	26	0.115
734	A	4	3	1.	41	0.073
735	A	4	3	1.	41	0.073
736	A	6	5	1.	41	0.122
737	A	4	3	1.	41	0.073
738	A	4	3	1.	41	0.073
739	A	4	3	1.	41	0.073
740	A	3	2	1.	41	0.049
741	A	3	2	1.	41	0.049
742	A	3	2	1.	41	0.049
743	A	3	2	1.	41	0.049
744	A	3	2	1.	41	0.049
745	A	3	2	1.	41	0.049
746	A	3	2	1.	41	0.049
747	A	3	2	1.	41	0.049
748	A	3	2	1.	43	0.047
749	A	3	2	1.	43	0.047
750	A	3	2	1.	43	0.047
751	A	3	2	1.	43	0.047

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
752	A	3	2	1.	43	0.047
753	A	3	2	1.	43	0.047
754	A	3	2	1.	43	0.047
755	A	3	2	1.	43	0.047
756	A	3	2	1.	43	0.047
757	A	3	2	1.	43	0.047
758	A	3	2	1.	43	0.047
759	A	3	2	1.	43	0.047
760	A	3	2	1.	43	0.047
761	A	3	2	1.	43	0.047
762	A	3	2	1.	43	0.047
763	A	3	2	1.	43	0.047
764	A	7	5	1.	43	0.116
765	A	6	5	1.	43	0.116
766	A	5	5	1.	43	0.116
767	A	4	4	1.	43	0.093
768	A	5	5	1.	43	0.116
769	A	6	5	1.	43	0.116
770	A	7	5	1.	43	0.116
771	A	8	6	1.	43	0.14
772	A	7	6	1.	43	0.14
773	A	6	6	1.	43	0.14
774	A	5	5	1.	43	0.116
775	A	5	5	1.	43	0.116
776	A	6	5	1.	43	0.116
777	A	7	5	1.	43	0.116
778	A	8	5	1.	43	0.116
779	A	8	6	1.	43	0.14
780	A	7	6	1.	43	0.14
781	A	6	5	1.	43	0.116
782	A	6	6	1.	43	0.14
783	A	6	5	1.	43	0.116

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
784	A	7	5	1.	43	0.116
785	A	8	5	1.	43	0.116
786	A	9	5	1.	43	0.116
787	A	8	6	1.	45	0.133
788	A	7	6	1.	45	0.133
789	A	6	6	1.	45	0.133
790	A	5	5	1.	45	0.111
791	A	5	5	1.	45	0.111
792	A	3	3	1.	45	0.067
793	A	4	4	1.	45	0.089
794	A	5	4	1.	45	0.089
795	A	8	7	1.	45	0.156
796	A	7	7	1.	45	0.156
797	A	6	6	1.	45	0.133
798	A	6	6	1.	45	0.133
799	A	6	6	1.	45	0.133
800	A	6	6	1.	45	0.133
801	A	3	3	1.	45	0.067
802	A	4	4	1.	45	0.089
803	A	5	4	1.	45	0.089
804	A	6	4	1.	45	0.089
805	A	8	7	1.	45	0.156
806	A	7	6	1.	45	0.133
807	A	7	7	1.	45	0.156
808	A	7	6	1.	45	0.133
809	A	7	6	1.	45	0.133
810	A	7	7	1.	45	0.156
811	A	7	6	1.	45	0.133
812	A	3	3	1.	45	0.067
813	A	4	4	1.	45	0.089
814	A	5	4	1.	45	0.089
815	A	6	4	1.	45	0.089

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
816	A	9	7	1.	45	0.156
817	A	8	6	1.	45	0.133
818	A	8	7	1.	45	0.156
819	A	8	7	1.	45	0.156
820	A	8	6	1.	45	0.133
821	A	8	6	1.	45	0.133
822	A	8	7	1.	45	0.156
823	A	8	7	1.	45	0.156
824	A	8	6	1.	45	0.133
825	A	3	3	1.	45	0.067
826	A	4	4	1.	45	0.089
827	A	5	4	1.	45	0.089
828	A	6	4	1.	45	0.089
829	A	7	4	1.	45	0.089
830	A	7	6	1.	45	0.133
831	A	6	6	1.	45	0.133
832	A	5	5	1.	45	0.111
833	A	3	3	1.	45	0.067
834	A	4	4	1.	45	0.089
835	A	5	4	1.	45	0.089
836	A	8	7	1.	45	0.156
837	A	7	7	1.	45	0.156
838	A	6	6	1.	45	0.133
839	A	3	3	1.	45	0.067
840	A	4	4	1.	45	0.089
841	A	4	4	1.	45	0.089
842	A	6	4	1.	45	0.089
843	A	9	7	1.	45	0.156
844	A	8	7	1.	45	0.156
845	A	7	6	1.	45	0.133
846	A	3	3	1.	45	0.067
847	A	4	4	1.	45	0.089

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
848	A	5	4	1.	45	0.089
849	A	5	4	1.	45	0.089
850	A	5	5	1.	45	0.111
851	A	4	4	1.	41	0.098
852	A	4	4	1.	47	0.085
853	A	2	2	1.	46	0.043
854	A	3	3	1.	36	0.083
855	A	4	4	1.	38	0.105

Chapter 3

Listing of integrals

3.1 $\int \tan^2(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=91

$$\frac{a(B+iA)\tan^2(c+dx)}{2d}+\frac{a(A-iB)\tan(c+dx)}{d}+\frac{a(B+iA)\log(\cos(c+dx))}{d}-ax(A-iB)+\frac{iaB\tan^3(c+dx)}{3d}$$

```
[Out] -(a*(A - I*B)*x) + (a*(I*A + B)*Log[Cos[c + d*x]])/d + (a*(A - I*B)*Tan[c +
 d*x])/d + (a*(I*A + B)*Tan[c + d*x]^2)/(2*d) + ((I/3)*a*B*Tan[c + d*x]^3)/
d
```

Rubi [A] time = 0.110829, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3592, 3528, 3525, 3475}

$$\frac{a(B+iA)\tan^2(c+dx)}{2d}+\frac{a(A-iB)\tan(c+dx)}{d}+\frac{a(B+iA)\log(\cos(c+dx))}{d}-ax(A-iB)+\frac{iaB\tan^3(c+dx)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*(A - I*B)*x) + (a*(I*A + B)*Log[Cos[c + d*x]])/d + (a*(A - I*B)*Tan[c +
 d*x])/d + (a*(I*A + B)*Tan[c + d*x]^2)/(2*d) + ((I/3)*a*B*Tan[c + d*x]^3)/
d
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \tan^2(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx &= \frac{iaB\tan^3(c+dx)}{3d}+\int \tan^2(c+dx)(a(A-iB)+a(iA+B)\,\mathrm{t}\\ &= \frac{a(iA+B)\tan^2(c+dx)}{2d}+\frac{iaB\tan^3(c+dx)}{3d}+\int \tan(c+dx\\ &= -a(A-iB)x+\frac{a(A-iB)\tan(c+dx)}{d}+\frac{a(iA+B)\tan^2(c+}{2d}\\ &= -a(A-iB)x+\frac{a(iA+B)\log(\cos(c+dx))}{d}+\frac{a(A-iB)\tan(}{d}\end{aligned}$$

Mathematica [A] time = 0.869767, size = 86, normalized size = 0.95

$$\frac{a\left(3(B+iA)\tan^2(c+dx)-6(A-iB)\tan^{-1}(\tan(c+dx))+6(A-iB)\tan(c+dx)+6(B+iA)\log(\cos(c+dx))+2iB\,\mathrm{ta}\right.}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a*(-6*(A - I*B)*ArcTan[Tan[c + d*x]] + 6*(I*A + B)*Log[Cos[c + d*x]] + 6*(
A - I*B)*Tan[c + d*x] + 3*(I*A + B)*Tan[c + d*x]^2 + (2*I)*B*Tan[c + d*x]^3
))/(6*d)
```

Maple [A] time = 0.012, size = 141, normalized size = 1.6

$$\frac{\frac{i}{3}aB\left(\tan\left(dx+c\right)\right)^{3}}{d}+\frac{\frac{i}{2}aA\left(\tan\left(dx+c\right)\right)^{2}}{d}-\frac{iaB\tan\left(dx+c\right)}{d}+\frac{aB\left(\tan\left(dx+c\right)\right)^{2}}{2d}+\frac{aA\tan\left(dx+c\right)}{d}-\frac{\frac{i}{2}a\ln\left(1+(\tan$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/3*I*a*B*tan(d*x+c)^3/d+1/2*I/d*a*A*tan(d*x+c)^2-I/d*a*B*tan(d*x+c)+1/2/d*
a*B*tan(d*x+c)^2+1/d*a*A*tan(d*x+c)-1/2*I/d*a*ln(1+tan(d*x+c)^2)*A-1/2/d*a*
ln(1+tan(d*x+c)^2)*B+I/d*a*B*arctan(tan(d*x+c))-1/d*a*A*arctan(tan(d*x+c))
```

Maxima [A] time = 1.52614, size = 113, normalized size = 1.24

$$-\frac{-2iBa\tan\left(dx+c\right)^{3}+3\left(-iA-B\right)a\tan\left(dx+c\right)^{2}+6\left(dx+c\right)\left(A-iB\right)a+3\left(iA+B\right)a\log\left(\tan\left(dx+c\right)^{2}+1\right)-(6A}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/6*(-2*I*B*a*tan(d*x + c)^3 + 3*(-I*A - B)*a*tan(d*x + c)^2 + 6*(d*x + c)
*(A - I*B)*a + 3*(I*A + B)*a*log(tan(d*x + c)^2 + 1) - (6*A - 6*I*B)*a*tan(
d*x + c))/d
```

Fricas [B] time = 1.42001, size = 467, normalized size = 5.13

$$\frac{(12i\,A+18\,B)ae^{(4i\,dx+4i\,c)}+(18i\,A+18\,B)ae^{(2i\,dx+2i\,c)}+(6i\,A+8\,B)a+\left((3i\,A+3\,B)ae^{(6i\,dx+6i\,c)}+(9i\,A+9\,B)ae^{(4i\,dx+4i\,c)}\right.}{3\left(de^{(6i\,dx+6i\,c)}+3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/3*((12*I*A + 18*B)*a*e^(4*I*d*x + 4*I*c) + (18*I*A + 18*B)*a*e^(2*I*d*x +
 2*I*c) + (6*I*A + 8*B)*a + ((3*I*A + 3*B)*a*e^(6*I*d*x + 6*I*c) + (9*I*A +
 9*B)*a*e^(4*I*d*x + 4*I*c) + (9*I*A + 9*B)*a*e^(2*I*d*x + 2*I*c) + (3*I*A
+ 3*B)*a)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I
*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [B] time = 12.6028, size = 156, normalized size = 1.71

$$\frac{a\,(iA+B)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{\frac{(4iAa+6Ba)e^{-2ic}e^{4idx}}{d}+\frac{(6iAa+6Ba)e^{-4ic}e^{2idx}}{d}+\frac{(6iAa+8Ba)e^{-6ic}}{3d}}{e^{6idx}+3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}+e^{-6ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(I*A + B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + ((4*I*A*a + 6*B*a)*exp(-2*I
*c)*exp(4*I*d*x)/d + (6*I*A*a + 6*B*a)*exp(-4*I*c)*exp(2*I*d*x)/d + (6*I*A*
a + 8*B*a)*exp(-6*I*c)/(3*d))/(exp(6*I*d*x) + 3*exp(-2*I*c)*exp(4*I*d*x) +
3*exp(-4*I*c)*exp(2*I*d*x) + exp(-6*I*c))
```

Giac [B] time = 1.64339, size = 383, normalized size = 4.21

$$\frac{3i\,Aae^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+3\,Bae^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+9i\,Aae^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+9\,Bae^{(4i\,dx}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/3*(3*I*A*a*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 3*B*a*e^(6*
I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 9*I*A*a*e^(4*I*d*x + 4*I*c)*l
og(e^(2*I*d*x + 2*I*c) + 1) + 9*B*a*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*
I*c) + 1) + 9*I*A*a*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 9*B*
a*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 12*I*A*a*e^(4*I*d*x +
4*I*c) + 18*B*a*e^(4*I*d*x + 4*I*c) + 18*I*A*a*e^(2*I*d*x + 2*I*c) + 18*B*a
*e^(2*I*d*x + 2*I*c) + 3*I*A*a*log(e^(2*I*d*x + 2*I*c) + 1) + 3*B*a*log(e^(
2*I*d*x + 2*I*c) + 1) + 6*I*A*a + 8*B*a)/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*
I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

3.2 $\int \tan(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=69

$$\frac{a(B+iA)\tan(c+dx)}{d}-\frac{a(A-iB)\log(\cos(c+dx))}{d}-ax(B+iA)+\frac{iaB\tan^2(c+dx)}{2d}$$

```
[Out] -(a*(I*A + B)*x) - (a*(A - I*B)*Log[Cos[c + d*x]])/d + (a*(I*A + B)*Tan[c +
 d*x])/d + ((I/2)*a*B*Tan[c + d*x]^2)/d
```

Rubi [A] time = 0.0555895, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1, Rules used = {3592, 3525, 3475}

$$\frac{a(B+iA)\tan(c+dx)}{d}-\frac{a(A-iB)\log(\cos(c+dx))}{d}-ax(B+iA)+\frac{iaB\tan^2(c+dx)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*(I*A + B)*x) - (a*(A - I*B)*Log[Cos[c + d*x]])/d + (a*(I*A + B)*Tan[c +
 d*x])/d + ((I/2)*a*B*Tan[c + d*x]^2)/d
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{iaB\tan^2(c+dx)}{2d} + \int \tan(c+dx)(a(A-iB)+a(iA+B)\,\mathrm{t}$$
$$= -a(iA+B)x + \frac{a(iA+B)\tan(c+dx)}{d} + \frac{iaB\tan^2(c+dx)}{2d} +$$
$$= -a(iA+B)x - \frac{a(A-iB)\log(\cos(c+dx))}{d} + \frac{a(iA+B)\tan}{d}$$

Mathematica [A] time = 0.306199, size = 70, normalized size = 1.01

$$\frac{a\left((-2B-2iA)\tan^{-1}(\tan(c+dx))+2(B+iA)\tan(c+dx)-2(A-iB)\log(\cos(c+dx))+iB\tan^2(c+dx)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a*(((-2*I)*A - 2*B)*ArcTan[Tan[c + d*x]] - 2*(A - I*B)*Log[Cos[c + d*x]] +
 2*(I*A + B)*Tan[c + d*x] + I*B*Tan[c + d*x]^2))/(2*d)
```

Maple [A] time = 0.005, size = 110, normalized size = 1.6

$$\frac{\frac{i}{2}aB(\tan(dx+c))^2}{d} + \frac{iaA\tan(dx+c)}{d} + \frac{aB\tan(dx+c)}{d} + \frac{a\ln\left(1+(\tan(dx+c))^2\right)A}{2d} - \frac{\frac{i}{2}a\ln\left(1+(\tan(dx+c))^2\right)B}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2*I*a*B*tan(d*x+c)^2/d+I/d*a*A*tan(d*x+c)+1/d*a*B*tan(d*x+c)+1/2/d*a*ln(1
+tan(d*x+c)^2)*A-1/2*I/d*a*ln(1+tan(d*x+c)^2)*B-I/d*a*A*arctan(tan(d*x+c))-
1/d*a*B*arctan(tan(d*x+c))
```

Maximia [A] time = 1.64783, size = 92, normalized size = 1.33

$$-\frac{-iBa\tan(dx+c)^2-2(dx+c)(-iA-B)a-(A-iB)a\log\left(\tan(dx+c)^2+1\right)+2(-iA-B)a\tan(dx+c)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] -1/2*(-I*B*a*tan(d*x + c)^2 - 2*(d*x + c)*(-I*A - B)*a - (A - I*B)*a*log(ta
n(d*x + c)^2 + 1) + 2*(-I*A - B)*a*tan(d*x + c))/d
```

Fricas [A] time = 1.46938, size = 304, normalized size = 4.41

$$-\frac{2(A-2iB)ae^{(2idx+2ic)}+2(A-iB)a+\left((A-iB)ae^{(4idx+4ic)}+2(A-iB)ae^{(2idx+2ic)}+(A-iB)a\right)\log\left(e^{(2idx+2ic)}+1\right)}{de^{(4idx+4ic)}+2de^{(2idx+2ic)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] -(2*(A - 2*I*B)*a*e^(2*I*d*x + 2*I*c) + 2*(A - I*B)*a + ((A - I*B)*a*e^(4*I
*d*x + 4*I*c) + 2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (A - I*B)*a)*log(e^(2*I
*d*x + 2*I*c) + 1))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 4.95594, size = 110, normalized size = 1.59

$$\frac{a(-A+iB)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{-\frac{(2Aa-4iBa)e^{-2ic}e^{2idx}}{d}-\frac{(2Aa-2iBa)e^{-4ic}}{d}}{e^{4idx}+2e^{-2ic}e^{2idx}+e^{-4ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(-A + I*B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + (-(2*A*a - 4*I*B*a)*exp(-2
*I*c)*exp(2*I*d*x)/d - (2*A*a - 2*I*B*a)*exp(-4*I*c)/d)/(exp(4*I*d*x) + 2*e
```

```
xp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c))
```

Giac [B] time = 1.2918, size = 262, normalized size = 3.8

$$-\frac{Aae^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-i\,Bae^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+2\,Aae^{(2i\,dx+2i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-2i\,Bae^{(2i\,dx+}}{de^{(4i\,dx+4i\,c)}\,}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -(A*a*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - I*B*a*e^(4*I*d*x +
 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 2*A*a*e^(2*I*d*x + 2*I*c)*log(e^(2*I
*d*x + 2*I*c) + 1) - 2*I*B*a*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) +
1) + 2*A*a*e^(2*I*d*x + 2*I*c) - 4*I*B*a*e^(2*I*d*x + 2*I*c) + A*a*log(e^(2
*I*d*x + 2*I*c) + 1) - I*B*a*log(e^(2*I*d*x + 2*I*c) + 1) + 2*A*a - 2*I*B*a
)/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

3.3 $\int (a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=46

$$-\frac{a(B+iA)\log(\cos(c+dx))}{d}+ax(A-iB)+\frac{iaB\tan(c+dx)}{d}$$

```
[Out] a*(A - I*B)*x - (a*(I*A + B)*Log[Cos[c + d*x]])/d + (I*a*B*Tan[c + d*x])/d
```

Rubi [A] time = 0.0278612, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {3525, 3475}

$$-\frac{a(B+iA)\log(\cos(c+dx))}{d}+ax(A-iB)+\frac{iaB\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] a*(A - I*B)*x - (a*(I*A + B)*Log[Cos[c + d*x]])/d + (I*a*B*Tan[c + d*x])/d
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int (a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx &= a(A-iB)x+\frac{iaB\tan(c+dx)}{d}+(a(iA+B))\int \tan(c+dx)\,dx\\ &= a(A-iB)x-\frac{a(iA+B)\log(\cos(c+dx))}{d}+\frac{iaB\tan(c+dx)}{d}\end{aligned}$$

Mathematica [A] time = 0.0263979, size = 66, normalized size = 1.43

$$-\frac{iaA\log(\cos(c+dx))}{d}+aAx-\frac{iaB\tan^{-1}(\tan(c+dx))}{d}+\frac{iaB\tan(c+dx)}{d}-\frac{aB\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] a*A*x - (I*a*B*ArcTan[Tan[c + d*x]])/d - (I*a*A*Log[Cos[c + d*x]])/d - (a*B
*Log[Cos[c + d*x]])/d + (I*a*B*Tan[c + d*x])/d
```

Maple [A] time = 0.003, size = 81, normalized size = 1.8

$$\frac{iaB\tan(dx+c)}{d}+\frac{\frac{i}{2}a\ln\left(1+(\tan(dx+c))^2\right)A}{d}+\frac{a\ln\left(1+(\tan(dx+c))^2\right)B}{2d}-\frac{iaB\arctan(\tan(dx+c))}{d}+\frac{aA\,\mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] I*a*B*tan(d*x+c)/d+1/2*I/d*a*ln(1+tan(d*x+c)^2)*A+1/2/d*a*ln(1+tan(d*x+c)^2
)*B-I/d*a*B*arctan(tan(d*x+c))+1/d*a*A*arctan(tan(d*x+c))
```

Maxima [A] time = 1.66479, size = 68, normalized size = 1.48

$$\frac{2(dx+c)(A-iB)a-(-iA-B)a\log\left(\tan(dx+c)^2+1\right)+2iBa\tan(dx+c)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(2*(d*x + c)*(A - I*B)*a - (-I*A - B)*a*log(tan(d*x + c)^2 + 1) + 2*I*B
*a*tan(d*x + c))/d
```

Fricas [A] time = 1.36108, size = 161, normalized size = 3.5

$$-\frac{2\,Ba-\left(\left(-i\,A-B\right)ae^{\left(2i\,dx+2i\,c\right)}+\left(-i\,A-B\right)a\right)\log\left(e^{\left(2i\,dx+2i\,c\right)}+1\right)}{de^{\left(2i\,dx+2i\,c\right)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(2*B*a - ((-I*A - B)*a*e^(2*I*d*x + 2*I*c) + (-I*A - B)*a)*log(e^(2*I*d*x
+ 2*I*c) + 1))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 2.38147, size = 58, normalized size = 1.26

$$-\frac{2Bae^{-2ic}}{d\left(e^{2idx}+e^{-2ic}\right)}-\frac{a\left(iA+B\right)\log\left(e^{2idx}+e^{-2ic}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*B*a*exp(-2*I*c)/(d*(exp(2*I*d*x) + exp(-2*I*c))) - a*(I*A + B)*log(exp(2
*I*d*x) + exp(-2*I*c))/d
```

Giac [B] time = 1.34306, size = 139, normalized size = 3.02

$$\frac{-i\,Aae^{\left(2i\,dx+2i\,c\right)}\log\left(e^{\left(2i\,dx+2i\,c\right)}+1\right)-Bae^{\left(2i\,dx+2i\,c\right)}\log\left(e^{\left(2i\,dx+2i\,c\right)}+1\right)-i\,Aa\log\left(e^{\left(2i\,dx+2i\,c\right)}+1\right)-Ba\log\left(e^{\left(2i\,dx+2i\,c\right)}+1\right)}{de^{\left(2i\,dx+2i\,c\right)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] (-I*A*a*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - B*a*e^(2*I*d*x +
 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - I*A*a*log(e^(2*I*d*x + 2*I*c) + 1) -
 B*a*log(e^(2*I*d*x + 2*I*c) + 1) - 2*B*a)/(d*e^(2*I*d*x + 2*I*c) + d)
```

3.4 $\int \cot(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=40

$$ax(B+iA)+\frac{aA\log(\sin(c+dx))}{d}-\frac{iaB\log(\cos(c+dx))}{d}$$

```
[Out] a*(I*A + B)*x - (I*a*B*Log[Cos[c + d*x]])/d + (a*A*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.0711095, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1, Rules used = {3589, 3475, 3531}

$$ax(B+iA)+\frac{aA\log(\sin(c+dx))}{d}-\frac{iaB\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] a*(I*A + B)*x - (I*a*B*Log[Cos[c + d*x]])/d + (a*A*Log[Sin[c + d*x]])/d
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = (iaB)\int \tan(c+dx)\,dx + \int \cot(c+dx)(aA+a(iA+B)\tan$$

$$= a(iA+B)x - \frac{iaB\log(\cos(c+dx))}{d} + (aA)\int \cot(c+dx)\,dx$$

$$= a(iA+B)x - \frac{iaB\log(\cos(c+dx))}{d} + \frac{aA\log(\sin(c+dx))}{d}$$

Mathematica [A] time = 0.0557537, size = 49, normalized size = 1.22

$$\frac{aA(\log(\tan(c+dx))+\log(\cos(c+dx)))}{d} + iaAx - \frac{iaB\log(\cos(c+dx))}{d} + aBx$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] I*a*A*x + a*B*x - (I*a*B*Log[Cos[c + d*x]])/d + (a*A*(Log[Cos[c + d*x]] + L
og[Tan[c + d*x]]))/d
```

Maple [A] time = 0.059, size = 56, normalized size = 1.4

$$iAax + \frac{iAac}{d} - \frac{iBa\ln(\cos(dx+c))}{d} + aBx + \frac{Aa\ln(\sin(dx+c))}{d} + \frac{Bac}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] I*A*a*x+I/d*A*a*c-I*a*B*ln(cos(d*x+c))/d+a*B*x+a*A*ln(sin(d*x+c))/d+1/d*B*a
*c
```

Maxima [A] time = 1.71528, size = 66, normalized size = 1.65

$$\frac{2(dx+c)(iA+B)a - (A-iB)a\log\left(\tan(dx+c)^2+1\right) + 2Aa\log(\tan(dx+c))}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/2*(2*(d*x + c)*(I*A + B)*a - (A - I*B)*a*log(tan(d*x + c)^2 + 1) + 2*A*a*
log(tan(d*x + c)))/d
```

Fricas [A] time = 1.38504, size = 103, normalized size = 2.58

$$\frac{-i\,Ba\log\left(e^{(2i\,dx+2i\,c)}+1\right)+Aa\log\left(e^{(2i\,dx+2i\,c)}-1\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] (-I*B*a*log(e^(2*I*d*x + 2*I*c) + 1) + A*a*log(e^(2*I*d*x + 2*I*c) - 1))/d
```

Sympy [B] time = 2.49193, size = 92, normalized size = 2.3

$$\operatorname{RootSum}\left(z^2d^2+z\left(-Aad+iBad\right)-iABa^2,\left(i\mapsto i\log\left(-\frac{2iid}{iAae^{2ic}-Bae^{2ic}}+\frac{iA+B}{iAe^{2ic}-Be^{2ic}}+e^{2idx}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] RootSum(_z**2*d**2 + _z*(-A*a*d + I*B*a*d) - I*A*B*a**2, Lambda(_i, _i*log(
-2*_i*I*d/(I*A*a*exp(2*I*c) - B*a*exp(2*I*c)) + (I*A + B)/(I*A*exp(2*I*c) -
 B*exp(2*I*c)) + exp(2*I*d*x))))
```

Giac [B] time = 1.44866, size = 104, normalized size = 2.6

$$-\frac{i\,Ba\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right|\right)+i\,Ba\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-1\right|\right)-Aa\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)+2\left(Aa-i\,Ba\right)\log\left(t\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -(I*B*a*log(abs(tan(1/2*d*x + 1/2*c) + 1)) + I*B*a*log(abs(tan(1/2*d*x + 1/
2*c) - 1)) - A*a*log(abs(tan(1/2*d*x + 1/2*c))) + 2*(A*a - I*B*a)*log(tan(1
/2*d*x + 1/2*c) + I))/d
```

3.5 $\int \cot^2(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=44

$$\frac{a(B+iA)\log(\sin(c+dx))}{d}-ax(A-iB)-\frac{aA\cot(c+dx)}{d}$$

```
[Out] -(a*(A - I*B)*x) - (a*A*Cot[c + d*x])/d + (a*(I*A + B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.0840953, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3591, 3531, 3475}

$$\frac{a(B+iA)\log(\sin(c+dx))}{d}-ax(A-iB)-\frac{aA\cot(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*(A - I*B)*x) - (a*A*Cot[c + d*x])/d + (a*(I*A + B)*Log[Sin[c + d*x]])/d
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)}{d} + \int \cot(c+dx)(a(iA+B)-a(A-iB)\tan$$
$$= -a(A-iB)x - \frac{aA\cot(c+dx)}{d} + (a(iA+B))\int \cot(c+dx)$$
$$= -a(A-iB)x - \frac{aA\cot(c+dx)}{d} + \frac{a(iA+B)\log(\sin(c+dx))}{d}$$

Mathematica [C] time = 0.197743, size = 84, normalized size = 1.91

$$-\frac{aA\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},-\tan^2(c+dx)\right)}{d} + \frac{iaA(\log(\tan(c+dx))+\log(\cos(c+dx)))}{d} + \frac{aB(\log(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] I*a*B*x - (a*A*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1, 1/2, -Tan[c + d*x]^2
])/d + (I*a*A*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]]))/d + (a*B*(Log[Cos[c
+ d*x]] + Log[Tan[c + d*x]]))/d
```

Maple [A] time = 0.046, size = 71, normalized size = 1.6

$$iBax + \frac{iAa\ln(\sin(dx+c))}{d} - Axa + \frac{iBac}{d} - \frac{Aa\cot(dx+c)}{d} - \frac{Aac}{d} + \frac{aB\ln(\sin(dx+c))}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] I*B*a*x+I/d*A*a*ln(sin(d*x+c))-A*x*a+I/d*B*a*c-a*A*cot(d*x+c)/d-1/d*A*a*c+1
/d*a*B*ln(sin(d*x+c))
```

Maxima [A] time = 1.66823, size = 86, normalized size = 1.95

$$-\frac{2\,(dx+c)(A-i\,B)a+(i\,A+B)a\log\left(\tan\left(dx+c\right)^2+1\right)-2\,(i\,A+B)a\log\left(\tan\left(dx+c\right)\right)+\frac{2\,Aa}{\tan(dx+c)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(d*x + c)*(A - I*B)*a + (I*A + B)*a*log(tan(d*x + c)^2 + 1) - 2*(I*
A + B)*a*log(tan(d*x + c)) + 2*A*a/tan(d*x + c))/d
```

Fricas [A] time = 1.38598, size = 162, normalized size = 3.68

$$\frac{-2i\,Aa+\left((i\,A+B)ae^{(2i\,dx+2i\,c)}+(-i\,A-B)a\right)\log\left(e^{(2i\,dx+2i\,c)}-1\right)}{de^{(2i\,dx+2i\,c)}-d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] (-2*I*A*a + ((I*A + B)*a*e^(2*I*d*x + 2*I*c) + (-I*A - B)*a)*log(e^(2*I*d*x
 + 2*I*c) - 1))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 3.39197, size = 58, normalized size = 1.32

$$-\frac{2iAae^{-2ic}}{d\left(e^{2idx}-e^{-2ic}\right)}+\frac{a\,(iA+B)\log\left(e^{2idx}-e^{-2ic}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I*A*a*exp(-2*I*c)/(d*(exp(2*I*d*x) - exp(-2*I*c))) + a*(I*A + B)*log(exp
(2*I*d*x) - exp(-2*I*c))/d
```

Giac [B] time = 1.4037, size = 142, normalized size = 3.23

$$\frac{Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+4\left(-i\,Aa-Ba\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+i\right)+2\left(i\,Aa+Ba\right)\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)+\frac{-2i\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\right.}{\tan}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(A*a*tan(1/2*d*x + 1/2*c) + 4*(-I*A*a - B*a)*log(tan(1/2*d*x + 1/2*c) +
 I) + 2*(I*A*a + B*a)*log(abs(tan(1/2*d*x + 1/2*c))) + (-2*I*A*a*tan(1/2*d*
x + 1/2*c) - 2*B*a*tan(1/2*d*x + 1/2*c) - A*a)/tan(1/2*d*x + 1/2*c))/d
```

3.6 $\int \cot^3(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=68

$$-\frac{a(B+iA)\cot(c+dx)}{d}-\frac{a(A-iB)\log(\sin(c+dx))}{d}-ax(B+iA)-\frac{aA\cot^2(c+dx)}{2d}$$

```
[Out] -(a*(I*A + B)*x) - (a*(I*A + B)*Cot[c + d*x])/d - (a*A*Cot[c + d*x]^2)/(2*d
) - (a*(A - I*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.121235, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3591, 3529, 3531, 3475}

$$-\frac{a(B+iA)\cot(c+dx)}{d}-\frac{a(A-iB)\log(\sin(c+dx))}{d}-ax(B+iA)-\frac{aA\cot^2(c+dx)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(a*(I*A + B)*x) - (a*(I*A + B)*Cot[c + d*x])/d - (a*A*Cot[c + d*x]^2)/(2*d
) - (a*(A - I*B)*Log[Sin[c + d*x]])/d
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
```

```
b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)}{2d} + \int \cot^2(c+dx)(a(iA+B)-a(A-iB)\,\mathrm{t}$$

$$= -\frac{a(iA+B)\cot(c+dx)}{d} - \frac{aA\cot^2(c+dx)}{2d} + \int \cot(c+dx)$$

$$= -a(iA+B)x - \frac{a(iA+B)\cot(c+dx)}{d} - \frac{aA\cot^2(c+dx)}{2d} - ($$

$$= -a(iA+B)x - \frac{a(iA+B)\cot(c+dx)}{d} - \frac{aA\cot^2(c+dx)}{2d} - $$

Mathematica [C] time = 0.361013, size = 76, normalized size = 1.12

$$-\frac{a\left(2(B+iA)\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},-\tan^2(c+dx)\right)+2(A-iB)(\log(\tan(c+dx))+\log(\cos(c+d\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*(A*Cot[c + d*x]^2 + 2*(I*A + B)*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1,
 1/2, -Tan[c + d*x]^2] + 2*(A - I*B)*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]]
)))/(2*d)
```

Maple [A] time = 0.064, size = 101, normalized size = 1.5

$$-iAax-\frac{iA\cot(dx+c)\,a}{d}-\frac{iAac}{d}+\frac{iBa\ln(\sin(dx+c))}{d}-\frac{Aa(\cot(dx+c))^2}{2d}-\frac{Aa\ln(\sin(dx+c))}{d}-aBx-\frac{\cot(dx+}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -I*A*a*x-I/d*A*cot(d*x+c)*a-I/d*A*a*c+I/d*B*a*ln(sin(d*x+c))-1/2*a*A*cot(d*
x+c)^2/d-a*A*ln(sin(d*x+c))/d-a*B*x-1/d*B*cot(d*x+c)*a-1/d*B*a*c
```

Maxima [A] time = 1.70647, size = 113, normalized size = 1.66

$$\frac{2(dx+c)(-iA-B)a+(A-iB)a\log\left(\tan(dx+c)^2+1\right)-2(A-iB)a\log(\tan(dx+c))+\frac{2(-iA-B)a\tan(dx+c)-Aa}{\tan(dx+c)^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/2*(2*(d*x + c)*(-I*A - B)*a + (A - I*B)*a*log(tan(d*x + c)^2 + 1) - 2*(A
- I*B)*a*log(tan(d*x + c)) + (2*(-I*A - B)*a*tan(d*x + c) - A*a)/tan(d*x +
c)^2)/d
```

Fricas [A] time = 1.40163, size = 302, normalized size = 4.44

$$\frac{2(2A-iB)ae^{(2i\,dx+2i\,c)}-2(A-iB)a-\left((A-iB)ae^{(4i\,dx+4i\,c)}-2(A-iB)ae^{(2i\,dx+2i\,c)}+(A-iB)a\right)\log\left(e^{(2i\,dx+2i\,c)}-1\right)}{de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] (2*(2*A - I*B)*a*e^(2*I*d*x + 2*I*c) - 2*(A - I*B)*a - ((A - I*B)*a*e^(4*I*
d*x + 4*I*c) - 2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (A - I*B)*a)*log(e^(2*I*
```

```
d*x + 2*I*c) - 1))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 5.83582, size = 109, normalized size = 1.6

$$\frac{a\left(-A+iB\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{-\frac{(2Aa-2iBa)e^{-4ic}}{d}+\frac{(4Aa-2iBa)e^{-2ic}e^{2idx}}{d}}{e^{4idx}-2e^{-2ic}e^{2idx}+e^{-4ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(-A + I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(2*A*a - 2*I*B*a)*exp(-4
*I*c)/d + (4*A*a - 2*I*B*a)*exp(-2*I*c)*exp(2*I*d*x)/d)/(exp(4*I*d*x) - 2*e
xp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c))
```

Giac [B] time = 1.45869, size = 220, normalized size = 3.24

$$-\frac{Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}-4i\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-4\,Ba\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-16\left(Aa-i\,Ba\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+i\right)+8\,(A}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/8*(A*a*tan(1/2*d*x + 1/2*c)^2 - 4*I*A*a*tan(1/2*d*x + 1/2*c) - 4*B*a*tan
(1/2*d*x + 1/2*c) - 16*(A*a - I*B*a)*log(tan(1/2*d*x + 1/2*c) + I) + 8*(A*a
 - I*B*a)*log(abs(tan(1/2*d*x + 1/2*c))) - (12*A*a*tan(1/2*d*x + 1/2*c)^2 -
 12*I*B*a*tan(1/2*d*x + 1/2*c)^2 - 4*I*A*a*tan(1/2*d*x + 1/2*c) - 4*B*a*tan
(1/2*d*x + 1/2*c) - A*a)/tan(1/2*d*x + 1/2*c)^2)/d
```

3.7 $\int \cot^4(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=89

$$-\frac{a(B+iA)\cot^2(c+dx)}{2d}+\frac{a(A-iB)\cot(c+dx)}{d}-\frac{a(B+iA)\log(\sin(c+dx))}{d}+ax(A-iB)-\frac{aA\cot^3(c+dx)}{3d}$$

```
[Out] a*(A - I*B)*x + (a*(A - I*B)*Cot[c + d*x])/d - (a*(I*A + B)*Cot[c + d*x]^2)
/(2*d) - (a*A*Cot[c + d*x]^3)/(3*d) - (a*(I*A + B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.152381, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3591, 3529, 3531, 3475}

$$-\frac{a(B+iA)\cot^2(c+dx)}{2d}+\frac{a(A-iB)\cot(c+dx)}{d}-\frac{a(B+iA)\log(\sin(c+dx))}{d}+ax(A-iB)-\frac{aA\cot^3(c+dx)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] a*(A - I*B)*x + (a*(A - I*B)*Cot[c + d*x])/d - (a*(I*A + B)*Cot[c + d*x]^2)
/(2*d) - (a*A*Cot[c + d*x]^3)/(3*d) - (a*(I*A + B)*Log[Sin[c + d*x]])/d
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
```

```
b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)}{3d} + \int \cot^3(c+dx)(a(iA+B)-a(A-iB)\,\text{t}$$

$$= -\frac{a(iA+B)\cot^2(c+dx)}{2d} - \frac{aA\cot^3(c+dx)}{3d} + \int \cot^2(c+d$$

$$= \frac{a(A-iB)\cot(c+dx)}{d} - \frac{a(iA+B)\cot^2(c+dx)}{2d} - \frac{aA\cot^3(}{3d}$$

$$= a(A-iB)x + \frac{a(A-iB)\cot(c+dx)}{d} - \frac{a(iA+B)\cot^2(c+dx}{2d}$$

$$= a(A-iB)x + \frac{a(A-iB)\cot(c+dx)}{d} - \frac{a(iA+B)\cot^2(c+dx}{2d}$$

Mathematica [C] time = 0.689976, size = 102, normalized size = 1.15

$$-\frac{a\left(2A\cot^3(c+dx)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},-\tan^2(c+dx)\right)+6iB\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\right.}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*(2*A*Cot[c + d*x]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[c + d*x]^2] +
 (6*I)*B*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1, 1/2, -Tan[c + d*x]^2] + 3*
(I*A + B)*(Cot[c + d*x]^2 + 2*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]]))))/(6
```

```
*d)
```

Maple [A] time = 0.061, size = 129, normalized size = 1.5

$$\frac{-\frac{i}{2}Aa\left(\cot\left(dx+c\right)\right)^{2}}{d}-\frac{iAa\ln\left(\sin\left(dx+c\right)\right)}{d}-iBax-\frac{iB\cot\left(dx+c\right)a}{d}-\frac{iBac}{d}-\frac{Aa\left(\cot\left(dx+c\right)\right)^{3}}{3d}+\frac{Aa\cot\left(dx+c\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2*I/d*A*a*cot(d*x+c)^2-I/d*A*a*ln(sin(d*x+c))-I*B*a*x-I/d*B*cot(d*x+c)*a
-I/d*B*a*c-1/3*a*A*cot(d*x+c)^3/d+a*A*cot(d*x+c)/d+A*x*a+1/d*A*a*c-1/2/d*a*
B*cot(d*x+c)^2-1/d*a*B*ln(sin(d*x+c))
```

Maxima [A] time = 1.67821, size = 140, normalized size = 1.57

$$\frac{6\left(dx+c\right)(A-iB)a-3\left(-iA-B\right)a\log\left(\tan\left(dx+c\right)^{2}+1\right)+6\left(-iA-B\right)a\log\left(\tan\left(dx+c\right)\right)+\frac{(6A-6iB)a\tan(dx+c)^{2}+3(-iA}{\tan(dx+c)}}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/6*(6*(d*x + c)*(A - I*B)*a - 3*(-I*A - B)*a*log(tan(d*x + c)^2 + 1) + 6*(
-I*A - B)*a*log(tan(d*x + c)) + ((6*A - 6*I*B)*a*tan(d*x + c)^2 + 3*(-I*A -
 B)*a*tan(d*x + c) - 2*A*a)/tan(d*x + c)^3)/d
```

Fricas [B] time = 1.43306, size = 471, normalized size = 5.29

$$\frac{(18iA+12B)ae^{(4i\,dx+4i\,c)}+(-18iA-18B)ae^{(2i\,dx+2i\,c)}+(8iA+6B)a+\left((-3iA-3B)ae^{(6i\,dx+6i\,c)}+(9iA+9B)ae^{(4i\,dx+}\right.}{3\left(de^{(6i\,dx+6i\,c)}-3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}-d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/3*((18*I*A + 12*B)*a*e^(4*I*d*x + 4*I*c) + (-18*I*A - 18*B)*a*e^(2*I*d*x
+ 2*I*c) + (8*I*A + 6*B)*a + ((-3*I*A - 3*B)*a*e^(6*I*d*x + 6*I*c) + (9*I*A
 + 9*B)*a*e^(4*I*d*x + 4*I*c) + (-9*I*A - 9*B)*a*e^(2*I*d*x + 2*I*c) + (3*I
*A + 3*B)*a)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(
4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [B] time = 10.1357, size = 156, normalized size = 1.75

$$-\frac{a\left(iA+B\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{\frac{(6iAa+4Ba)e^{-2ic}e^{4idx}}{d}-\frac{(6iAa+6Ba)e^{-4ic}e^{2idx}}{d}+\frac{(8iAa+6Ba)e^{-6ic}}{3d}}{e^{6idx}-3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}-e^{-6ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -a*(I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + ((6*I*A*a + 4*B*a)*exp(-2*
I*c)*exp(4*I*d*x)/d - (6*I*A*a + 6*B*a)*exp(-4*I*c)*exp(2*I*d*x)/d + (8*I*A
*a + 6*B*a)*exp(-6*I*c)/(3*d))/(exp(6*I*d*x) - 3*exp(-2*I*c)*exp(4*I*d*x) +
 3*exp(-4*I*c)*exp(2*I*d*x) - exp(-6*I*c))
```

Giac [B] time = 1.38009, size = 300, normalized size = 3.37

$$Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{3}-3i\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}-3\,Ba\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}-15\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+12i\,Ba\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/24*(A*a*tan(1/2*d*x + 1/2*c)^3 - 3*I*A*a*tan(1/2*d*x + 1/2*c)^2 - 3*B*a*t
an(1/2*d*x + 1/2*c)^2 - 15*A*a*tan(1/2*d*x + 1/2*c) + 12*I*B*a*tan(1/2*d*x
+ 1/2*c) + 48*(I*A*a + B*a)*log(tan(1/2*d*x + 1/2*c) + I) - 24*(I*A*a + B*a
)*log(abs(tan(1/2*d*x + 1/2*c))) - (-44*I*A*a*tan(1/2*d*x + 1/2*c)^3 - 44*B
```

```
*a*tan(1/2*d*x + 1/2*c)^3 - 15*A*a*tan(1/2*d*x + 1/2*c)^2 + 12*I*B*a*tan(1/
2*d*x + 1/2*c)^2 + 3*I*A*a*tan(1/2*d*x + 1/2*c) + 3*B*a*tan(1/2*d*x + 1/2*c
) + A*a)/tan(1/2*d*x + 1/2*c)^3)/d
```

3.8 $\int \cot^5(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=111

$$-\frac{a(B+iA)\cot^3(c+dx)}{3d}+\frac{a(A-iB)\cot^2(c+dx)}{2d}+\frac{a(B+iA)\cot(c+dx)}{d}+\frac{a(A-iB)\log(\sin(c+dx))}{d}+ax(B+iA)-$$

```
[Out] a*(I*A + B)*x + (a*(I*A + B)*Cot[c + d*x])/d + (a*(A - I*B)*Cot[c + d*x]^2)
/(2*d) - (a*(I*A + B)*Cot[c + d*x]^3)/(3*d) - (a*A*Cot[c + d*x]^4)/(4*d) +
(a*(A - I*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.185932, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3591, 3529, 3531, 3475}

$$-\frac{a(B+iA)\cot^3(c+dx)}{3d}+\frac{a(A-iB)\cot^2(c+dx)}{2d}+\frac{a(B+iA)\cot(c+dx)}{d}+\frac{a(A-iB)\log(\sin(c+dx))}{d}+ax(B+iA)-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] a*(I*A + B)*x + (a*(I*A + B)*Cot[c + d*x])/d + (a*(A - I*B)*Cot[c + d*x]^2)
/(2*d) - (a*(I*A + B)*Cot[c + d*x]^3)/(3*d) - (a*A*Cot[c + d*x]^4)/(4*d) +
(a*(A - I*B)*Log[Sin[c + d*x]])/d
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
```

```
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^5(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx &= -\frac{aA\cot^4(c+dx)}{4d}+\int \cot^4(c+dx)(a(iA+B)-a(A-iB)\\ &= -\frac{a(iA+B)\cot^3(c+dx)}{3d}-\frac{aA\cot^4(c+dx)}{4d}+\int \cot^3(c+\\ &= \frac{a(A-iB)\cot^2(c+dx)}{2d}-\frac{a(iA+B)\cot^3(c+dx)}{3d}-\frac{aA\cot\\ &= \frac{a(iA+B)\cot(c+dx)}{d}+\frac{a(A-iB)\cot^2(c+dx)}{2d}-\frac{a(iA+\\ &= a(iA+B)x+\frac{a(iA+B)\cot(c+dx)}{d}+\frac{a(A-iB)\cot^2(c+\\ &= a(iA+B)x+\frac{a(iA+B)\cot(c+dx)}{d}+\frac{a(A-iB)\cot^2(c+\end{aligned}$$

Mathematica [C] time = 0.865551, size = 96, normalized size = 0.86

$$-\frac{a\left(4(B+iA)\cot^3(c+dx)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},-\tan^2(c+dx)\right)-6(A-iB)\cot^2(c+dx)-12(A-iB)(\log}{12d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*(-6*(A - I*B)*Cot[c + d*x]^2 + 3*A*Cot[c + d*x]^4 + 4*(I*A + B)*Cot[c +
 d*x]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[c + d*x]^2] - 12*(A - I*B)*(L
og[Cos[c + d*x]] + Log[Tan[c + d*x]])))/(12*d)
```

Maple [A] time = 0.064, size = 159, normalized size = 1.4

$$\frac{-\frac{i}{3}Aa(\cot(dx+c))^3}{d}+\frac{iAa\cot(dx+c)}{d}+iAax+\frac{iAac}{d}-\frac{\frac{i}{2}Ba(\cot(dx+c))^2}{d}-\frac{iBa\ln(\sin(dx+c))}{d}-\frac{Aa(\cot(dx+c)}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3*I/d*A*a*cot(d*x+c)^3+I/d*A*a*cot(d*x+c)+I*A*a*x+I/d*A*a*c-1/2*I/d*B*a*
cot(d*x+c)^2-I/d*B*a*ln(sin(d*x+c))-1/4*a*A*cot(d*x+c)^4/d+1/2*a*A*cot(d*x+
c)^2/d+a*A*ln(sin(d*x+c))/d-1/3/d*a*B*cot(d*x+c)^3+1/d*B*cot(d*x+c)*a+a*B*x
+1/d*B*a*c
```

Maxima [A] time = 1.53561, size = 159, normalized size = 1.43

$$\frac{12(dx+c)(iA+B)a-6(A-iB)a\log\left(\tan(dx+c)^2+1\right)+12(A-iB)a\log(\tan(dx+c))-\frac{12(-iA-B)a\tan(dx+c)^3-(6A-6i}{t}}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/12*(12*(d*x + c)*(I*A + B)*a - 6*(A - I*B)*a*log(tan(d*x + c)^2 + 1) + 12
*(A - I*B)*a*log(tan(d*x + c)) - (12*(-I*A - B)*a*tan(d*x + c)^3 - (6*A - 6
*I*B)*a*tan(d*x + c)^2 + 4*(I*A + B)*a*tan(d*x + c) + 3*A*a)/tan(d*x + c)^4
)/d
```

Fricas [B] time = 1.47014, size = 589, normalized size = 5.31

$$-\frac{6(4A-3iB)ae^{(6idx+6ic)}-36(A-iB)ae^{(4idx+4ic)}+2(16A-13iB)ae^{(2idx+2ic)}-8(A-iB)a-3\left((A-iB)ae^{(8idx+8ic)}-\right.}{3\left(de^{(8idx+8ic)}-4de^{(6idx+6ic)}+6de^{(4idx+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/3*(6*(4*A - 3*I*B)*a*e^(6*I*d*x + 6*I*c) - 36*(A - I*B)*a*e^(4*I*d*x + 4
*I*c) + 2*(16*A - 13*I*B)*a*e^(2*I*d*x + 2*I*c) - 8*(A - I*B)*a - 3*((A - I
*B)*a*e^(8*I*d*x + 8*I*c) - 4*(A - I*B)*a*e^(6*I*d*x + 6*I*c) + 6*(A - I*B)
*a*e^(4*I*d*x + 4*I*c) - 4*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (A - I*B)*a)*l
og(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*
c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [B] time = 36.6446, size = 204, normalized size = 1.84

$$\frac{a\left(A-iB\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{\frac{(8Aa-8iBa)e^{-8ic}}{3d}-\frac{(8Aa-6iBa)e^{-2ic}e^{6idx}}{d}+\frac{(12Aa-12iBa)e^{-4ic}e^{4idx}}{d}-\frac{(32Aa-26iBa)e^{-6ic}e^{2idx}}{3d}}{e^{8idx}-4e^{-2ic}e^{6idx}+6e^{-4ic}e^{4idx}-4e^{-6ic}e^{2idx}+e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(A - I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + ((8*A*a - 8*I*B*a)*exp(-8*I
*c)/(3*d) - (8*A*a - 6*I*B*a)*exp(-2*I*c)*exp(6*I*d*x)/d + (12*A*a - 12*I*B
*a)*exp(-4*I*c)*exp(4*I*d*x)/d - (32*A*a - 26*I*B*a)*exp(-6*I*c)*exp(2*I*d*
x)/(3*d))/(exp(8*I*d*x) - 4*exp(-2*I*c)*exp(6*I*d*x) + 6*exp(-4*I*c)*exp(4*
I*d*x) - 4*exp(-6*I*c)*exp(2*I*d*x) + exp(-8*I*c))
```

Giac [B] time = 1.54844, size = 382, normalized size = 3.44

$$-\frac{3\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{4}-8i\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{3}-8\,Ba\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{3}-36\,Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}+24i\,Ba\tan\left(\frac{1}{2}\,d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/192*(3*A*a*tan(1/2*d*x + 1/2*c)^4 - 8*I*A*a*tan(1/2*d*x + 1/2*c)^3 - 8*B
*a*tan(1/2*d*x + 1/2*c)^3 - 36*A*a*tan(1/2*d*x + 1/2*c)^2 + 24*I*B*a*tan(1/
2*d*x + 1/2*c)^2 + 120*I*A*a*tan(1/2*d*x + 1/2*c) + 120*B*a*tan(1/2*d*x + 1
/2*c) + 384*(A*a - I*B*a)*log(tan(1/2*d*x + 1/2*c) + I) - 192*(A*a - I*B*a)
*log(abs(tan(1/2*d*x + 1/2*c))) + (400*A*a*tan(1/2*d*x + 1/2*c)^4 - 400*I*B
*a*tan(1/2*d*x + 1/2*c)^4 - 120*I*A*a*tan(1/2*d*x + 1/2*c)^3 - 120*B*a*tan(
1/2*d*x + 1/2*c)^3 - 36*A*a*tan(1/2*d*x + 1/2*c)^2 + 24*I*B*a*tan(1/2*d*x +
 1/2*c)^2 + 8*I*A*a*tan(1/2*d*x + 1/2*c) + 8*B*a*tan(1/2*d*x + 1/2*c) + 3*A
*a)/tan(1/2*d*x + 1/2*c)^4)/d
```

3.9 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=141

$$-\frac{a^2(4A-5iB)\tan^3(c+dx)}{12d}+\frac{a^2(B+iA)\tan^2(c+dx)}{d}+\frac{2a^2(A-iB)\tan(c+dx)}{d}+\frac{2a^2(B+iA)\log(\cos(c+dx))}{d}-2a$$

```
[Out] -2*a^2*(A - I*B)*x + (2*a^2*(I*A + B)*Log[Cos[c + d*x]])/d + (2*a^2*(A - I*
B)*Tan[c + d*x])/d + (a^2*(I*A + B)*Tan[c + d*x]^2)/d - (a^2*(4*A - (5*I)*B
)*Tan[c + d*x]^3)/(12*d) + ((I/4)*B*Tan[c + d*x]^3*(a^2 + I*a^2*Tan[c + d*x
]))/d
```

Rubi [A] time = 0.252153, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3594, 3592, 3528, 3525, 3475}

$$-\frac{a^2(4A-5iB)\tan^3(c+dx)}{12d}+\frac{a^2(B+iA)\tan^2(c+dx)}{d}+\frac{2a^2(A-iB)\tan(c+dx)}{d}+\frac{2a^2(B+iA)\log(\cos(c+dx))}{d}-2a$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```



```
[Out] -2*a^2*(A - I*B)*x + (2*a^2*(I*A + B)*Log[Cos[c + d*x]])/d + (2*a^2*(A - I*
B)*Tan[c + d*x])/d + (a^2*(I*A + B)*Tan[c + d*x]^2)/d - (a^2*(4*A - (5*I)*B
)*Tan[c + d*x]^3)/(12*d) + ((I/4)*B*Tan[c + d*x]^3*(a^2 + I*a^2*Tan[c + d*x
]))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{iB\tan^3(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{4d}+\frac{1}{4}\int \tan^2(c+dx)$$

$$= -\frac{a^2(4A-5iB)\tan^3(c+dx)}{12d}+\frac{iB\tan^3(c+dx)\left(a^2+ia^2\tan\right.}{4d}$$

$$= \frac{a^2(iA+B)\tan^2(c+dx)}{d}-\frac{a^2(4A-5iB)\tan^3(c+dx)}{12d}+\frac{iB}{}$$

$$= -2a^2(A-iB)x+\frac{2a^2(A-iB)\tan(c+dx)}{d}+\frac{a^2(iA+B)\tan}{d}$$

$$= -2a^2(A-iB)x+\frac{2a^2(iA+B)\log(\cos(c+dx))}{d}+\frac{2a^2(A-}{}$$

Mathematica [B] time = 6.32311, size = 305, normalized size = 2.16

$$\frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(-4dx(A-iB)(\cos(2c)-i\sin(2c))\cos^3(c+dx)+(B+iA)(\cos(2c)-i\sin(2c)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-4*(A - I*B)*d*x*Cos[c + d*x]^3*(Cos[2*c] - I*Sin[2*c]) + 2*(A - I*B)*Arc
Tan[Tan[3*c + d*x]]*Cos[c + d*x]^3*(Cos[2*c] - I*Sin[2*c]) + (I*A + B)*Cos[
c + d*x]^3*Log[Cos[c + d*x]^2]*(Cos[2*c] - I*Sin[2*c]) - (B*Sec[c + d*x]*(C
os[2*c] - I*Sin[2*c]))/4 + ((7*A - (8*I)*B)*Cos[c + d*x]^2*Sec[c]*(Cos[2*c]
 - I*Sin[2*c])*Sin[d*x])/3 + ((A - (2*I)*B)*Cos[c]*Sin[d*x]*(I + Tan[c])^2)
/3 - (Cos[c + d*x]*(Cos[2*c] - I*Sin[2*c])*((-6*I)*A - 9*B + 2*(A - (2*I)*B
)*Tan[c]))/6)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] +
 I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.006, size = 193, normalized size = 1.4

$$\frac{\frac{2i}{3}a^2B\left(\tan\left(dx+c\right)\right)^3}{d}-\frac{a^2B\left(\tan\left(dx+c\right)\right)^4}{4d}+\frac{ia^2A\left(\tan\left(dx+c\right)\right)^2}{d}-\frac{a^2A\left(\tan\left(dx+c\right)\right)^3}{3d}-\frac{2\,ia^2B\tan\left(dx+c\right)}{d}+\frac{a^2B\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/3*I/d*a^2*B*tan(d*x+c)^3-1/4/d*a^2*B*tan(d*x+c)^4+I/d*a^2*A*tan(d*x+c)^2-
1/3/d*a^2*A*tan(d*x+c)^3-2*I/d*a^2*B*tan(d*x+c)+1/d*a^2*B*tan(d*x+c)^2+2/d*
a^2*A*tan(d*x+c)-I/d*a^2*A*ln(1+tan(d*x+c)^2)-1/d*a^2*B*ln(1+tan(d*x+c)^2)+
2*I/d*a^2*B*arctan(tan(d*x+c))-2/d*a^2*A*arctan(tan(d*x+c))
```

Maxima [A] time = 1.61527, size = 158, normalized size = 1.12

$$-\frac{3\,Ba^2\tan\left(dx+c\right)^4+\left(4\,A-8i\,B\right)a^2\tan\left(dx+c\right)^3+12\left(-i\,A-B\right)a^2\tan\left(dx+c\right)^2+12\left(dx+c\right)\left(2\,A-2i\,B\right)a^2-12\left(-i\,\right.}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/12*(3*B*a^2*tan(d*x + c)^4 + (4*A - 8*I*B)*a^2*tan(d*x + c)^3 + 12*(-I*A
 - B)*a^2*tan(d*x + c)^2 + 12*(d*x + c)*(2*A - 2*I*B)*a^2 - 12*(-I*A - B)*a
^2*log(tan(d*x + c)^2 + 1) - (24*A - 24*I*B)*a^2*tan(d*x + c))/d
```

Fricas [A] time = 1.38267, size = 643, normalized size = 4.56

$$\frac{(30i\,A + 42\,B)a^2e^{(6i\,dx+6i\,c)} + (66i\,A + 72\,B)a^2e^{(4i\,dx+4i\,c)} + (50i\,A + 58\,B)a^2e^{(2i\,dx+2i\,c)} + (14i\,A + 16\,B)a^2 + \left((6i\,A + 6\,B)a^2\right.}{3\left(de^{(8i\,dx+8i\,c)} + 4\,de^{(6i\,dx+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/3*((30*I*A + 42*B)*a^2*e^(6*I*d*x + 6*I*c) + (66*I*A + 72*B)*a^2*e^(4*I*d
*x + 4*I*c) + (50*I*A + 58*B)*a^2*e^(2*I*d*x + 2*I*c) + (14*I*A + 16*B)*a^2
 + ((6*I*A + 6*B)*a^2*e^(8*I*d*x + 8*I*c) + (24*I*A + 24*B)*a^2*e^(6*I*d*x
+ 6*I*c) + (36*I*A + 36*B)*a^2*e^(4*I*d*x + 4*I*c) + (24*I*A + 24*B)*a^2*e^
(2*I*d*x + 2*I*c) + (6*I*A + 6*B)*a^2)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(
8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*
e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 42.0235, size = 221, normalized size = 1.57

$$\frac{2a^2\,(iA + B)\log\left(e^{2idx} + e^{-2ic}\right)}{d} + \frac{\frac{\left(10iAa^2+14Ba^2\right)e^{-2ic}e^{6idx}}{d} + \frac{\left(14iAa^2+16Ba^2\right)e^{-8ic}}{3d} + \frac{\left(22iAa^2+24Ba^2\right)e^{-4ic}e^{4idx}}{d} + \frac{\left(50iAa^2+58Ba^2\right)e^{-6ic}e^{2idx}}{3d}}{e^{8idx} + 4e^{-2ic}e^{6idx} + 6e^{-4ic}e^{4idx} + 4e^{-6ic}e^{2idx} + e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*a**2*(I*A + B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + ((10*I*A*a**2 + 14*B*a
**2)*exp(-2*I*c)*exp(6*I*d*x)/d + (14*I*A*a**2 + 16*B*a**2)*exp(-8*I*c)/(3*
d) + (22*I*A*a**2 + 24*B*a**2)*exp(-4*I*c)*exp(4*I*d*x)/d + (50*I*A*a**2 +
58*B*a**2)*exp(-6*I*c)*exp(2*I*d*x)/(3*d))/(exp(8*I*d*x) + 4*exp(-2*I*c)*ex
```

```
p(6*I*d*x) + 6*exp(-4*I*c)*exp(4*I*d*x) + 4*exp(-6*I*c)*exp(2*I*d*x) + exp(
-8*I*c))
```

Giac [B] time = 1.70968, size = 551, normalized size = 3.91

$$\frac{6i\,Aa^2e^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+6\,Ba^2e^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+24i\,Aa^2e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+24\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/3*(6*I*A*a^2*e^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 6*B*a^2*e
^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 24*I*A*a^2*e^(6*I*d*x + 6
*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 24*B*a^2*e^(6*I*d*x + 6*I*c)*log(e^(2*
I*d*x + 2*I*c) + 1) + 36*I*A*a^2*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c
) + 1) + 36*B*a^2*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 24*I*A
*a^2*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 24*B*a^2*e^(2*I*d*x
 + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 30*I*A*a^2*e^(6*I*d*x + 6*I*c) + 4
2*B*a^2*e^(6*I*d*x + 6*I*c) + 66*I*A*a^2*e^(4*I*d*x + 4*I*c) + 72*B*a^2*e^(
4*I*d*x + 4*I*c) + 50*I*A*a^2*e^(2*I*d*x + 2*I*c) + 58*B*a^2*e^(2*I*d*x + 2
*I*c) + 6*I*A*a^2*log(e^(2*I*d*x + 2*I*c) + 1) + 6*B*a^2*log(e^(2*I*d*x + 2
*I*c) + 1) + 14*I*A*a^2 + 16*B*a^2)/(d*e^(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x
 + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c) + d)
```

3.10 $\int \tan(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=107

$$\frac{a^2(B+iA)\tan(c+dx)}{d}-\frac{2a^2(A-iB)\log(\cos(c+dx))}{d}-2a^2x(B+iA)+\frac{A(a+ia\tan(c+dx))^2}{2d}-\frac{iB(a+ia\tan(c+dx)}{3ad}$$

```
[Out] -2*a^2*(I*A + B)*x - (2*a^2*(A - I*B)*Log[Cos[c + d*x]])/d + (a^2*(I*A + B)
*Tan[c + d*x])/d + (A*(a + I*a*Tan[c + d*x])^2)/(2*d) - ((I/3)*B*(a + I*a*T
an[c + d*x])^3)/(a*d)
```

Rubi [A] time = 0.115465, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3592, 3527, 3477, 3475}

$$\frac{a^2(B+iA)\tan(c+dx)}{d}-\frac{2a^2(A-iB)\log(\cos(c+dx))}{d}-2a^2x(B+iA)+\frac{A(a+ia\tan(c+dx))^2}{2d}-\frac{iB(a+ia\tan(c+dx)}{3ad}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -2*a^2*(I*A + B)*x - (2*a^2*(A - I*B)*Log[Cos[c + d*x]])/d + (a^2*(I*A + B)
*Tan[c + d*x])/d + (A*(a + I*a*Tan[c + d*x])^2)/(2*d) - ((I/3)*B*(a + I*a*T
an[c + d*x])^3)/(a*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && !LtQ[m, 0]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{iB(a+ia\tan(c+dx))^3}{3ad} + \int (a+ia\tan(c+dx))^2(-B+$$

$$= \frac{A(a+ia\tan(c+dx))^2}{2d} - \frac{iB(a+ia\tan(c+dx))^3}{3ad} - (iA+$$

$$= -2a^2(iA+B)x + \frac{a^2(iA+B)\tan(c+dx)}{d} + \frac{A(a+ia\tan(}{2d}$$

$$= -2a^2(iA+B)x - \frac{2a^2(A-iB)\log(\cos(c+dx))}{d} + \frac{a^2(iA+}{}$$

Mathematica [B] time = 3.91559, size = 273, normalized size = 2.55

$$\frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\Big((A-iB)\cos^3(c+dx)(-4dx\sin(2c)-4idx\cos(2c))-(A-iB)(\cos(2c)-i\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((2*(I*A + B)*ArcTan[Tan[3*c + d*x]]*Cos[c + d*x]^3*(Cos[2*c] - I*Sin[2*c])
 - (A - I*B)*Cos[c + d*x]^3*Log[Cos[c + d*x]^2]*(Cos[2*c] - I*Sin[2*c]) + (
A - I*B)*Cos[c + d*x]^3*((-4*I)*d*x*Cos[2*c] - 4*d*x*Sin[2*c]) + ((6*A - (7
*I)*B)*Cos[c + d*x]^2*Sec[c]*(I*Cos[2*c] + Sin[2*c])*Sin[d*x])/3 + (B*Cos[c
]*Sin[d*x]*(I + Tan[c])^2)/3 - (Cos[c + d*x]*(Cos[2*c] - I*Sin[2*c])*(3*A -
 (6*I)*B + 2*B*Tan[c]))/6)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/(
d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.006, size = 158, normalized size = 1.5

$$\frac{ia^2B(\tan(dx+c))^2}{d}-\frac{a^2B(\tan(dx+c))^3}{3d}+\frac{2ia^2A\tan(dx+c)}{d}-\frac{a^2A(\tan(dx+c))^2}{2d}+2\frac{a^2B\tan(dx+c)}{d}-\frac{ia^2B\ln\left(1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] I/d*a^2*B*tan(d*x+c)^2-1/3/d*a^2*B*tan(d*x+c)^3+2*I/d*a^2*A*tan(d*x+c)-1/2/
d*a^2*A*tan(d*x+c)^2+2/d*a^2*B*tan(d*x+c)-I/d*a^2*B*ln(1+tan(d*x+c)^2)+1/d*
a^2*A*ln(1+tan(d*x+c)^2)-2*I/d*a^2*A*arctan(tan(d*x+c))-2/d*a^2*B*arctan(ta
n(d*x+c))
```

Maxima [A] time = 1.70474, size = 126, normalized size = 1.18

$$-\frac{2Ba^2\tan(dx+c)^3+(3A-6iB)a^2\tan(dx+c)^2+12(dx+c)(iA+B)a^2-6(A-iB)a^2\log\left(\tan(dx+c)^2+1\right)+12(\cdot}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/6*(2*B*a^2*tan(d*x + c)^3 + (3*A - 6*I*B)*a^2*tan(d*x + c)^2 + 12*(d*x +
 c)*(I*A + B)*a^2 - 6*(A - I*B)*a^2*log(tan(d*x + c)^2 + 1) + 12*(-I*A - B)
*a^2*tan(d*x + c))/d
```

Fricas [A] time = 1.32, size = 474, normalized size = 4.43

$$-\frac{2\left(3(3A-5iB)a^2e^{(4idx+4ic)}+3(5A-6iB)a^2e^{(2idx+2ic)}+(6A-7iB)a^2+3\left((A-iB)a^2e^{(6idx+6ic)}+3(A-iB)a^2e^{(4idx\cdot}\right.\right.}{3\left(de^{(6idx+6ic)}+3de^{(4idx+4ic)}+3de^{(2idx+2ic)}+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -2/3*(3*(3*A - 5*I*B)*a^2*e^(4*I*d*x + 4*I*c) + 3*(5*A - 6*I*B)*a^2*e^(2*I*
d*x + 2*I*c) + (6*A - 7*I*B)*a^2 + 3*((A - I*B)*a^2*e^(6*I*d*x + 6*I*c) + 3
*(A - I*B)*a^2*e^(4*I*d*x + 4*I*c) + 3*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) +
(A - I*B)*a^2)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e
^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 15.407, size = 172, normalized size = 1.61

$$\frac{2a^2(-A+iB)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{-\frac{(6Aa^2-10iBa^2)e^{-2ic}e^{4idx}}{d}-\frac{(10Aa^2-12iBa^2)e^{-4ic}e^{2idx}}{d}-\frac{(12Aa^2-14iBa^2)e^{-6ic}}{3d}}{e^{6idx}+3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}+e^{-6ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*a**2*(-A + I*B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + (-(6*A*a**2 - 10*I*B*
a**2)*exp(-2*I*c)*exp(4*I*d*x)/d - (10*A*a**2 - 12*I*B*a**2)*exp(-4*I*c)*ex
p(2*I*d*x)/d - (12*A*a**2 - 14*I*B*a**2)*exp(-6*I*c)/(3*d))/(exp(6*I*d*x) +
 3*exp(-2*I*c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*x) + exp(-6*I*c))
```

Giac [B] time = 1.47892, size = 421, normalized size = 3.93

$$-\frac{6\,Aa^2e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-6i\,Ba^2e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+18\,Aa^2e^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-18i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/3*(6*A*a^2*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 6*I*B*a^2*
e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 18*A*a^2*e^(4*I*d*x + 4*
I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 18*I*B*a^2*e^(4*I*d*x + 4*I*c)*log(e^(2
*I*d*x + 2*I*c) + 1) + 18*A*a^2*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c)
 + 1) - 18*I*B*a^2*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 18*A*
a^2*e^(4*I*d*x + 4*I*c) - 30*I*B*a^2*e^(4*I*d*x + 4*I*c) + 30*A*a^2*e^(2*I*
d*x + 2*I*c) - 36*I*B*a^2*e^(2*I*d*x + 2*I*c) + 6*A*a^2*log(e^(2*I*d*x + 2*
I*c) + 1) - 6*I*B*a^2*log(e^(2*I*d*x + 2*I*c) + 1) + 12*A*a^2 - 14*I*B*a^2)
/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c)
```

```
+ d)
```

3.11 $\int (a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=80

$$-\frac{a^2(A-iB)\tan(c+dx)}{d}-\frac{2a^2(B+iA)\log(\cos(c+dx))}{d}+2a^2x(A-iB)+\frac{B(a+ia\tan(c+dx))^2}{2d}$$

```
[Out] 2*a^2*(A - I*B)*x - (2*a^2*(I*A + B)*Log[Cos[c + d*x]])/d - (a^2*(A - I*B)*
Tan[c + d*x])/d + (B*(a + I*a*Tan[c + d*x])^2)/(2*d)
```

Rubi [A] time = 0.0691261, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3527, 3477, 3475}

$$-\frac{a^2(A-iB)\tan(c+dx)}{d}-\frac{2a^2(B+iA)\log(\cos(c+dx))}{d}+2a^2x(A-iB)+\frac{B(a+ia\tan(c+dx))^2}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] 2*a^2*(A - I*B)*x - (2*a^2*(I*A + B)*Log[Cos[c + d*x]])/d - (a^2*(A - I*B)*
Tan[c + d*x])/d + (B*(a + I*a*Tan[c + d*x])^2)/(2*d)
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{B(a+ia\tan(c+dx))^2}{2d} - (-A+iB)\int (a+ia\tan(c+dx))^2\,dx$$
$$= 2a^2(A-iB)x - \frac{a^2(A-iB)\tan(c+dx)}{d} + \frac{B(a+ia\tan(c+dx))^2}{2d} + \Big(2a^2$$
$$= 2a^2(A-iB)x - \frac{2a^2(iA+B)\log(\cos(c+dx))}{d} - \frac{a^2(A-iB)\tan(c+dx)}{d}$$

Mathematica [B] time = 2.22004, size = 263, normalized size = 3.29

$$\frac{a^2\sec(c)\sec^2(c+dx)(\cos(2dx)+i\sin(2dx))\Big(-8(A-iB)\cos(c)\cos^2(c+dx)\tan^{-1}(\tan(3c+dx)) - i\Big((B+iA)\cos(c+2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*Sec[c]*Sec[c + d*x]^2*(Cos[2*d*x] + I*Sin[2*d*x])*(-8*(A - I*B)*ArcTan
[Tan[3*c + d*x]]*Cos[c]*Cos[c + d*x]^2 - I*((4*I)*A*d*x*Cos[3*c + 2*d*x] +
4*B*d*x*Cos[3*c + 2*d*x] + (I*A + B)*Cos[c + 2*d*x]*(4*d*x - I*Log[Cos[c +
d*x]^2]) + A*Cos[3*c + 2*d*x]*Log[Cos[c + d*x]^2] - I*B*Cos[3*c + 2*d*x]*Lo
g[Cos[c + d*x]^2] + 2*Cos[c]*((-I)*B + (4*I)*A*d*x + 4*B*d*x + (A - I*B)*Lo
g[Cos[c + d*x]^2]) + (2*I)*A*Sin[c] + 4*B*Sin[c] - (2*I)*A*Sin[c + 2*d*x] -
 4*B*Sin[c + 2*d*x])))/(4*d*(Cos[d*x] + I*Sin[d*x])^2)
```

Maple [A] time = 0.006, size = 123, normalized size = 1.5

$$-\frac{a^2B(\tan(dx+c))^2}{2d} - \frac{a^2A\tan(dx+c)}{d} + \frac{2ia^2B\tan(dx+c)}{d} + \frac{ia^2A\ln\Big(1+(\tan(dx+c))^2\Big)}{d} + \frac{a^2B\ln\Big(1+(\tan(dx+c}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*a^2*B*tan(d*x+c)^2-1/d*a^2*A*tan(d*x+c)+2*I/d*a^2*B*tan(d*x+c)+I/d*a
^2*A*ln(1+tan(d*x+c)^2)+1/d*a^2*B*ln(1+tan(d*x+c)^2)-2*I/d*a^2*B*arctan(tan
(d*x+c))+2/d*a^2*A*arctan(tan(d*x+c))
```

Maxima [A] time = 1.54547, size = 100, normalized size = 1.25

$$-\frac{Ba^2\tan(dx+c)^2-2(dx+c)(2A-2iB)a^2-2(iA+B)a^2\log\left(\tan(dx+c)^2+1\right)+(2A-4iB)a^2\tan(dx+c)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*(B*a^2*tan(d*x + c)^2 - 2*(d*x + c)*(2*A - 2*I*B)*a^2 - 2*(I*A + B)*a^
2*log(tan(d*x + c)^2 + 1) + (2*A - 4*I*B)*a^2*tan(d*x + c))/d
```

Fricas [A] time = 1.4749, size = 339, normalized size = 4.24

$$\frac{(-2iA-6B)a^2e^{(2idx+2ic)}+(-2iA-4B)a^2+\left((-2iA-2B)a^2e^{(4idx+4ic)}+(-4iA-4B)a^2e^{(2idx+2ic)}+(-2iA-2B)a^2\right)}{de^{(4idx+4ic)}+2de^{(2idx+2ic)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] ((-2*I*A - 6*B)*a^2*e^(2*I*d*x + 2*I*c) + (-2*I*A - 4*B)*a^2 + ((-2*I*A - 2
*B)*a^2*e^(4*I*d*x + 4*I*c) + (-4*I*A - 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (-2*
I*A - 2*B)*a^2)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(4*I*d*x + 4*I*c) + 2*d*
e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 7.08905, size = 121, normalized size = 1.51

$$-\frac{2a^2(iA+B)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{-\frac{\left(2iAa^2+4Ba^2\right)e^{-4ic}}{d}-\frac{\left(2iAa^2+6Ba^2\right)e^{-2ic}e^{2idx}}{d}}{e^{4idx}+2e^{-2ic}e^{2idx}+e^{-4ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*a**2*(I*A + B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + (-(2*I*A*a**2 + 4*B*a
**2)*exp(-4*I*c)/d - (2*I*A*a**2 + 6*B*a**2)*exp(-2*I*c)*exp(2*I*d*x)/d)/(e
```

```
xp(4*I*d*x) + 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c))
```

Giac [B] time = 1.3872, size = 290, normalized size = 3.62

$$\frac{-2i\,Aa^2e^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-2\,Ba^2e^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-4i\,Aa^2e^{(2i\,dx+2i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-4\,Ba^2e}{de^{(4i\,dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] (-2*I*A*a^2*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 2*B*a^2*e^(4
*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 4*I*A*a^2*e^(2*I*d*x + 2*I*c
)*log(e^(2*I*d*x + 2*I*c) + 1) - 4*B*a^2*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x
 + 2*I*c) + 1) - 2*I*A*a^2*e^(2*I*d*x + 2*I*c) - 6*B*a^2*e^(2*I*d*x + 2*I*c
) - 2*I*A*a^2*log(e^(2*I*d*x + 2*I*c) + 1) - 2*B*a^2*log(e^(2*I*d*x + 2*I*c
) + 1) - 2*I*A*a^2 - 4*B*a^2)/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I
*c) + d)
```

3.12 $\int \cot(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=75

$$\frac{a^2(A-2iB)\log(\cos(c+dx))}{d}+2a^2x(B+iA)+\frac{a^2A\log(\sin(c+dx))}{d}+\frac{iB\left(a^2+ia^2\tan(c+dx)\right)}{d}$$

```
[Out] 2*a^2*(I*A + B)*x + (a^2*(A - (2*I)*B)*Log[Cos[c + d*x]])/d + (a^2*A*Log[Si
n[c + d*x]])/d + (I*B*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rubi [A] time = 0.158676, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3594, 3589, 3475, 3531}

$$\frac{a^2(A-2iB)\log(\cos(c+dx))}{d}+2a^2x(B+iA)+\frac{a^2A\log(\sin(c+dx))}{d}+\frac{iB\left(a^2+ia^2\tan(c+dx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] 2*a^2*(I*A + B)*x + (a^2*(A - (2*I)*B)*Log[Cos[c + d*x]])/d + (a^2*A*Log[Si
n[c + d*x]])/d + (I*B*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
```

```
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{iB\left(a^2+ia^2\tan(c+dx)\right)}{d} + \int \cot(c+dx)(a+ia\tan(c+dx$$

$$= \frac{iB\left(a^2+ia^2\tan(c+dx)\right)}{d} - \left(a^2(A-2iB)\right)\int \tan(c+dx)\,dx$$

$$= 2a^2(iA+B)x + \frac{a^2(A-2iB)\log(\cos(c+dx))}{d} + \frac{iB\left(a^2+ia^2\right.}{}$$

$$= 2a^2(iA+B)x + \frac{a^2(A-2iB)\log(\cos(c+dx))}{d} + \frac{a^2A\log(\sin}{d}$$

Mathematica [B] time = 2.70705, size = 201, normalized size = 2.68

$$\frac{a^2(\cos(2dx)+i\sin(2dx))(A+B\tan(c+dx))\left(\sec(c)\left(\cos(dx)\left((A-2iB)\log\left(\cos^2(c+dx)\right)+8dx(B+iA)+A\log\left(\sin^2\right.\right.\right.\right.}{4d(\cos(dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*((-8*I)*(A - I*B)*ArcTan[Tan[3*c + d*x]]*Cos[c + d*x] + Sec[c]*(Cos[d*
x]*(8*(I*A + B)*d*x + (A - (2*I)*B)*Log[Cos[c + d*x]^2] + A*Log[Sin[c + d*x
]^2]) + Cos[2*c + d*x]*(8*(I*A + B)*d*x + (A - (2*I)*B)*Log[Cos[c + d*x]^2]
 + A*Log[Sin[c + d*x]^2]) - 4*B*Sin[d*x]))*(Cos[2*d*x] + I*Sin[2*d*x])*(A +
```

```
 B*Tan[c + d*x]))/(4*d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c
+ d*x]))
```

Maple [A] time = 0.06, size = 100, normalized size = 1.3

$$2\,iAa^2x+\frac{2\,iAa^2c}{d}-\frac{2\,iBa^2\ln\left(\cos\left(dx+c\right)\right)}{d}+2\,a^2Bx+\frac{a^2A\ln\left(\cos\left(dx+c\right)\right)}{d}+\frac{a^2A\ln\left(\sin\left(dx+c\right)\right)}{d}-\frac{a^2B\tan\left(dx+c\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*I*A*a^2*x+2*I/d*A*a^2*c-2*I/d*B*a^2*ln(cos(d*x+c))+2*a^2*B*x+1/d*a^2*A*ln
(cos(d*x+c))+a^2*A*ln(sin(d*x+c))/d-1/d*a^2*B*tan(d*x+c)+2/d*B*a^2*c
```

Maxima [A] time = 1.71502, size = 90, normalized size = 1.2

$$-\frac{2\,(dx+c)(-i\,A-B)a^2+(A-i\,B)a^2\log\left(\tan\left(dx+c\right)^2+1\right)-Aa^2\log\left(\tan\left(dx+c\right)\right)+Ba^2\tan\left(dx+c\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -(2*(d*x + c)*(-I*A - B)*a^2 + (A - I*B)*a^2*log(tan(d*x + c)^2 + 1) - A*a^
2*log(tan(d*x + c)) + B*a^2*tan(d*x + c))/d
```

Fricas [A] time = 1.4481, size = 265, normalized size = 3.53

$$\frac{-2i\,Ba^2+\left((A-2i\,B)a^2e^{(2i\,dx+2i\,c)}+(A-2i\,B)a^2\right)\log\left(e^{(2i\,dx+2i\,c)}+1\right)+\left(Aa^2e^{(2i\,dx+2i\,c)}+Aa^2\right)\log\left(e^{(2i\,dx+2i\,c)}-1\right)}{de^{(2i\,dx+2i\,c)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] (-2*I*B*a^2 + ((A - 2*I*B)*a^2*e^(2*I*d*x + 2*I*c) + (A - 2*I*B)*a^2)*log(e
^(2*I*d*x + 2*I*c) + 1) + (A*a^2*e^(2*I*d*x + 2*I*c) + A*a^2)*log(e^(2*I*d*
x + 2*I*c) - 1))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 4.31611, size = 119, normalized size = 1.59

$$-\frac{2iBa^2e^{-2ic}}{d\left(e^{2idx}+e^{-2ic}\right)}+\operatorname{RootSum}\left(z^2d^2+z\left(-2Aa^2d+2iBa^2d\right)+A^2a^4-2iABa^4,\left(i\mapsto i\log\left(\frac{iide^{-2ic}}{Ba^2}+e^{2idx}-\frac{(iA+B)e^{-2i}}{B}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I*B*a**2*exp(-2*I*c)/(d*(exp(2*I*d*x) + exp(-2*I*c))) + RootSum(_z**2*d*
*2 + _z*(-2*A*a**2*d + 2*I*B*a**2*d) + A**2*a**4 - 2*I*A*B*a**4, Lambda(_i,
 _i*log(_i*I*d*exp(-2*I*c)/(B*a**2) + exp(2*I*d*x) - (I*A + B)*exp(-2*I*c)/
B)))
```

Giac [B] time = 1.48997, size = 240, normalized size = 3.2

$$\frac{Aa^2\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)\right|\right)-2\left(2Aa^2-2iBa^2\right)\log\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+i\right)+\left(Aa^2-2iBa^2\right)\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+1\right|\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] (A*a^2*log(abs(tan(1/2*d*x + 1/2*c))) - 2*(2*A*a^2 - 2*I*B*a^2)*log(tan(1/2
*d*x + 1/2*c) + I) + (A*a^2 - 2*I*B*a^2)*log(abs(tan(1/2*d*x + 1/2*c) + 1))
 + (A*a^2 - 2*I*B*a^2)*log(abs(tan(1/2*d*x + 1/2*c) - 1)) - (A*a^2*tan(1/2*
d*x + 1/2*c)^2 - 2*I*B*a^2*tan(1/2*d*x + 1/2*c)^2 - 2*B*a^2*tan(1/2*d*x + 1
/2*c) - A*a^2 + 2*I*B*a^2)/(tan(1/2*d*x + 1/2*c)^2 - 1))/d
```

3.13 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=79

$$\frac{a^2(B+2iA)\log(\sin(c+dx))}{d}-2a^2x(A-iB)-\frac{A\cot(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{d}+\frac{a^2B\log(\cos(c+dx))}{d}$$

```
[Out] -2*a^2*(A - I*B)*x + (a^2*B*Log[Cos[c + d*x]])/d + (a^2*((2*I)*A + B)*Log[S
in[c + d*x]])/d - (A*Cot[c + d*x]*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rubi [A] time = 0.177857, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3593, 3589, 3475, 3531}

$$\frac{a^2(B+2iA)\log(\sin(c+dx))}{d}-2a^2x(A-iB)-\frac{A\cot(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{d}+\frac{a^2B\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -2*a^2*(A - I*B)*x + (a^2*B*Log[Cos[c + d*x]])/d + (a^2*((2*I)*A + B)*Log[S
in[c + d*x]])/d - (A*Cot[c + d*x]*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
```

```
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\begin{aligned}\int \cot^2(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx &= -\frac{A\cot(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{d}+\int \cot(c+dx)(a+\\ &= -\frac{A\cot(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{d}-\left(a^2B\right)\int \tan(c+\\ &= -2a^2(A-iB)x+\frac{a^2B\log(\cos(c+dx))}{d}-\frac{A\cot(c+dx)\left(a^2\right.}{}\\ &= -2a^2(A-iB)x+\frac{a^2B\log(\cos(c+dx))}{d}+\frac{a^2(2iA+B)\log(\mathrm{s}}{d}\end{aligned}$$

Mathematica [B] time = 3.08541, size = 202, normalized size = 2.56

$$\frac{a^2(\cos(2dx)+i\sin(2dx))(A\cot(c+dx)+B)\left(8(A-iB)\sin(c+dx)\tan^{-1}(\tan(3c+dx))+\csc(c)\left(\cos(2c+dx)\left((-B-2\right.\right.\right.}{4d(\cos(dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*(B + A*Cot[c + d*x])*(Cos[2*d*x] + I*Sin[2*d*x])*(Csc[c]*(Cos[2*c + d*
x]*(8*(A - I*B)*d*x - B*Log[Cos[c + d*x]^2] + ((-2*I)*A - B)*Log[Sin[c + d*
x]^2]) + Cos[d*x]*(-8*(A - I*B)*d*x + B*Log[Cos[c + d*x]^2] + ((2*I)*A + B)
*Log[Sin[c + d*x]^2]) + 4*A*Sin[d*x]) + 8*(A - I*B)*ArcTan[Tan[3*c + d*x]]*
```

```
Sin[c + d*x]))/(4*d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d
*x]))
```

Maple [A] time = 0.06, size = 100, normalized size = 1.3

$$2\,iBa^{2}x+\frac{2\,iAa^{2}\ln\left(\sin\left(dx+c\right)\right)}{d}-2\,a^{2}Ax+\frac{2\,iBa^{2}c}{d}-\frac{a^{2}A\cot\left(dx+c\right)}{d}-2\,\frac{Aa^{2}c}{d}+\frac{a^{2}B\ln\left(\cos\left(dx+c\right)\right)}{d}+\frac{a^{2}B\ln\left(\sin\left(dx+c\right)\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*I*B*a^2*x+2*I/d*A*a^2*ln(sin(d*x+c))-2*a^2*A*x+2*I/d*B*a^2*c-a^2*A*cot(d*
x+c)/d-2/d*A*a^2*c+a^2*B*ln(cos(d*x+c))/d+1/d*a^2*B*ln(sin(d*x+c))
```

Maxima [A] time = 1.54445, size = 101, normalized size = 1.28

$$-\frac{(dx+c)(2\,A-2i\,B)a^{2}-(-i\,A-B)a^{2}\log\left(\tan\left(dx+c\right)^{2}+1\right)-(2i\,A+B)a^{2}\log\left(\tan\left(dx+c\right)\right)+\frac{Aa^{2}}{\tan(dx+c)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -((d*x + c)*(2*A - 2*I*B)*a^2 - (-I*A - B)*a^2*log(tan(d*x + c)^2 + 1) - (2
*I*A + B)*a^2*log(tan(d*x + c)) + A*a^2/tan(d*x + c))/d
```

Fricas [A] time = 1.55175, size = 266, normalized size = 3.37

$$\frac{-2i\,Aa^{2}+\left(Ba^{2}e^{(2i\,dx+2i\,c)}-Ba^{2}\right)\log\left(e^{(2i\,dx+2i\,c)}+1\right)+\left((2i\,A+B)a^{2}e^{(2i\,dx+2i\,c)}+(-2i\,A-B)a^{2}\right)\log\left(e^{(2i\,dx+2i\,c)}-1\right)}{de^{(2i\,dx+2i\,c)}-d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] (-2*I*A*a^2 + (B*a^2*e^(2*I*d*x + 2*I*c) - B*a^2)*log(e^(2*I*d*x + 2*I*c) +
 1) + ((2*I*A + B)*a^2*e^(2*I*d*x + 2*I*c) + (-2*I*A - B)*a^2)*log(e^(2*I*d
*x + 2*I*c) - 1))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 5.21919, size = 121, normalized size = 1.53

$$-\frac{2iAa^2e^{-2ic}}{d\left(e^{2idx}-e^{-2ic}\right)}+\operatorname{RootSum}\left(z^2d^2+z\left(-2iAa^2d-2Ba^2d\right)+2iABa^4+B^2a^4,\left(i\mapsto i\log\left(\frac{iide^{-2ic}}{Aa^2}+e^{2idx}+\frac{(A-iB)\,e^{-2ic}}{A}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I*A*a**2*exp(-2*I*c)/(d*(exp(2*I*d*x) - exp(-2*I*c))) + RootSum(_z**2*d*
*2 + _z*(-2*I*A*a**2*d - 2*B*a**2*d) + 2*I*A*B*a**4 + B**2*a**4, Lambda(_i,
 _i*log(_i*I*d*exp(-2*I*c)/(A*a**2) + exp(2*I*d*x) + (A - I*B)*exp(-2*I*c)/
A)))
```

Giac [B] time = 1.55165, size = 213, normalized size = 2.7

$$\frac{2\,Ba^2\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right|\right)+2\,Ba^2\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-1\right|\right)+Aa^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-8\left(i\,Aa^2+Ba^2\right)\log\left(\tan\left(\right.\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/2*(2*B*a^2*log(abs(tan(1/2*d*x + 1/2*c) + 1)) + 2*B*a^2*log(abs(tan(1/2*d
*x + 1/2*c) - 1)) + A*a^2*tan(1/2*d*x + 1/2*c) - 8*(I*A*a^2 + B*a^2)*log(ta
n(1/2*d*x + 1/2*c) + I) + 2*(2*I*A*a^2 + B*a^2)*log(abs(tan(1/2*d*x + 1/2*c
))) + (-4*I*A*a^2*tan(1/2*d*x + 1/2*c) - 2*B*a^2*tan(1/2*d*x + 1/2*c) - A*a
^2)/tan(1/2*d*x + 1/2*c))/d
```

3.14 $\int \cot^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=94

$$-\frac{a^2(2B+3iA)\cot(c+dx)}{2d}-\frac{2a^2(A-iB)\log(\sin(c+dx))}{d}-2a^2x(B+iA)-\frac{A\cot^2(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{2d}$$

```
[Out] -2*a^2*(I*A + B)*x - (a^2*((3*I)*A + 2*B)*Cot[c + d*x])/(2*d) - (2*a^2*(A -
 I*B)*Log[Sin[c + d*x]])/d - (A*Cot[c + d*x]^2*(a^2 + I*a^2*Tan[c + d*x]))/
(2*d)
```

Rubi [A] time = 0.207893, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3593, 3591, 3531, 3475}

$$-\frac{a^2(2B+3iA)\cot(c+dx)}{2d}-\frac{2a^2(A-iB)\log(\sin(c+dx))}{d}-2a^2x(B+iA)-\frac{A\cot^2(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -2*a^2*(I*A + B)*x - (a^2*((3*I)*A + 2*B)*Cot[c + d*x])/(2*d) - (2*a^2*(A -
 I*B)*Log[Sin[c + d*x]])/d - (A*Cot[c + d*x]^2*(a^2 + I*a^2*Tan[c + d*x]))/
(2*d)
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
```

```
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{A\cot^2(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{2d}+\frac{1}{2}\int \cot^2(c+dx$$

$$= -\frac{a^2(3iA+2B)\cot(c+dx)}{2d}-\frac{A\cot^2(c+dx)\left(a^2+ia^2\tan(\right.}{2d}$$

$$= -2a^2(iA+B)x-\frac{a^2(3iA+2B)\cot(c+dx)}{2d}-\frac{A\cot^2(c+d}{}$$

$$= -2a^2(iA+B)x-\frac{a^2(3iA+2B)\cot(c+dx)}{2d}-\frac{2a^2(A-iB)\,l}{}$$

Mathematica [B] time = 2.3557, size = 302, normalized size = 3.21

$$\frac{a^2\csc(c)\csc^2(c+dx)(\cos(2dx)+i\sin(2dx))\left(8(B+iA)\sin(c)\sin^2(c+dx)\tan^{-1}(\tan(3c+dx))+2(B+2iA)\cos(c)-8i\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*Csc[c]*Csc[c + d*x]^2*(Cos[2*d*x] + I*Sin[2*d*x])*(2*((2*I)*A + B)*Cos
[c] - (4*I)*A*Cos[c + 2*d*x] - 2*B*Cos[c + 2*d*x] - 2*A*Sin[c] - (8*I)*A*d*
```

```
x*Sin[c] - 8*B*d*x*Sin[c] - 2*A*Log[Sin[c + d*x]^2]*Sin[c] + (2*I)*B*Log[Si
n[c + d*x]^2]*Sin[c] + 8*(I*A + B)*ArcTan[Tan[3*c + d*x]]*Sin[c]*Sin[c + d*
x]^2 - (4*I)*A*d*x*Sin[c + 2*d*x] - 4*B*d*x*Sin[c + 2*d*x] - A*Log[Sin[c +
d*x]^2]*Sin[c + 2*d*x] + I*B*Log[Sin[c + d*x]^2]*Sin[c + 2*d*x] + (4*I)*A*d
*x*Sin[3*c + 2*d*x] + 4*B*d*x*Sin[3*c + 2*d*x] + A*Log[Sin[c + d*x]^2]*Sin[
3*c + 2*d*x] - I*B*Log[Sin[c + d*x]^2]*Sin[3*c + 2*d*x]))/(4*d*(Cos[d*x] +
I*Sin[d*x])^2)
```

Maple [A] time = 0.071, size = 119, normalized size = 1.3

$$-2\,\frac{a^2A\ln(\sin(dx+c))}{d}-2\,a^2Bx-2\,\frac{Ba^2c}{d}-2\,iAa^2x-\frac{2\,iA\cot(dx+c)\,a^2}{d}-\frac{2\,iAa^2c}{d}+\frac{2\,iBa^2\ln(\sin(dx+c))}{d}-\frac{a^2A\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*a^2*A*ln(sin(d*x+c))/d-2*a^2*B*x-2/d*B*a^2*c-2*I*A*x*a^2-2*I/d*A*cot(d*x
+c)*a^2-2*I/d*A*a^2*c+2*I/d*B*a^2*ln(sin(d*x+c))-1/2*a^2*A*cot(d*x+c)^2/d-1
/d*B*cot(d*x+c)*a^2
```

Maxima [A] time = 1.66555, size = 130, normalized size = 1.38

$$-\frac{4\,(dx+c)(i\,A+B)a^2-2\,(A-i\,B)a^2\log\left(\tan(dx+c)^2+1\right)+2\,(2\,A-2i\,B)a^2\log(\tan(dx+c))-\frac{2\,(-2i\,A-B)a^2\tan(dx+c)-}{\tan(dx+c)^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/2*(4*(d*x + c)*(I*A + B)*a^2 - 2*(A - I*B)*a^2*log(tan(d*x + c)^2 + 1) +
 2*(2*A - 2*I*B)*a^2*log(tan(d*x + c)) - (2*(-2*I*A - B)*a^2*tan(d*x + c) -
 A*a^2)/tan(d*x + c)^2)/d
```

Fricas [A] time = 1.40485, size = 316, normalized size = 3.36

$$\frac{2\left((3\,A-i\,B)a^2e^{(2i\,dx+2i\,c)}-(2\,A-i\,B)a^2-\left((A-i\,B)a^2e^{(4i\,dx+4i\,c)}-2\,(A-i\,B)a^2e^{(2i\,dx+2i\,c)}+(A-i\,B)a^2\right)\log\left(e^{(2i\,dx+2i\,c)}\right.}{de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 2*((3*A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - (2*A - I*B)*a^2 - ((A - I*B)*a^2*e
^(4*I*d*x + 4*I*c) - 2*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + (A - I*B)*a^2)*l
og(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*
c) + d)
```

Sympy [A] time = 5.36212, size = 119, normalized size = 1.27

$$\frac{2a^2\left(-A+iB\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{-\frac{\left(4Aa^2-2iBa^2\right)e^{-4ic}}{d}+\frac{\left(6Aa^2-2iBa^2\right)e^{-2ic}e^{2idx}}{d}}{e^{4idx}-2e^{-2ic}e^{2idx}+e^{-4ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*a**2*(-A + I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(4*A*a**2 - 2*I*B*a
**2)*exp(-4*I*c)/d + (6*A*a**2 - 2*I*B*a**2)*exp(-2*I*c)*exp(2*I*d*x)/d)/(e
xp(4*I*d*x) - 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c))
```

Giac [B] time = 1.61919, size = 254, normalized size = 2.7

$$-\frac{Aa^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-8i\,Aa^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-4\,Ba^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-16\left(2\,Aa^2-2i\,Ba^2\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/8*(A*a^2*tan(1/2*d*x + 1/2*c)^2 - 8*I*A*a^2*tan(1/2*d*x + 1/2*c) - 4*B*a
^2*tan(1/2*d*x + 1/2*c) - 16*(2*A*a^2 - 2*I*B*a^2)*log(tan(1/2*d*x + 1/2*c)
 + I) + 16*(A*a^2 - I*B*a^2)*log(abs(tan(1/2*d*x + 1/2*c))) - (24*A*a^2*tan
(1/2*d*x + 1/2*c)^2 - 24*I*B*a^2*tan(1/2*d*x + 1/2*c)^2 - 8*I*A*a^2*tan(1/2
```

```
*d*x + 1/2*c) - 4*B*a^2*tan(1/2*d*x + 1/2*c) - A*a^2)/tan(1/2*d*x + 1/2*c)^
2)/d
```

3.15 $\int \cot^4(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=117

$$-\frac{a^2(3B+4iA)\cot^2(c+dx)}{6d}+\frac{2a^2(A-iB)\cot(c+dx)}{d}-\frac{2a^2(B+iA)\log(\sin(c+dx))}{d}+2a^2x(A-iB)-\frac{A\cot^3(c+dx)}{}$$

```
[Out] 2*a^2*(A - I*B)*x + (2*a^2*(A - I*B)*Cot[c + d*x])/d - (a^2*((4*I)*A + 3*B)
*Cot[c + d*x]^2)/(6*d) - (2*a^2*(I*A + B)*Log[Sin[c + d*x]])/d - (A*Cot[c +
 d*x]^3*(a^2 + I*a^2*Tan[c + d*x]))/(3*d)
```

Rubi [A] time = 0.255599, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3591, 3529, 3531, 3475}

$$-\frac{a^2(3B+4iA)\cot^2(c+dx)}{6d}+\frac{2a^2(A-iB)\cot(c+dx)}{d}-\frac{2a^2(B+iA)\log(\sin(c+dx))}{d}+2a^2x(A-iB)-\frac{A\cot^3(c+dx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] 2*a^2*(A - I*B)*x + (2*a^2*(A - I*B)*Cot[c + d*x])/d - (a^2*((4*I)*A + 3*B)
*Cot[c + d*x]^2)/(6*d) - (2*a^2*(I*A + B)*Log[Sin[c + d*x]])/d - (A*Cot[c +
 d*x]^3*(a^2 + I*a^2*Tan[c + d*x]))/(3*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
```

```
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{A\cot^3(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{3d}+\frac{1}{3}\int \cot^3(c+d$$

$$= -\frac{a^2(4iA+3B)\cot^2(c+dx)}{6d}-\frac{A\cot^3(c+dx)\left(a^2+ia^2\,\mathrm{ta}\right.}{3d}$$

$$= \frac{2a^2(A-iB)\cot(c+dx)}{d}-\frac{a^2(4iA+3B)\cot^2(c+dx)}{6d}-\frac{A}{}$$

$$= 2a^2(A-iB)x+\frac{2a^2(A-iB)\cot(c+dx)}{d}-\frac{a^2(4iA+3B)\,\mathrm{c}}{6d}$$

$$= 2a^2(A-iB)x+\frac{2a^2(A-iB)\cot(c+dx)}{d}-\frac{a^2(4iA+3B)\,\mathrm{c}}{6d}$$

Mathematica [B] time = 3.30089, size = 435, normalized size = 3.72

$$\frac{a^2 \csc(c)\csc^3(c+dx)(\cos(2dx)+i\sin(2dx))\left(-48(A-iB)\sin(c)\sin^3(c+dx)\tan^{-1}(\tan(3c+dx))+3\cos(dx)\left((-3B-3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*Csc[c]*Csc[c + d*x]^3*(Cos[2*d*x] + I*Sin[2*d*x])*((12*I)*A*Cos[2*c +
d*x] + 6*B*Cos[2*c + d*x] - 36*A*d*x*Cos[2*c + d*x] + (36*I)*B*d*x*Cos[2*c
+ d*x] - 12*A*d*x*Cos[2*c + 3*d*x] + (12*I)*B*d*x*Cos[2*c + 3*d*x] + 12*A*d
*x*Cos[4*c + 3*d*x] - (12*I)*B*d*x*Cos[4*c + 3*d*x] + (9*I)*A*Cos[2*c + d*x
]*Log[Sin[c + d*x]^2] + 9*B*Cos[2*c + d*x]*Log[Sin[c + d*x]^2] + (3*I)*A*Co
s[2*c + 3*d*x]*Log[Sin[c + d*x]^2] + 3*B*Cos[2*c + 3*d*x]*Log[Sin[c + d*x]^
2] - (3*I)*A*Cos[4*c + 3*d*x]*Log[Sin[c + d*x]^2] - 3*B*Cos[4*c + 3*d*x]*Lo
g[Sin[c + d*x]^2] + 3*Cos[d*x]*(2*B*(-1 - (6*I)*d*x) + 4*A*(-I + 3*d*x) + (
(-3*I)*A - 3*B)*Log[Sin[c + d*x]^2]) - 24*A*Sin[d*x] + (24*I)*B*Sin[d*x] -
48*(A - I*B)*ArcTan[Tan[3*c + d*x]]*Sin[c]*Sin[c + d*x]^3 - 18*A*Sin[2*c +
d*x] + (12*I)*B*Sin[2*c + d*x] + 14*A*Sin[2*c + 3*d*x] - (12*I)*B*Sin[2*c +
 3*d*x]))/(24*d*(Cos[d*x] + I*Sin[d*x])^2)
```

Maple [A] time = 0.066, size = 154, normalized size = 1.3

$$2a^2Ax+2\frac{a^2A\cot(dx+c)}{d}+2\frac{Aa^2c}{d}-2\frac{a^2B\ln(\sin(dx+c))}{d}-\frac{iAa^2(\cot(dx+c))^2}{d}-\frac{2iAa^2\ln(\sin(dx+c))}{d}-2iBa^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*a^2*A*x+2*a^2*A*cot(d*x+c)/d+2/d*A*a^2*c-2/d*a^2*B*ln(sin(d*x+c))-I/d*A*a
^2*cot(d*x+c)^2-2*I/d*A*a^2*ln(sin(d*x+c))-2*I*B*x*a^2-2*I/d*B*cot(d*x+c)*a
^2-2*I/d*B*a^2*c-1/3*a^2*A*cot(d*x+c)^3/d-1/2/d*a^2*B*cot(d*x+c)^2
```

Maxima [A] time = 1.62685, size = 154, normalized size = 1.32

$$\frac{6(dx+c)(2A-2iB)a^2+6(iA+B)a^2\log\left(\tan(dx+c)^2+1\right)-12(iA+B)a^2\log(\tan(dx+c))+\frac{(12A-12iB)a^2\tan(dx+c)^2}{\tan}}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/6*(6*(d*x + c)*(2*A - 2*I*B)*a^2 + 6*(I*A + B)*a^2*log(tan(d*x + c)^2 + 1
) - 12*(I*A + B)*a^2*log(tan(d*x + c)) + ((12*A - 12*I*B)*a^2*tan(d*x + c)^
2 + 3*(-2*I*A - B)*a^2*tan(d*x + c) - 2*A*a^2)/tan(d*x + c)^3)/d
```

Fricas [A] time = 1.32167, size = 498, normalized size = 4.26

$$\frac{(30iA+18B)a^2e^{(4idx+4ic)} + (-36iA-30B)a^2e^{(2idx+2ic)} + (14iA+12B)a^2 + \big((-6iA-6B)a^2e^{(6idx+6ic)} + (18iA+18B \cdots}{3\big(de^{(6idx+6ic)} - 3\,de^{(4idx+4ic)} + 3\,de^{(2idx+2ic)} \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/3*((30*I*A + 18*B)*a^2*e^(4*I*d*x + 4*I*c) + (-36*I*A - 30*B)*a^2*e^(2*I*
d*x + 2*I*c) + (14*I*A + 12*B)*a^2 + ((-6*I*A - 6*B)*a^2*e^(6*I*d*x + 6*I*c
) + (18*I*A + 18*B)*a^2*e^(4*I*d*x + 4*I*c) + (-18*I*A - 18*B)*a^2*e^(2*I*d
*x + 2*I*c) + (6*I*A + 6*B)*a^2)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*I*d*
x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 7.44088, size = 170, normalized size = 1.45

$$-\frac{2a^2\left(iA+B\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d} + \frac{\frac{\left(10iAa^2+6Ba^2\right)e^{-2ic}e^{4idx}}{d} - \frac{\left(12iAa^2+10Ba^2\right)e^{-4ic}e^{2idx}}{d} + \frac{\left(14iAa^2+12Ba^2\right)e^{-6ic}}{3d}}{e^{6idx} - 3e^{-2ic}e^{4idx} + 3e^{-4ic}e^{2idx} - e^{-6ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*a**2*(I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + ((10*I*A*a**2 + 6*B*a
**2)*exp(-2*I*c)*exp(4*I*d*x)/d - (12*I*A*a**2 + 10*B*a**2)*exp(-4*I*c)*exp
(2*I*d*x)/d + (14*I*A*a**2 + 12*B*a**2)*exp(-6*I*c)/(3*d))/(exp(6*I*d*x) -
3*exp(-2*I*c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*x) - exp(-6*I*c))
```

Giac [B] time = 1.48899, size = 346, normalized size = 2.96

$$Aa^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^3-6i\,Aa^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-3\,Ba^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-27\,Aa^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+24i\,Ba^2\tan\left(\frac{1}{2}dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/24*(A*a^2*tan(1/2*d*x + 1/2*c)^3 - 6*I*A*a^2*tan(1/2*d*x + 1/2*c)^2 - 3*B
*a^2*tan(1/2*d*x + 1/2*c)^2 - 27*A*a^2*tan(1/2*d*x + 1/2*c) + 24*I*B*a^2*ta
n(1/2*d*x + 1/2*c) - 96*(-I*A*a^2 - B*a^2)*log(tan(1/2*d*x + 1/2*c) + I) +
48*(-I*A*a^2 - B*a^2)*log(abs(tan(1/2*d*x + 1/2*c))) - (-88*I*A*a^2*tan(1/2
*d*x + 1/2*c)^3 - 88*B*a^2*tan(1/2*d*x + 1/2*c)^3 - 27*A*a^2*tan(1/2*d*x +
1/2*c)^2 + 24*I*B*a^2*tan(1/2*d*x + 1/2*c)^2 + 6*I*A*a^2*tan(1/2*d*x + 1/2*
c) + 3*B*a^2*tan(1/2*d*x + 1/2*c) + A*a^2)/tan(1/2*d*x + 1/2*c)^3)/d
```

3.16 $\int \cot^5(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=139

$$-\frac{a^2(4B+5iA)\cot^3(c+dx)}{12d}+\frac{a^2(A-iB)\cot^2(c+dx)}{d}+\frac{2a^2(B+iA)\cot(c+dx)}{d}+\frac{2a^2(A-iB)\log(\sin(c+dx))}{d}+2a^2$$

```
[Out] 2*a^2*(I*A + B)*x + (2*a^2*(I*A + B)*Cot[c + d*x])/d + (a^2*(A - I*B)*Cot[c
 + d*x]^2)/d - (a^2*((5*I)*A + 4*B)*Cot[c + d*x]^3)/(12*d) + (2*a^2*(A - I*
B)*Log[Sin[c + d*x]])/d - (A*Cot[c + d*x]^4*(a^2 + I*a^2*Tan[c + d*x]))/(4*
d)
```

Rubi [A] time = 0.293271, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3591, 3529, 3531, 3475}

$$-\frac{a^2(4B+5iA)\cot^3(c+dx)}{12d}+\frac{a^2(A-iB)\cot^2(c+dx)}{d}+\frac{2a^2(B+iA)\cot(c+dx)}{d}+\frac{2a^2(A-iB)\log(\sin(c+dx))}{d}+2a^2$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] 2*a^2*(I*A + B)*x + (2*a^2*(I*A + B)*Cot[c + d*x])/d + (a^2*(A - I*B)*Cot[c
 + d*x]^2)/d - (a^2*((5*I)*A + 4*B)*Cot[c + d*x]^3)/(12*d) + (2*a^2*(A - I*
B)*Log[Sin[c + d*x]])/d - (A*Cot[c + d*x]^4*(a^2 + I*a^2*Tan[c + d*x]))/(4*
d)
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^5(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{A\cot^4(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{4d}+\frac{1}{4}\int \cot^4(c+d$$

$$= -\frac{a^2(5iA+4B)\cot^3(c+dx)}{12d}-\frac{A\cot^4(c+dx)\left(a^2+ia^2\,\mathrm{ta}\right.}{4d}$$

$$= \frac{a^2(A-iB)\cot^2(c+dx)}{d}-\frac{a^2(5iA+4B)\cot^3(c+dx)}{12d}-$$

$$= \frac{2a^2(iA+B)\cot(c+dx)}{d}+\frac{a^2(A-iB)\cot^2(c+dx)}{d}-\frac{a^2(5}{}$$

$$= 2a^2(iA+B)x+\frac{2a^2(iA+B)\cot(c+dx)}{d}+\frac{a^2(A-iB)\cot}{d}$$

$$= 2a^2(iA+B)x+\frac{2a^2(iA+B)\cot(c+dx)}{d}+\frac{a^2(A-iB)\cot}{d}$$

Mathematica [B] time = 8.43952, size = 902, normalized size = 6.49

$$a^2\left(\frac{(\cot(c+dx)+i)^2(B+A\cot(c+dx))(A\cos(c)-iB\cos(c)-iA\sin(c)-B\sin(c))\left(-2i\tan^{-1}(\tan(3c+dx))\cos(c)-\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^2*(((I + Cot[c + d*x])^2*(B + A*Cot[c + d*x])*Csc[c + d*x]*(-(A*Cos[2*c])
/4 + (I/4)*A*Sin[2*c]))/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Si
n[c + d*x])) + ((I + Cot[c + d*x])^2*(B + A*Cot[c + d*x])*Csc[c]*(Cos[2*c]/
3 - (I/3)*Sin[2*c])*((2*I)*A*Sin[d*x] + B*Sin[d*x]))/(d*(Cos[d*x] + I*Sin[d
*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^2*(B + A*Co
t[c + d*x])*Csc[c]*((-4*I)*A*Cos[c] - 2*B*Cos[c] + 9*A*Sin[c] - (6*I)*B*Sin
[c])*(Cos[2*c]/6 - (I/6)*Sin[2*c])*Sin[c + d*x])/(d*(Cos[d*x] + I*Sin[d*x])
^2*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^2*(B + A*Cot[c
+ d*x])*Csc[c]*(Cos[2*c]/3 - (I/3)*Sin[2*c])*((-8*I)*A*Sin[d*x] - 7*B*Sin[d
*x])*Sin[c + d*x]^2)/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c
 + d*x])) + ((I + Cot[c + d*x])^2*(B + A*Cot[c + d*x])*(A*Cos[c] - I*B*Cos[
c] - I*A*Sin[c] - B*Sin[c])*((-2*I)*ArcTan[Tan[3*c + d*x]]*Cos[c] - 2*ArcTa
n[Tan[3*c + d*x]]*Sin[c])*Sin[c + d*x]^3)/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*C
os[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^2*(B + A*Cot[c + d*x])
*(A*Cos[c] - I*B*Cos[c] - I*A*Sin[c] - B*Sin[c])*(Cos[c]*Log[Sin[c + d*x]^2
] - I*Log[Sin[c + d*x]^2]*Sin[c])*Sin[c + d*x]^3)/(d*(Cos[d*x] + I*Sin[d*x]
```

```
)^2*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*(I + Cot[c + d*x])^2*(B + A*Cot
[c + d*x])*((6*I)*A*Cos[c]^2 + 6*B*Cos[c]^2 - 2*A*Cos[c]^2*Cot[c] + (2*I)*B
*Cos[c]^2*Cot[c] + 6*A*Cos[c]*Sin[c] - (6*I)*B*Cos[c]*Sin[c] - (2*I)*A*Sin[
c]^2 - 2*B*Sin[c]^2 + (A - I*B)*Cot[c]*(2*Cos[2*c] - (2*I)*Sin[2*c]))*Sin[c
 + d*x]^3)/((Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x])) +
((I*A + B)*(I + Cot[c + d*x])^2*(B + A*Cot[c + d*x])*(2*d*x*Cos[2*c] - (2*I
)*d*x*Sin[2*c])*Sin[c + d*x]^3)/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x
] + B*Sin[c + d*x])))
```

Maple [A] time = 0.074, size = 188, normalized size = 1.4

$$\frac{a^2A(\cot(dx+c))^2}{d}+2\frac{a^2A\ln(\sin(dx+c))}{d}+2a^2Bx+2\frac{\cot(dx+c)Ba^2}{d}+2\frac{Ba^2c}{d}+\frac{2iAa^2\cot(dx+c)}{d}+2iAa^2x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] a^2*A*cot(d*x+c)^2/d+2*a^2*A*ln(sin(d*x+c))/d+2*a^2*B*x+2/d*B*cot(d*x+c)*a^
2+2/d*B*a^2*c+2*I/d*A*a^2*cot(d*x+c)+2*I*A*a^2*x+2*I/d*A*a^2*c-I/d*B*a^2*co
t(d*x+c)^2-2/3*I/d*A*a^2*cot(d*x+c)^3-2*I/d*B*a^2*ln(sin(d*x+c))-1/4*a^2*A*
cot(d*x+c)^4/d-1/3/d*a^2*B*cot(d*x+c)^3
```

Maxima [A] time = 1.71061, size = 182, normalized size = 1.31

$$-\frac{24(dx+c)(-iA-B)a^2+12(A-iB)a^2\log\left(\tan(dx+c)^2+1\right)-12(2A-2iB)a^2\log(\tan(dx+c))-\frac{24(iA+B)a^2\tan(dx+}{}}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/12*(24*(d*x + c)*(-I*A - B)*a^2 + 12*(A - I*B)*a^2*log(tan(d*x + c)^2 +
1) - 12*(2*A - 2*I*B)*a^2*log(tan(d*x + c)) - (24*(I*A + B)*a^2*tan(d*x + c
)^3 + (12*A - 12*I*B)*a^2*tan(d*x + c)^2 + 4*(-2*I*A - B)*a^2*tan(d*x + c)
- 3*A*a^2)/tan(d*x + c)^4)/d
```

Fricas [A] time = 1.43193, size = 620, normalized size = 4.46

$$-\frac{2\left(3\,(7\,A-5i\,B)a^2e^{(6i\,dx+6i\,c)}-3\,(12\,A-11i\,B)a^2e^{(4i\,dx+4i\,c)}+(29\,A-25i\,B)a^2e^{(2i\,dx+2i\,c)}-(8\,A-7i\,B)a^2-3\left((A-i\,B)a\right.\right.}{3\left(de^{(8i\,dx+8i\,c)}-4\,de^{(6i\,dx+6i\,c)}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -2/3*(3*(7*A - 5*I*B)*a^2*e^(6*I*d*x + 6*I*c) - 3*(12*A - 11*I*B)*a^2*e^(4*
I*d*x + 4*I*c) + (29*A - 25*I*B)*a^2*e^(2*I*d*x + 2*I*c) - (8*A - 7*I*B)*a^
2 - 3*((A - I*B)*a^2*e^(8*I*d*x + 8*I*c) - 4*(A - I*B)*a^2*e^(6*I*d*x + 6*I
*c) + 6*(A - I*B)*a^2*e^(4*I*d*x + 4*I*c) - 4*(A - I*B)*a^2*e^(2*I*d*x + 2*
I*c) + (A - I*B)*a^2)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(8*I*d*x + 8*I*c)
- 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*
c) + d)
```

Sympy [A] time = 22.4911, size = 221, normalized size = 1.59

$$\frac{2a^2\,(A-iB)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{-\frac{\left(14Aa^2-10iBa^2\right)e^{-2ic}e^{6idx}}{d}+\frac{\left(16Aa^2-14iBa^2\right)e^{-8ic}}{3d}+\frac{\left(24Aa^2-22iBa^2\right)e^{-4ic}e^{4idx}}{d}-\frac{\left(58Aa^2-50iBa^2\right)e^{-6ic}e^{2idx}}{3d}}{e^{8idx}-4e^{-2ic}e^{6idx}+6e^{-4ic}e^{4idx}-4e^{-6ic}e^{2idx}+e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*a**2*(A - I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(14*A*a**2 - 10*I*B*
a**2)*exp(-2*I*c)*exp(6*I*d*x)/d + (16*A*a**2 - 14*I*B*a**2)*exp(-8*I*c)/(3
*d) + (24*A*a**2 - 22*I*B*a**2)*exp(-4*I*c)*exp(4*I*d*x)/d - (58*A*a**2 - 5
0*I*B*a**2)*exp(-6*I*c)*exp(2*I*d*x)/(3*d))/(exp(8*I*d*x) - 4*exp(-2*I*c)*e
xp(6*I*d*x) + 6*exp(-4*I*c)*exp(4*I*d*x) - 4*exp(-6*I*c)*exp(2*I*d*x) + exp
(-8*I*c))
```

Giac [B] time = 1.6494, size = 437, normalized size = 3.14

$$-\frac{3\,Aa^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-16i\,Aa^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-8\,Ba^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-60\,Aa^2\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+48i\,Ba^2\tan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/192*(3*A*a^2*tan(1/2*d*x + 1/2*c)^4 - 16*I*A*a^2*tan(1/2*d*x + 1/2*c)^3
- 8*B*a^2*tan(1/2*d*x + 1/2*c)^3 - 60*A*a^2*tan(1/2*d*x + 1/2*c)^2 + 48*I*B
*a^2*tan(1/2*d*x + 1/2*c)^2 + 240*I*A*a^2*tan(1/2*d*x + 1/2*c) + 216*B*a^2*
tan(1/2*d*x + 1/2*c) + 384*(2*A*a^2 - 2*I*B*a^2)*log(tan(1/2*d*x + 1/2*c) +
 I) - 384*(A*a^2 - I*B*a^2)*log(abs(tan(1/2*d*x + 1/2*c))) + (800*A*a^2*tan
(1/2*d*x + 1/2*c)^4 - 800*I*B*a^2*tan(1/2*d*x + 1/2*c)^4 - 240*I*A*a^2*tan(
1/2*d*x + 1/2*c)^3 - 216*B*a^2*tan(1/2*d*x + 1/2*c)^3 - 60*A*a^2*tan(1/2*d*
x + 1/2*c)^2 + 48*I*B*a^2*tan(1/2*d*x + 1/2*c)^2 + 16*I*A*a^2*tan(1/2*d*x +
 1/2*c) + 8*B*a^2*tan(1/2*d*x + 1/2*c) + 3*A*a^2)/tan(1/2*d*x + 1/2*c)^4)/d
```

3.17 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=182

$$-\frac{a^3(45A-47iB)\tan^3(c+dx)}{60d}+\frac{2a^3(B+iA)\tan^2(c+dx)}{d}-\frac{(5A-7iB)\tan^3(c+dx)\left(a^3+ia^3\tan(c+dx)\right)}{20d}+\frac{4a^3(A-$$

```
[Out] -4*a^3*(A - I*B)*x + (4*a^3*(I*A + B)*Log[Cos[c + d*x]])/d + (4*a^3*(A - I*
B)*Tan[c + d*x])/d + (2*a^3*(I*A + B)*Tan[c + d*x]^2)/d - (a^3*(45*A - (47*
I)*B)*Tan[c + d*x]^3)/(60*d) + ((I/5)*a*B*Tan[c + d*x]^3*(a + I*a*Tan[c + d
*x])^2)/d - ((5*A - (7*I)*B)*Tan[c + d*x]^3*(a^3 + I*a^3*Tan[c + d*x]))/(20
*d)
```

Rubi [A] time = 0.423991, antiderivative size = 182, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3594, 3592, 3528, 3525, 3475}

$$-\frac{a^3(45A-47iB)\tan^3(c+dx)}{60d}+\frac{2a^3(B+iA)\tan^2(c+dx)}{d}-\frac{(5A-7iB)\tan^3(c+dx)\left(a^3+ia^3\tan(c+dx)\right)}{20d}+\frac{4a^3(A-$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] -4*a^3*(A - I*B)*x + (4*a^3*(I*A + B)*Log[Cos[c + d*x]])/d + (4*a^3*(A - I*
B)*Tan[c + d*x])/d + (2*a^3*(I*A + B)*Tan[c + d*x]^2)/d - (a^3*(45*A - (47*
I)*B)*Tan[c + d*x]^3)/(60*d) + ((I/5)*a*B*Tan[c + d*x]^3*(a + I*a*Tan[c + d
*x])^2)/d - ((5*A - (7*I)*B)*Tan[c + d*x]^3*(a^3 + I*a^3*Tan[c + d*x]))/(20
*d)
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{iaB\tan^3(c+dx)(a+ia\tan(c+dx))^2}{5d} + \frac{1}{5}\int \tan^2(c+dx$$
$$= \frac{iaB\tan^3(c+dx)(a+ia\tan(c+dx))^2}{5d} - \frac{(5A-7iB)\tan^3(}{}$$
$$= -\frac{a^3(45A-47iB)\tan^3(c+dx)}{60d} + \frac{iaB\tan^3(c+dx)(a+ia}{5d}$$
$$= \frac{2a^3(iA+B)\tan^2(c+dx)}{d} - \frac{a^3(45A-47iB)\tan^3(c+dx)}{60d}$$
$$= -4a^3(A-iB)x + \frac{4a^3(A-iB)\tan(c+dx)}{d} + \frac{2a^3(iA+B)}{}$$
$$= -4a^3(A-iB)x + \frac{4a^3(iA+B)\log(\cos(c+dx))}{d} + \frac{4a^3(A-}{}$$

Mathematica [B] time = 8.20921, size = 847, normalized size = 4.65

$$\frac{x\left(-2A\cos^3(c)+2iB\cos^3(c)+8iA\sin(c)\cos^2(c)+8B\sin(c)\cos^2(c)+12A\sin^2(c)\cos(c)-12iB\sin^2(c)\cos(c)+2A\,\mathrm{co}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]^4*(I*A*Cos[(3*c)/2] + B*Cos[(3*c)/2] + A*Sin[(3*c)/2] - I*B*S
in[(3*c)/2])*(2*Cos[(3*c)/2]*Log[Cos[c + d*x]^2] - (2*I)*Log[Cos[c + d*x]^2
]*Sin[(3*c)/2])*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x]
 + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Sec[c]*Sec[c + d*x]*
(Cos[3*c]/240 - (I/240)*Sin[3*c])*((195*I)*A*Cos[d*x] + 225*B*Cos[d*x] - 30
0*A*d*x*Cos[d*x] + (300*I)*B*d*x*Cos[d*x] + (195*I)*A*Cos[2*c + d*x] + 225*
B*Cos[2*c + d*x] - 300*A*d*x*Cos[2*c + d*x] + (300*I)*B*d*x*Cos[2*c + d*x]
+ (75*I)*A*Cos[2*c + 3*d*x] + 105*B*Cos[2*c + 3*d*x] - 150*A*d*x*Cos[2*c +
3*d*x] + (150*I)*B*d*x*Cos[2*c + 3*d*x] + (75*I)*A*Cos[4*c + 3*d*x] + 105*B
*Cos[4*c + 3*d*x] - 150*A*d*x*Cos[4*c + 3*d*x] + (150*I)*B*d*x*Cos[4*c + 3*
d*x] - 30*A*d*x*Cos[4*c + 5*d*x] + (30*I)*B*d*x*Cos[4*c + 5*d*x] - 30*A*d*x
*Cos[6*c + 5*d*x] + (30*I)*B*d*x*Cos[6*c + 5*d*x] + 420*A*Sin[d*x] - (470*I
)*B*Sin[d*x] - 330*A*Sin[2*c + d*x] + (360*I)*B*Sin[2*c + d*x] + 270*A*Sin[
2*c + 3*d*x] - (280*I)*B*Sin[2*c + 3*d*x] - 105*A*Sin[4*c + 3*d*x] + (135*I
)*B*Sin[4*c + 3*d*x] + 75*A*Sin[4*c + 5*d*x] - (83*I)*B*Sin[4*c + 5*d*x])*(
a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^3*
(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*Cos[c + d*x]^4*(2*A*Cos[c] - (2*I)*
```

```
B*Cos[c] - 2*A*Cos[c]^3 + (2*I)*B*Cos[c]^3 - (4*I)*A*Sin[c] - 4*B*Sin[c] +
(8*I)*A*Cos[c]^2*Sin[c] + 8*B*Cos[c]^2*Sin[c] + 12*A*Cos[c]*Sin[c]^2 - (12*
I)*B*Cos[c]*Sin[c]^2 - (8*I)*A*Sin[c]^3 - 8*B*Sin[c]^3 - 2*A*Sin[c]*Tan[c]
+ (2*I)*B*Sin[c]*Tan[c] - 2*A*Sin[c]^3*Tan[c] + (2*I)*B*Sin[c]^3*Tan[c] - I
*(A - I*B)*(4*Cos[3*c] - (4*I)*Sin[3*c])*Tan[c])*(a + I*a*Tan[c + d*x])^3*(
A + B*Tan[c + d*x]))/((Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c +
 d*x]))
```

Maple [A] time = 0.005, size = 230, normalized size = 1.3

$$\frac{-\frac{i}{5}a^3B(\tan(dx+c))^5}{d}-\frac{\frac{i}{4}a^3A(\tan(dx+c))^4}{d}+\frac{\frac{4i}{3}a^3B(\tan(dx+c))^3}{d}-\frac{3a^3B(\tan(dx+c))^4}{4d}+\frac{2ia^3A(\tan(dx+c))^2}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/5*I/d*a^3*B*tan(d*x+c)^5-1/4*I/d*a^3*A*tan(d*x+c)^4+4/3*I/d*a^3*B*tan(d*
x+c)^3-3/4/d*a^3*B*tan(d*x+c)^4+2*I/d*a^3*A*tan(d*x+c)^2-1/d*a^3*A*tan(d*x+
c)^3-4*I/d*a^3*B*tan(d*x+c)+2/d*a^3*B*tan(d*x+c)^2+4/d*a^3*A*tan(d*x+c)-2*I
/d*a^3*A*ln(1+tan(d*x+c)^2)-2/d*a^3*B*ln(1+tan(d*x+c)^2)+4*I/d*a^3*B*arctan
(tan(d*x+c))-4/d*a^3*A*arctan(tan(d*x+c))
```

Maxima [A] time = 1.92663, size = 182, normalized size = 1.

$$-\frac{12iBa^3\tan(dx+c)^5+15(iA+3B)a^3\tan(dx+c)^4+(60A-80iB)a^3\tan(dx+c)^3+120(-iA-B)a^3\tan(dx+c)^2}{60d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/60*(12*I*B*a^3*tan(d*x + c)^5 + 15*(I*A + 3*B)*a^3*tan(d*x + c)^4 + (60*
A - 80*I*B)*a^3*tan(d*x + c)^3 + 120*(-I*A - B)*a^3*tan(d*x + c)^2 + 60*(d*
x + c)*(4*A - 4*I*B)*a^3 + 120*(I*A + B)*a^3*log(tan(d*x + c)^2 + 1) - (240
*A - 240*I*B)*a^3*tan(d*x + c))/d
```

Fricas [A] time = 1.41306, size = 836, normalized size = 4.59

$$\frac{(360i\,A+480\,B)a^3e^{(8i\,dx+8i\,c)}+(1050i\,A+1170\,B)a^3e^{(6i\,dx+6i\,c)}+(1230i\,A+1390\,B)a^3e^{(4i\,dx+4i\,c)}+(690i\,A+770\,B)a^3e^{(2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/15*((360*I*A + 480*B)*a^3*e^(8*I*d*x + 8*I*c) + (1050*I*A + 1170*B)*a^3*e
^(6*I*d*x + 6*I*c) + (1230*I*A + 1390*B)*a^3*e^(4*I*d*x + 4*I*c) + (690*I*A
 + 770*B)*a^3*e^(2*I*d*x + 2*I*c) + (150*I*A + 166*B)*a^3 + ((60*I*A + 60*B
)*a^3*e^(10*I*d*x + 10*I*c) + (300*I*A + 300*B)*a^3*e^(8*I*d*x + 8*I*c) + (
600*I*A + 600*B)*a^3*e^(6*I*d*x + 6*I*c) + (600*I*A + 600*B)*a^3*e^(4*I*d*x
 + 4*I*c) + (300*I*A + 300*B)*a^3*e^(2*I*d*x + 2*I*c) + (60*I*A + 60*B)*a^3
)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(10*I*d*x + 10*I*c) + 5*d*e^(8*I*d*x +
 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) + 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*
d*x + 2*I*c) + d)
```

Sympy [A] time = 54.8753, size = 272, normalized size = 1.49

$$\frac{4a^3\left(iA+B\right)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{\frac{\left(24iAa^3+32Ba^3\right)e^{-2ic}e^{8idx}}{d}+\frac{\left(70iAa^3+78Ba^3\right)e^{-4ic}e^{6idx}}{d}+\frac{\left(138iAa^3+154Ba^3\right)e^{-8ic}e^{2idx}}{3d}+\frac{\left(150iAa^3+166Ba^3\right)e}{15d}}{e^{10idx}+5e^{-2ic}e^{8idx}+10e^{-4ic}e^{6idx}+10e^{-6ic}e^{4idx}+5e^{-8ic}e^{2idx}+e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*a**3*(I*A + B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + ((24*I*A*a**3 + 32*B*a
**3)*exp(-2*I*c)*exp(8*I*d*x)/d + (70*I*A*a**3 + 78*B*a**3)*exp(-4*I*c)*exp
(6*I*d*x)/d + (138*I*A*a**3 + 154*B*a**3)*exp(-8*I*c)*exp(2*I*d*x)/(3*d) +
(150*I*A*a**3 + 166*B*a**3)*exp(-10*I*c)/(15*d) + (246*I*A*a**3 + 278*B*a**
3)*exp(-6*I*c)*exp(4*I*d*x)/(3*d))/(exp(10*I*d*x) + 5*exp(-2*I*c)*exp(8*I*d
*x) + 10*exp(-4*I*c)*exp(6*I*d*x) + 10*exp(-6*I*c)*exp(4*I*d*x) + 5*exp(-8*
I*c)*exp(2*I*d*x) + exp(-10*I*c))
```

Giac [B] time = 1.75459, size = 680, normalized size = 3.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/15*(60*I*A*a^3*e^(10*I*d*x + 10*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 60*B*
a^3*e^(10*I*d*x + 10*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 300*I*A*a^3*e^(8*I
*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 300*B*a^3*e^(8*I*d*x + 8*I*c)*
log(e^(2*I*d*x + 2*I*c) + 1) + 600*I*A*a^3*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d
*x + 2*I*c) + 1) + 600*B*a^3*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) +
1) + 600*I*A*a^3*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 600*B*a
^3*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 300*I*A*a^3*e^(2*I*d*
x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 300*B*a^3*e^(2*I*d*x + 2*I*c)*log
(e^(2*I*d*x + 2*I*c) + 1) + 360*I*A*a^3*e^(8*I*d*x + 8*I*c) + 480*B*a^3*e^(
8*I*d*x + 8*I*c) + 1050*I*A*a^3*e^(6*I*d*x + 6*I*c) + 1170*B*a^3*e^(6*I*d*x
 + 6*I*c) + 1230*I*A*a^3*e^(4*I*d*x + 4*I*c) + 1390*B*a^3*e^(4*I*d*x + 4*I*
c) + 690*I*A*a^3*e^(2*I*d*x + 2*I*c) + 770*B*a^3*e^(2*I*d*x + 2*I*c) + 60*I
*A*a^3*log(e^(2*I*d*x + 2*I*c) + 1) + 60*B*a^3*log(e^(2*I*d*x + 2*I*c) + 1)
 + 150*I*A*a^3 + 166*B*a^3)/(d*e^(10*I*d*x + 10*I*c) + 5*d*e^(8*I*d*x + 8*I
*c) + 10*d*e^(6*I*d*x + 6*I*c) + 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*d*x
+ 2*I*c) + d)
```

3.18 $\int \tan(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=138

$$\frac{2a^3(B+iA)\tan(c+dx)}{d}-\frac{4a^3(A-iB)\log(\cos(c+dx))}{d}-4a^3x(B+iA)+\frac{a(A-iB)(a+ia\tan(c+dx))^2}{2d}+\frac{A(a+ia\tan\ldots}{3\ldots}$$

```
[Out] -4*a^3*(I*A + B)*x - (4*a^3*(A - I*B)*Log[Cos[c + d*x]])/d + (2*a^3*(I*A +
B)*Tan[c + d*x])/d + (a*(A - I*B)*(a + I*a*Tan[c + d*x])^2)/(2*d) + (A*(a +
 I*a*Tan[c + d*x])^3)/(3*d) - ((I/4)*B*(a + I*a*Tan[c + d*x])^4)/(a*d)
```

Rubi [A] time = 0.134645, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3592, 3527, 3478, 3477, 3475}

$$\frac{2a^3(B+iA)\tan(c+dx)}{d}-\frac{4a^3(A-iB)\log(\cos(c+dx))}{d}-4a^3x(B+iA)+\frac{a(A-iB)(a+ia\tan(c+dx))^2}{2d}+\frac{A(a+ia\tan\ldots}{3\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] -4*a^3*(I*A + B)*x - (4*a^3*(A - I*B)*Log[Cos[c + d*x]])/d + (2*a^3*(I*A +
B)*Tan[c + d*x])/d + (a*(A - I*B)*(a + I*a*Tan[c + d*x])^2)/(2*d) + (A*(a +
 I*a*Tan[c + d*x])^3)/(3*d) - ((I/4)*B*(a + I*a*Tan[c + d*x])^4)/(a*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{iB(a+ia\tan(c+dx))^4}{4ad} + \int (a+ia\tan(c+dx))^3(-B+A$$
$$= \frac{A(a+ia\tan(c+dx))^3}{3d} - \frac{iB(a+ia\tan(c+dx))^4}{4ad} - (iA+B$$
$$= \frac{a(A-iB)(a+ia\tan(c+dx))^2}{2d} + \frac{A(a+ia\tan(c+dx))^3}{3d} -$$
$$= -4a^3(iA+B)x + \frac{2a^3(iA+B)\tan(c+dx)}{d} + \frac{a(A-iB)(a+}{2}$$
$$= -4a^3(iA+B)x - \frac{4a^3(A-iB)\log(\cos(c+dx))}{d} + \frac{2a^3(iA+}{}$$

Mathematica [B] time = 7.61, size = 980, normalized size = 7.1

$$\frac{x\left(-2iA\cos^3(c) - 2B\cos^3(c) - 8A\sin(c)\cos^2(c) + 8iB\sin(c)\cos^2(c) + 12iA\sin^2(c)\cos(c) + 12B\sin^2(c)\cos(c) + 2iA\cos\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]^4*(A*Cos[(3*c)/2] - I*B*Cos[(3*c)/2] - I*A*Sin[(3*c)/2] - B*S
in[(3*c)/2])*(-2*Cos[(3*c)/2]*Log[Cos[c + d*x]^2] + (2*I)*Log[Cos[c + d*x]^
2]*Sin[(3*c)/2])*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x
] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^2*(-9*
A*Cos[c] + (15*I)*B*Cos[c] - (2*I)*A*Sin[c] - 6*B*Sin[c])*(Cos[3*c]/6 - (I/
6)*Sin[3*c])*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[c/2] -
Sin[c/2])*(Cos[c/2] + Sin[c/2])*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] +
 B*Sin[c + d*x])) + (((-I/4)*B*Cos[3*c] - (B*Sin[3*c])/4)*(a + I*a*Tan[c +
d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x]
+ B*Sin[c + d*x])) + ((A - I*B)*Cos[c + d*x]^4*((-4*I)*d*x*Cos[3*c] - 4*d*x
*Sin[3*c])*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*
Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]*(Cos[3*c]/3
- (I/3)*Sin[3*c])*((-I)*A*Sin[d*x] - 3*B*Sin[d*x])*(a + I*a*Tan[c + d*x])^3
*(A + B*Tan[c + d*x]))/(d*(Cos[c/2] - Sin[c/2])*(Cos[c/2] + Sin[c/2])*(Cos[
d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^3*(
Cos[3*c]/3 - (I/3)*Sin[3*c])*((13*I)*A*Sin[d*x] + 15*B*Sin[d*x])*(a + I*a*T
an[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[c/2] - Sin[c/2])*(Cos[c/2] + S
in[c/2])*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*
Cos[c + d*x]^4*((2*I)*A*Cos[c] + 2*B*Cos[c] - (2*I)*A*Cos[c]^3 - 2*B*Cos[c]
^3 + 4*A*Sin[c] - (4*I)*B*Sin[c] - 8*A*Cos[c]^2*Sin[c] + (8*I)*B*Cos[c]^2*S
in[c] + (12*I)*A*Cos[c]*Sin[c]^2 + 12*B*Cos[c]*Sin[c]^2 + 8*A*Sin[c]^3 - (8
*I)*B*Sin[c]^3 - (2*I)*A*Sin[c]*Tan[c] - 2*B*Sin[c]*Tan[c] - (2*I)*A*Sin[c]
^3*Tan[c] - 2*B*Sin[c]^3*Tan[c] + (A - I*B)*(4*Cos[3*c] - (4*I)*Sin[3*c])*T
an[c])*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/((Cos[d*x] + I*Sin[d*
x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.006, size = 195, normalized size = 1.4

$$\frac{-\frac{i}{4}a^3B\left(\tan\left(dx+c\right)\right)^4}{d}-\frac{\frac{i}{3}a^3A\left(\tan\left(dx+c\right)\right)^3}{d}+\frac{2\,ia^3B\left(\tan\left(dx+c\right)\right)^2}{d}-\frac{a^3B\left(\tan\left(dx+c\right)\right)^3}{d}+\frac{4\,ia^3A\tan\left(dx+c\right)}{d}-\frac{3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/4*I/d*a^3*B*tan(d*x+c)^4-1/3*I/d*a^3*A*tan(d*x+c)^3+2*I/d*a^3*B*tan(d*x+
c)^2-1/d*a^3*B*tan(d*x+c)^3+4*I/d*a^3*A*tan(d*x+c)-3/2/d*a^3*A*tan(d*x+c)^2
+4/d*a^3*B*tan(d*x+c)-2*I/d*a^3*B*ln(1+tan(d*x+c)^2)+2/d*a^3*A*ln(1+tan(d*x
+c)^2)-4*I/d*a^3*A*arctan(tan(d*x+c))-4/d*a^3*B*arctan(tan(d*x+c))
```

Maxima [A] time = 1.69836, size = 155, normalized size = 1.12

$$-\frac{3 i B a^3 \tan(dx+c)^4 + 4(iA+3B)a^3\tan(dx+c)^3 + (18A-24iB)a^3\tan(dx+c)^2 + 48(dx+c)(iA+B)a^3 - 12(2A-}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/12*(3*I*B*a^3*tan(d*x + c)^4 + 4*(I*A + 3*B)*a^3*tan(d*x + c)^3 + (18*A
- 24*I*B)*a^3*tan(d*x + c)^2 + 48*(d*x + c)*(I*A + B)*a^3 - 12*(2*A - 2*I*B
)*a^3*log(tan(d*x + c)^2 + 1) + 48*(-I*A - B)*a^3*tan(d*x + c))/d
```

Fricas [A] time = 1.4785, size = 626, normalized size = 4.54

$$-\frac{2\left(12(2A-3iB)a^3e^{(6idx+6ic)} + 3(19A-23iB)a^3e^{(4idx+4ic)} + 2(23A-27iB)a^3e^{(2idx+2ic)} + (13A-15iB)a^3 + 6\left((A-\right.\right.}{3\left(de^{(8idx+8ic)} + 4de^{(6idx+6ic)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -2/3*(12*(2*A - 3*I*B)*a^3*e^(6*I*d*x + 6*I*c) + 3*(19*A - 23*I*B)*a^3*e^(4
*I*d*x + 4*I*c) + 2*(23*A - 27*I*B)*a^3*e^(2*I*d*x + 2*I*c) + (13*A - 15*I*
B)*a^3 + 6*((A - I*B)*a^3*e^(8*I*d*x + 8*I*c) + 4*(A - I*B)*a^3*e^(6*I*d*x
+ 6*I*c) + 6*(A - I*B)*a^3*e^(4*I*d*x + 4*I*c) + 4*(A - I*B)*a^3*e^(2*I*d*x
 + 2*I*c) + (A - I*B)*a^3)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(8*I*d*x + 8*
I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x +
 2*I*c) + d)
```

Sympy [A] time = 25.5057, size = 223, normalized size = 1.62

$$\frac{4a^3(-A+iB)\log\left(e^{2idx}+e^{-2ic}\right)}{d} + \frac{-\frac{(16Aa^3-24iBa^3)e^{-2ic}e^{6idx}}{d} - \frac{(26Aa^3-30iBa^3)e^{-8ic}}{3d} - \frac{(38Aa^3-46iBa^3)e^{-4ic}e^{4idx}}{d} - \frac{(92Aa^3-108iBa^3)e^{-6ic}e^{2idx}}{3d}}{e^{8idx}+4e^{-2ic}e^{6idx}+6e^{-4ic}e^{4idx}+4e^{-6ic}e^{2idx}+e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*a**3*(-A + I*B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + (-(16*A*a**3 - 24*I*B
*a**3)*exp(-2*I*c)*exp(6*I*d*x)/d - (26*A*a**3 - 30*I*B*a**3)*exp(-8*I*c)/(
3*d) - (38*A*a**3 - 46*I*B*a**3)*exp(-4*I*c)*exp(4*I*d*x)/d - (92*A*a**3 -
108*I*B*a**3)*exp(-6*I*c)*exp(2*I*d*x)/(3*d))/(exp(8*I*d*x) + 4*exp(-2*I*c)
*exp(6*I*d*x) + 6*exp(-4*I*c)*exp(4*I*d*x) + 4*exp(-6*I*c)*exp(2*I*d*x) + e
xp(-8*I*c))
```

Giac [B] time = 1.39743, size = 551, normalized size = 3.99

$$-\frac{12\,Aa^3e^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-12i\,Ba^3e^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+48\,Aa^3e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/3*(12*A*a^3*e^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 12*I*B*a^
3*e^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 48*A*a^3*e^(6*I*d*x +
6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 48*I*B*a^3*e^(6*I*d*x + 6*I*c)*log(e^
(2*I*d*x + 2*I*c) + 1) + 72*A*a^3*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*
c) + 1) - 72*I*B*a^3*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 48*
A*a^3*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 48*I*B*a^3*e^(2*I*
d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 48*A*a^3*e^(6*I*d*x + 6*I*c) -
72*I*B*a^3*e^(6*I*d*x + 6*I*c) + 114*A*a^3*e^(4*I*d*x + 4*I*c) - 138*I*B*a^
3*e^(4*I*d*x + 4*I*c) + 92*A*a^3*e^(2*I*d*x + 2*I*c) - 108*I*B*a^3*e^(2*I*d
*x + 2*I*c) + 12*A*a^3*log(e^(2*I*d*x + 2*I*c) + 1) - 12*I*B*a^3*log(e^(2*I
*d*x + 2*I*c) + 1) + 26*A*a^3 - 30*I*B*a^3)/(d*e^(8*I*d*x + 8*I*c) + 4*d*e^
(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c) + d)
```

3.19 $\int (a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=110

$$-\frac{2a^3(A-iB)\tan(c+dx)}{d}-\frac{4a^3(B+iA)\log(\cos(c+dx))}{d}+4a^3x(A-iB)+\frac{a(B+iA)(a+ia\tan(c+dx))^2}{2d}+\frac{B(a+ia\tan(c+dx))^3}{3d}$$

```
[Out] 4*a^3*(A - I*B)*x - (4*a^3*(I*A + B)*Log[Cos[c + d*x]])/d - (2*a^3*(A - I*B
)*Tan[c + d*x])/d + (a*(I*A + B)*(a + I*a*Tan[c + d*x])^2)/(2*d) + (B*(a +
I*a*Tan[c + d*x])^3)/(3*d)
```

Rubi [A] time = 0.0890933, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {3527, 3478, 3477, 3475}

$$-\frac{2a^3(A-iB)\tan(c+dx)}{d}-\frac{4a^3(B+iA)\log(\cos(c+dx))}{d}+4a^3x(A-iB)+\frac{a(B+iA)(a+ia\tan(c+dx))^2}{2d}+\frac{B(a+ia\tan(c+dx))^3}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] 4*a^3*(A - I*B)*x - (4*a^3*(I*A + B)*Log[Cos[c + d*x]])/d - (2*a^3*(A - I*B
)*Tan[c + d*x])/d + (a*(I*A + B)*(a + I*a*Tan[c + d*x])^2)/(2*d) + (B*(a +
I*a*Tan[c + d*x])^3)/(3*d)
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{B(a+ia\tan(c+dx))^3}{3d} - (-A+iB)\int (a+ia\tan(c+dx))^3\,dx$$
$$= \frac{a(iA+B)(a+ia\tan(c+dx))^2}{2d} + \frac{B(a+ia\tan(c+dx))^3}{3d} + (2a(A-iB$$
$$= 4a^3(A-iB)x - \frac{2a^3(A-iB)\tan(c+dx)}{d} + \frac{a(iA+B)(a+ia\tan(c+d}{2d}$$
$$= 4a^3(A-iB)x - \frac{4a^3(iA+B)\log(\cos(c+dx))}{d} - \frac{2a^3(A-iB)\tan(c+d}{d}$$

Mathematica [B] time = 3.82623, size = 331, normalized size = 3.01

$$\frac{a^3\sec(c)\sec^3(c+dx)\left(3\cos(dx)\left((-3B-3iA)\log\left(\cos^2(c+dx)\right)+6Adx-iA-6iBdx-3B\right)+3\cos(2c+dx)\left((-3B-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^3*Sec[c]*Sec[c + d*x]^3*(6*A*d*x*Cos[2*c + 3*d*x] - (6*I)*B*d*x*Cos[2*c
+ 3*d*x] + 6*A*d*x*Cos[4*c + 3*d*x] - (6*I)*B*d*x*Cos[4*c + 3*d*x] - (3*I)*
A*Cos[2*c + 3*d*x]*Log[Cos[c + d*x]^2] - 3*B*Cos[2*c + 3*d*x]*Log[Cos[c + d
*x]^2] - (3*I)*A*Cos[4*c + 3*d*x]*Log[Cos[c + d*x]^2] - 3*B*Cos[4*c + 3*d*x
]*Log[Cos[c + d*x]^2] + 3*Cos[d*x]*((-I)*A - 3*B + 6*A*d*x - (6*I)*B*d*x +
((-3*I)*A - 3*B)*Log[Cos[c + d*x]^2]) + 3*Cos[2*c + d*x]*((-I)*A - 3*B + 6*
A*d*x - (6*I)*B*d*x + ((-3*I)*A - 3*B)*Log[Cos[c + d*x]^2]) - 18*A*Sin[d*x]
 + (24*I)*B*Sin[d*x] + 9*A*Sin[2*c + d*x] - (15*I)*B*Sin[2*c + d*x] - 9*A*S
in[2*c + 3*d*x] + (13*I)*B*Sin[2*c + 3*d*x]))/(12*d)
```

Maple [A] time = 0.003, size = 160, normalized size = 1.5

$$\frac{-\frac{i}{3}a^3B(\tan(dx+c))^3}{d}-\frac{\frac{i}{2}a^3A(\tan(dx+c))^2}{d}+\frac{4ia^3B\tan(dx+c)}{d}-\frac{3a^3B(\tan(dx+c))^2}{2d}-3\frac{a^3A\tan(dx+c)}{d}+\frac{2ia^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3*I/d*a^3*B*tan(d*x+c)^3-1/2*I/d*a^3*A*tan(d*x+c)^2+4*I/d*a^3*B*tan(d*x+
c)-3/2/d*a^3*B*tan(d*x+c)^2-3/d*a^3*A*tan(d*x+c)+2*I/d*a^3*A*ln(1+tan(d*x+c
)^2)+2/d*a^3*B*ln(1+tan(d*x+c)^2)-4*I/d*a^3*B*arctan(tan(d*x+c))+4/d*a^3*A*
arctan(tan(d*x+c))
```

Maxima [A] time = 1.69227, size = 131, normalized size = 1.19

$$-\frac{2iBa^3\tan(dx+c)^3+3(iA+3B)a^3\tan(dx+c)^2-6(dx+c)(4A-4iB)a^3+12(-iA-B)a^3\log\left(\tan(dx+c)^2+1\right)-}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/6*(2*I*B*a^3*tan(d*x + c)^3 + 3*(I*A + 3*B)*a^3*tan(d*x + c)^2 - 6*(d*x
+ c)*(4*A - 4*I*B)*a^3 + 12*(-I*A - B)*a^3*log(tan(d*x + c)^2 + 1) + (18*A
- 24*I*B)*a^3*tan(d*x + c))/d
```

Fricas [A] time = 1.48427, size = 509, normalized size = 4.63

$$\frac{(-24iA-48B)a^3e^{(4idx+4ic)}+(-42iA-66B)a^3e^{(2idx+2ic)}+(-18iA-26B)a^3+\left((-12iA-12B)a^3e^{(6idx+6ic)}+(-36iA-\right.}{3\left(de^{(6idx+6ic)}+3de^{(4idx+4ic)}+3de^{(2idx-}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/3*((-24*I*A - 48*B)*a^3*e^(4*I*d*x + 4*I*c) + (-42*I*A - 66*B)*a^3*e^(2*I
*d*x + 2*I*c) + (-18*I*A - 26*B)*a^3 + ((-12*I*A - 12*B)*a^3*e^(6*I*d*x + 6
```

```
*I*c) + (-36*I*A - 36*B)*a^3*e^(4*I*d*x + 4*I*c) + (-36*I*A - 36*B)*a^3*e^(
2*I*d*x + 2*I*c) + (-12*I*A - 12*B)*a^3)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e
^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 6.48434, size = 172, normalized size = 1.56

$$-\frac{4a^3(iA+B)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{-\frac{\left(8iAa^3+16Ba^3\right)e^{-2ic}e^{4idx}}{d}-\frac{\left(14iAa^3+22Ba^3\right)e^{-4ic}e^{2idx}}{d}-\frac{\left(18iAa^3+26Ba^3\right)e^{-6ic}}{3d}}{e^{6idx}+3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}+e^{-6ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] -4*a**3*(I*A + B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + (-(8*I*A*a**3 + 16*B*
a**3)*exp(-2*I*c)*exp(4*I*d*x)/d - (14*I*A*a**3 + 22*B*a**3)*exp(-4*I*c)*ex
p(2*I*d*x)/d - (18*I*A*a**3 + 26*B*a**3)*exp(-6*I*c)/(3*d))/(exp(6*I*d*x) +
 3*exp(-2*I*c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*x) + exp(-6*I*c))
```

Giac [B] time = 1.50127, size = 421, normalized size = 3.83

$$\frac{-12i\,Aa^3e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-12\,Ba^3e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-36i\,Aa^3e^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/3*(-12*I*A*a^3*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 12*B*a^
3*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 36*I*A*a^3*e^(4*I*d*x
+ 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 36*B*a^3*e^(4*I*d*x + 4*I*c)*log(e^
(2*I*d*x + 2*I*c) + 1) - 36*I*A*a^3*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*
I*c) + 1) - 36*B*a^3*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 24*
I*A*a^3*e^(4*I*d*x + 4*I*c) - 48*B*a^3*e^(4*I*d*x + 4*I*c) - 42*I*A*a^3*e^(
2*I*d*x + 2*I*c) - 66*B*a^3*e^(2*I*d*x + 2*I*c) - 12*I*A*a^3*log(e^(2*I*d*x
 + 2*I*c) + 1) - 12*B*a^3*log(e^(2*I*d*x + 2*I*c) + 1) - 18*I*A*a^3 - 26*B*
a^3)/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*
I*c) + d)
```

3.20 $\int \cot(c + dx)(a + ia\tan(c + dx))^3(A + B\tan(c + dx))\,dx$

Optimal. Leaf size=107

$$-\frac{(A-2iB)\left(a^3+ia^3\tan(c+dx)\right)}{d}+\frac{a^3(3A-4iB)\log(\cos(c+dx))}{d}+4a^3x(B+iA)+\frac{a^3A\log(\sin(c+dx))}{d}+\frac{iaB(a+ia$$

```
[Out] 4*a^3*(I*A + B)*x + (a^3*(3*A - (4*I)*B)*Log[Cos[c + d*x]])/d + (a^3*A*Log[
Sin[c + d*x]])/d + ((I/2)*a*B*(a + I*a*Tan[c + d*x])^2)/d - ((A - (2*I)*B)*
(a^3 + I*a^3*Tan[c + d*x]))/d
```

Rubi [A] time = 0.280963, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3594, 3589, 3475, 3531}

$$-\frac{(A-2iB)\left(a^3+ia^3\tan(c+dx)\right)}{d}+\frac{a^3(3A-4iB)\log(\cos(c+dx))}{d}+4a^3x(B+iA)+\frac{a^3A\log(\sin(c+dx))}{d}+\frac{iaB(a+ia$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] 4*a^3*(I*A + B)*x + (a^3*(3*A - (4*I)*B)*Log[Cos[c + d*x]])/d + (a^3*A*Log[
Sin[c + d*x]])/d + ((I/2)*a*B*(a + I*a*Tan[c + d*x])^2)/d - ((A - (2*I)*B)*
(a^3 + I*a^3*Tan[c + d*x]))/d
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
```

```
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{iaB(a+ia\tan(c+dx))^2}{2d}+\frac{1}{2}\int \cot(c+dx)(a+ia\tan(c+$$

$$= \frac{iaB(a+ia\tan(c+dx))^2}{2d}-\frac{(A-2iB)\left(a^3+ia^3\tan(c+dx)\right.}{d}$$

$$= \frac{iaB(a+ia\tan(c+dx))^2}{2d}-\frac{(A-2iB)\left(a^3+ia^3\tan(c+dx)\right.}{d}$$

$$= 4a^3(iA+B)x+\frac{a^3(3A-4iB)\log(\cos(c+dx))}{d}+\frac{iaB(a+i}{}$$

$$= 4a^3(iA+B)x+\frac{a^3(3A-4iB)\log(\cos(c+dx))}{d}+\frac{a^3A\log(}{}$$

Mathematica [B] time = 7.65867, size = 281, normalized size = 2.63

$$\frac{a^3\sec(c)\sec^2(c+dx)(\cos(3dx)+i\sin(3dx))\left(2\cos(c)\left((3A-4iB)\log\left(\cos^2(c+dx)\right)+A\log\left(\sin^2(c+dx)\right)+8iAdx+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^3*Sec[c]*Sec[c + d*x]^2*(Cos[3*d*x] + I*Sin[3*d*x])*((8*I)*A*d*x*Cos[3*c
 + 2*d*x] + 8*B*d*x*Cos[3*c + 2*d*x] + 3*A*Cos[3*c + 2*d*x]*Log[Cos[c + d*x
```

```
]^2] - (4*I)*B*Cos[3*c + 2*d*x]*Log[Cos[c + d*x]^2] + A*Cos[3*c + 2*d*x]*Lo
g[Sin[c + d*x]^2] + 2*Cos[c]*((-2*I)*B + (8*I)*A*d*x + 8*B*d*x + (3*A - (4*
I)*B)*Log[Cos[c + d*x]^2] + A*Log[Sin[c + d*x]^2]) + Cos[c + 2*d*x]*(8*(I*A
 + B)*d*x + (3*A - (4*I)*B)*Log[Cos[c + d*x]^2] + A*Log[Sin[c + d*x]^2]) +
(4*I)*A*Sin[c] + 12*B*Sin[c] - (4*I)*A*Sin[c + 2*d*x] - 12*B*Sin[c + 2*d*x]
))/(8*d*(Cos[d*x] + I*Sin[d*x])^3)
```

Maple [A] time = 0.067, size = 135, normalized size = 1.3

$$4\,iAxa^3-\frac{iA\tan(dx+c)\,a^3}{d}+\frac{4\,iAa^3c}{d}-\frac{\frac{i}{2}Ba^3\left(\tan(dx+c)\right)^2}{d}-\frac{4\,iBa^3\ln(\cos(dx+c))}{d}+3\,\frac{Aa^3\ln(\cos(dx+c))}{d}+4\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*I*A*x*a^3-I/d*A*tan(d*x+c)*a^3+4*I/d*A*a^3*c-1/2*I/d*B*a^3*tan(d*x+c)^2-4
*I/d*B*a^3*ln(cos(d*x+c))+3/d*A*a^3*ln(cos(d*x+c))+4*B*a^3*x-3/d*a^3*B*tan(
d*x+c)+4/d*B*a^3*c+a^3*A*ln(sin(d*x+c))/d
```

Maxima [A] time = 1.68772, size = 123, normalized size = 1.15

$$-\frac{i\,Ba^3\tan(dx+c)^2+8\,(dx+c)(-i\,A-B)a^3+2\,(2\,A-2i\,B)a^3\log\left(\tan(dx+c)^2+1\right)-2\,Aa^3\log(\tan(dx+c))+2\,(i\,A}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/2*(I*B*a^3*tan(d*x + c)^2 + 8*(d*x + c)*(-I*A - B)*a^3 + 2*(2*A - 2*I*B)
*a^3*log(tan(d*x + c)^2 + 1) - 2*A*a^3*log(tan(d*x + c)) + 2*(I*A + 3*B)*a^
3*tan(d*x + c))/d
```

Fricas [A] time = 1.44725, size = 466, normalized size = 4.36

$$\frac{2\,(A-4i\,B)a^3e^{(2i\,dx+2i\,c)}+2\,(A-3i\,B)a^3+\left((3\,A-4i\,B)a^3e^{(4i\,dx+4i\,c)}+2\,(3\,A-4i\,B)a^3e^{(2i\,dx+2i\,c)}+(3\,A-4i\,B)a^3\right)\log\left(e^{(2i}\right.}{de^{(4i\,dx+4i\,c)}+2\,de^{(2i\,dx+2i\,c)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

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

Sympy [B] time = 8.41282, size = 207, normalized size = 1.93

$$\frac{\frac{\left(2Aa^3-8iBa^3\right)e^{-2ic}e^{2idx}}{d}+\frac{\left(2Aa^3-6iBa^3\right)e^{-4ic}}{d}}{e^{4idx}+2e^{-2ic}e^{2idx}+e^{-4ic}}+\operatorname{RootSum}\left(z^2d^2+z\left(-4Aa^3d+4iBa^3d\right)+3A^2a^6-4iABa^6,\left(i\mapsto i\log\left(\frac{}{iAa^3e^{2i}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] ((2*A*a**3 - 8*I*B*a**3)*exp(-2*I*c)*exp(2*I*d*x)/d + (2*A*a**3 - 6*I*B*a**
3)*exp(-4*I*c)/d)/(exp(4*I*d*x) + 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c))
 + RootSum(_z**2*d**2 + _z*(-4*A*a**3*d + 4*I*B*a**3*d) + 3*A**2*a**6 - 4*I
*A*B*a**6, Lambda(_i, _i*log(_i*I*d/(I*A*a**3*exp(2*I*c) + 2*B*a**3*exp(2*I
*c)) - (2*I*A + 2*B)/(I*A*exp(2*I*c) + 2*B*exp(2*I*c)) + exp(2*I*d*x))))
```

Giac [B] time = 1.5758, size = 362, normalized size = 3.38

$$\frac{2\,Aa^3\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)-4\left(4\,Aa^3-4i\,Ba^3\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+i\right)+2\left(3\,Aa^3-4i\,Ba^3\right)\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*A*a^3*log(abs(tan(1/2*d*x + 1/2*c))) - 4*(4*A*a^3 - 4*I*B*a^3)*log(t
an(1/2*d*x + 1/2*c) + I) + 2*(3*A*a^3 - 4*I*B*a^3)*log(abs(tan(1/2*d*x + 1/
2*c) + 1)) + 2*(3*A*a^3 - 4*I*B*a^3)*log(abs(tan(1/2*d*x + 1/2*c) - 1)) - (
9*A*a^3*tan(1/2*d*x + 1/2*c)^4 - 12*I*B*a^3*tan(1/2*d*x + 1/2*c)^4 - 4*I*A*
a^3*tan(1/2*d*x + 1/2*c)^3 - 12*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 18*A*a^3*tan
(1/2*d*x + 1/2*c)^2 + 28*I*B*a^3*tan(1/2*d*x + 1/2*c)^2 + 4*I*A*a^3*tan(1/2
*d*x + 1/2*c) + 12*B*a^3*tan(1/2*d*x + 1/2*c) + 9*A*a^3 - 12*I*B*a^3)/(tan(
1/2*d*x + 1/2*c)^2 - 1)^2)/d
```

3.21 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=116

$$\frac{(-B+iA)\left(a^3+ia^3\tan(c+dx)\right)}{d}+\frac{a^3(B+3iA)\log(\sin(c+dx))}{d}+\frac{a^3(3B+iA)\log(\cos(c+dx))}{d}-4a^3x(A-iB)-\frac{aA}{}$$

```
[Out] -4*a^3*(A - I*B)*x + (a^3*(I*A + 3*B)*Log[Cos[c + d*x]])/d + (a^3*((3*I)*A
+ B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^2)/d +
 ((I*A - B)*(a^3 + I*a^3*Tan[c + d*x]))/d
```

Rubi [A] time = 0.29589, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3594, 3589, 3475, 3531}

$$\frac{(-B+iA)\left(a^3+ia^3\tan(c+dx)\right)}{d}+\frac{a^3(B+3iA)\log(\sin(c+dx))}{d}+\frac{a^3(3B+iA)\log(\cos(c+dx))}{d}-4a^3x(A-iB)-\frac{aA}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -4*a^3*(A - I*B)*x + (a^3*(I*A + 3*B)*Log[Cos[c + d*x]])/d + (a^3*((3*I)*A
+ B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^2)/d +
 ((I*A - B)*(a^3 + I*a^3*Tan[c + d*x]))/d
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^2}{d} + \int \cot(c+dx)(a+$$

$$= -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^2}{d} + \frac{(iA-B)\left(a^3+ia^3\right.}{d}$$

$$= -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^2}{d} + \frac{(iA-B)\left(a^3+ia^3\right.}{d}$$

$$= -4a^3(A-iB)x + \frac{a^3(iA+3B)\log(\cos(c+dx))}{d} - \frac{aA\cot(c}{}$$

$$= -4a^3(A-iB)x + \frac{a^3(iA+3B)\log(\cos(c+dx))}{d} + \frac{a^3(3iA+}{}$$

Mathematica [B] time = 4.20123, size = 291, normalized size = 2.51

$$\frac{a^3\csc(c)\sec(c)\csc(c+dx)\sec(c+dx)\left(4(3A-iB)\sin(2c)\sin(2(c+dx))\tan^{-1}(\tan(4c+dx))+\cos(2dx)\left((B+3iA)\log\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^3*Csc[c]*Csc[c + d*x]*Sec[c]*Sec[c + d*x]*(14*A*d*x*Cos[4*c + 2*d*x] - (
10*I)*B*d*x*Cos[4*c + 2*d*x] - I*A*Cos[4*c + 2*d*x]*Log[Cos[c + d*x]^2] - 3
*B*Cos[4*c + 2*d*x]*Log[Cos[c + d*x]^2] - (3*I)*A*Cos[4*c + 2*d*x]*Log[Sin[
c + d*x]^2] - B*Cos[4*c + 2*d*x]*Log[Sin[c + d*x]^2] + Cos[2*d*x]*(2*(-7*A
+ (5*I)*B)*d*x + (I*A + 3*B)*Log[Cos[c + d*x]^2] + ((3*I)*A + B)*Log[Sin[c
+ d*x]^2]) - 4*A*Sin[2*c] - (4*I)*B*Sin[2*c] + 4*A*Sin[2*d*x] - (4*I)*B*Sin
[2*d*x] + 4*A*Sin[2*(c + d*x)] + (4*I)*B*Sin[2*(c + d*x)] + 4*(3*A - I*B)*A
rcTan[Tan[4*c + d*x]]*Sin[2*c]*Sin[2*(c + d*x)]))/(16*d)
```

Maple [A] time = 0.061, size = 134, normalized size = 1.2

$$4\,iBxa^3+\frac{iAa^3\ln(\cos(dx+c))}{d}+\frac{3\,iAa^3\ln(\sin(dx+c))}{d}-4\,Aa^3x-\frac{iB\tan(dx+c)\,a^3}{d}+\frac{4\,iBa^3c}{d}-\frac{A\cot(dx+c)\,a^3}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*I*B*x*a^3+I/d*A*a^3*ln(cos(d*x+c))+3*I/d*A*a^3*ln(sin(d*x+c))-4*A*a^3*x-I
/d*B*tan(d*x+c)*a^3+4*I/d*B*a^3*c-1/d*A*cot(d*x+c)*a^3-4/d*A*a^3*c+3/d*B*a^
3*ln(cos(d*x+c))+1/d*B*a^3*ln(sin(d*x+c))
```

Maxima [A] time = 1.56119, size = 115, normalized size = 0.99

$$-\frac{(dx+c)(4\,A-4i\,B)a^3+2\,(i\,A+B)a^3\log\left(\tan(dx+c)^2+1\right)-(3i\,A+B)a^3\log(\tan(dx+c))+i\,Ba^3\tan(dx+c)+}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -((d*x + c)*(4*A - 4*I*B)*a^3 + 2*(I*A + B)*a^3*log(tan(d*x + c)^2 + 1) - (
3*I*A + B)*a^3*log(tan(d*x + c)) + I*B*a^3*tan(d*x + c) + A*a^3/tan(d*x + c
))/d
```

Fricas [A] time = 1.40567, size = 360, normalized size = 3.1

$$\frac{(-2i\,A+2\,B)a^3e^{(2i\,dx+2i\,c)}+(-2i\,A-2\,B)a^3+\left((i\,A+3\,B)a^3e^{(4i\,dx+4i\,c)}+(-i\,A-3\,B)a^3\right)\log\left(e^{(2i\,dx+2i\,c)}+1\right)+\left((3i\,A+B)\right.}{de^{(4i\,dx+4i\,c)}-d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

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

Sympy [B] time = 3.94357, size = 199, normalized size = 1.72

$$\frac{-\frac{\left(2iAa^3-2Ba^3\right)e^{-2ic}e^{2idx}}{d}-\frac{\left(2iAa^3+2Ba^3\right)e^{-4ic}}{d}}{e^{4idx}-e^{-4ic}}+\operatorname{RootSum}\left(z^2d^2+z\left(-4iAa^3d-4Ba^3d\right)-3A^2a^6+10iABa^6+3B^2a^6,\left(i\mapsto i\log\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] (-(2*I*A*a**3 - 2*B*a**3)*exp(-2*I*c)*exp(2*I*d*x)/d - (2*I*A*a**3 + 2*B*a*
*3)*exp(-4*I*c)/d)/(exp(4*I*d*x) - exp(-4*I*c)) + RootSum(_z**2*d**2 + _z*(
-4*I*A*a**3*d - 4*B*a**3*d) - 3*A**2*a**6 + 10*I*A*B*a**6 + 3*B**2*a**6, La
mbda(_i, _i*log(_i*I*d/(A*a**3*exp(2*I*c) + I*B*a**3*exp(2*I*c)) + (2*A - 2
*I*B)/(A*exp(2*I*c) + I*B*exp(2*I*c)) + exp(2*I*d*x))))
```

Giac [B] time = 1.59254, size = 351, normalized size = 3.03

$$3\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-48\left(i\,Aa^3+Ba^3\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+i\right)+6\left(i\,Aa^3+3\,Ba^3\right)\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right|\right)+6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/6*(3*A*a^3*tan(1/2*d*x + 1/2*c) - 48*(I*A*a^3 + B*a^3)*log(tan(1/2*d*x +
1/2*c) + I) + 6*(I*A*a^3 + 3*B*a^3)*log(abs(tan(1/2*d*x + 1/2*c) + 1)) + 6*
(I*A*a^3 + 3*B*a^3)*log(abs(tan(1/2*d*x + 1/2*c) - 1)) - 6*(-3*I*A*a^3 - B*
a^3)*log(abs(tan(1/2*d*x + 1/2*c))) + (-10*I*A*a^3*tan(1/2*d*x + 1/2*c)^3 -
 14*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 3*A*a^3*tan(1/2*d*x + 1/2*c)^2 + 12*I*B*
a^3*tan(1/2*d*x + 1/2*c)^2 + 10*I*A*a^3*tan(1/2*d*x + 1/2*c) + 14*B*a^3*tan
(1/2*d*x + 1/2*c) + 3*A*a^3)/(tan(1/2*d*x + 1/2*c)^3 - tan(1/2*d*x + 1/2*c)
))/d
```

3.22 $\int \cot^3(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=123

$$-\frac{a^3(4A-3iB)\log(\sin(c+dx))}{d}-\frac{(B+2iA)\cot(c+dx)\left(a^3+ia^3\tan(c+dx)\right)}{d}-4a^3x(B+iA)+\frac{ia^3B\log(\cos(c+dx))}{d}-$$

```
[Out] -4*a^3*(I*A + B)*x + (I*a^3*B*Log[Cos[c + d*x]])/d - (a^3*(4*A - (3*I)*B)*L
og[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^2)/(2*d) -
 (((2*I)*A + B)*Cot[c + d*x]*(a^3 + I*a^3*Tan[c + d*x]))/d
```

Rubi [A] time = 0.315215, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3593, 3589, 3475, 3531}

$$-\frac{a^3(4A-3iB)\log(\sin(c+dx))}{d}-\frac{(B+2iA)\cot(c+dx)\left(a^3+ia^3\tan(c+dx)\right)}{d}-4a^3x(B+iA)+\frac{ia^3B\log(\cos(c+dx))}{d}-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -4*a^3*(I*A + B)*x + (I*a^3*B*Log[Cos[c + d*x]])/d - (a^3*(4*A - (3*I)*B)*L
og[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^2)/(2*d) -
 (((2*I)*A + B)*Cot[c + d*x]*(a^3 + I*a^3*Tan[c + d*x]))/d
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
```

```
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^2}{2d}+\frac{1}{2}\int \cot^2(c+d$$

$$= -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^2}{2d}-\frac{(2iA+B)\cot(c}{}$$

$$= -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^2}{2d}-\frac{(2iA+B)\cot(c}{}$$

$$= -4a^3(iA+B)x+\frac{ia^3B\log(\cos(c+dx))}{d}-\frac{aA\cot^2(c+dx}{}$$

$$= -4a^3(iA+B)x+\frac{ia^3B\log(\cos(c+dx))}{d}-\frac{a^3(4A-3iB)\log}{d}$$

Mathematica [B] time = 8.58067, size = 1010, normalized size = 8.21

$$a^3\left(\frac{x(\cot(c+dx)+i)^3(B+A\cot(c+dx))\left(-16iA\cos^3(c)-\frac{25}{2}B\cos^3(c)+4A\cot(c)\cos^3(c)-3iB\cot(c)\cos^3(c)-24A\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^3*(((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*(-(A*Cos[3*c])/2 + (I/2)*A*
Sin[3*c])*Sin[c + d*x]^2)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*
Sin[c + d*x])) + ((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*Csc[c/2]*Sec[c/
2]*(Cos[3*c]/2 - (I/2)*Sin[3*c])*((3*I)*A*Sin[d*x] + B*Sin[d*x])*Sin[c + d*
x]^3)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I
/2)*B*Cos[3*c]*(I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*Log[Cos[c + d*x]^2
]*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c +
d*x])) + ((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*(4*A*Cos[(3*c)/2] - (3*
I)*B*Cos[(3*c)/2] - (4*I)*A*Sin[(3*c)/2] - 3*B*Sin[(3*c)/2])*(I*ArcTan[Tan[
4*c + d*x]]*Cos[(3*c)/2] + ArcTan[Tan[4*c + d*x]]*Sin[(3*c)/2])*Sin[c + d*x
]^4)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I
+ Cot[c + d*x])^3*(B + A*Cot[c + d*x])*(4*A*Cos[(3*c)/2] - (3*I)*B*Cos[(3*c
)/2] - (4*I)*A*Sin[(3*c)/2] - 3*B*Sin[(3*c)/2])*(-(Cos[(3*c)/2]*Log[Sin[c +
 d*x]^2])/2 + (I/2)*Log[Sin[c + d*x]^2]*Sin[(3*c)/2])*Sin[c + d*x]^4)/(d*(C
os[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (B*(I + Cot[c
+ d*x])^3*(B + A*Cot[c + d*x])*Log[Cos[c + d*x]^2]*Sin[3*c]*Sin[c + d*x]^4)
/(2*d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((A -
I*B)*(I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*((-4*I)*d*x*Cos[3*c] - 4*d*x
*Sin[3*c])*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B
*Sin[c + d*x])) + (x*(I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*Sin[c + d*x]
^4*((B*Cos[c])/2 - (16*I)*A*Cos[c]^3 - (25*B*Cos[c]^3)/2 + 4*A*Cos[c]^3*Cot
[c] - (3*I)*B*Cos[c]^3*Cot[c] - I*B*Sin[c] - 24*A*Cos[c]^2*Sin[c] + (20*I)*
B*Cos[c]^2*Sin[c] + (16*I)*A*Cos[c]*Sin[c]^2 + 15*B*Cos[c]*Sin[c]^2 + 4*A*S
in[c]^3 - (5*I)*B*Sin[c]^3 + (2*A - I*B + 2*A*Cos[2*c] - (2*I)*B*Cos[2*c])*
Csc[c]*Sec[c]*(-Cos[3*c] + I*Sin[3*c]) - (B*Sin[c]*Tan[c])/2 - (B*Sin[c]^3*
Tan[c])/2))/((Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.075, size = 136, normalized size = 1.1

$$-4\,iAxa^3-\frac{4\,iAa^3c}{d}+\frac{iBa^3\ln\left(\cos\left(dx+c\right)\right)}{d}-4\,\frac{Aa^3\ln\left(\sin\left(dx+c\right)\right)}{d}-4\,Ba^3x-4\,\frac{Ba^3c}{d}-\frac{3\,iA\cot\left(dx+c\right)a^3}{d}+\frac{3\,iBa^3\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -4*I*A*x*a^3-4*I/d*A*a^3*c+I*a^3*B*ln(cos(d*x+c))/d-4*a^3*A*ln(sin(d*x+c))/
d-4*B*a^3*x-4/d*B*a^3*c-3*I/d*A*cot(d*x+c)*a^3+3*I/d*B*a^3*ln(sin(d*x+c))-1
/2/d*A*a^3*cot(d*x+c)^2-1/d*B*cot(d*x+c)*a^3
```

Maxima [A] time = 1.66136, size = 132, normalized size = 1.07

$$-\frac{8\,(dx+c)(i\,A+B)a^3-2\,(2\,A-2i\,B)a^3\log\left(\tan\left(dx+c\right)^2+1\right)+2\,(4\,A-3i\,B)a^3\log\left(\tan\left(dx+c\right)\right)-\frac{2\,(-3i\,A-B)a^3\tan(dx}{\tan(dx+c)^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/2*(8*(d*x + c)*(I*A + B)*a^3 - 2*(2*A - 2*I*B)*a^3*log(tan(d*x + c)^2 +
1) + 2*(4*A - 3*I*B)*a^3*log(tan(d*x + c)) - (2*(-3*I*A - B)*a^3*tan(d*x +
c) - A*a^3)/tan(d*x + c)^2)/d
```

Fricas [A] time = 1.50599, size = 474, normalized size = 3.85

$$\frac{2\,(4\,A-i\,B)a^3e^{(2i\,dx+2i\,c)}-2\,(3\,A-i\,B)a^3+\left(i\,Ba^3e^{(4i\,dx+4i\,c)}-2i\,Ba^3e^{(2i\,dx+2i\,c)}+i\,Ba^3\right)\log\left(e^{(2i\,dx+2i\,c)}+1\right)-\left((4\,A-3i\,B\right.}{de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

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

Sympy [A] time = 8.86526, size = 207, normalized size = 1.68

$$\frac{-\frac{\left(6Aa^3-2iBa^3\right)e^{-4ic}}{d}+\frac{\left(8Aa^3-2iBa^3\right)e^{-2ic}e^{2idx}}{d}}{e^{4idx}-2e^{-2ic}e^{2idx}+e^{-4ic}}+\operatorname{RootSum}\left(z^2d^2+z\left(4Aa^3d-4iBa^3d\right)-4iABa^6-3B^2a^6,\left(i\mapsto i\log\left(\frac{}{2iAa^3e^{2}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] (-(6*A*a**3 - 2*I*B*a**3)*exp(-4*I*c)/d + (8*A*a**3 - 2*I*B*a**3)*exp(-2*I*
c)*exp(2*I*d*x)/d)/(exp(4*I*d*x) - 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c)
) + RootSum(_z**2*d**2 + _z*(4*A*a**3*d - 4*I*B*a**3*d) - 4*I*A*B*a**6 - 3*
B**2*a**6, Lambda(_i, _i*log(_i*I*d/(2*I*A*a**3*exp(2*I*c) + B*a**3*exp(2*I
*c)) + (2*I*A + 2*B)/(2*I*A*exp(2*I*c) + B*exp(2*I*c)) + exp(2*I*d*x))))
```

Giac [B] time = 1.65034, size = 306, normalized size = 2.49

$$-\frac{Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-8i\,Ba^3\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right|\right)-8i\,Ba^3\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-1\right|\right)-12i\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/8*(A*a^3*tan(1/2*d*x + 1/2*c)^2 - 8*I*B*a^3*log(abs(tan(1/2*d*x + 1/2*c)
 + 1)) - 8*I*B*a^3*log(abs(tan(1/2*d*x + 1/2*c) - 1)) - 12*I*A*a^3*tan(1/2*
d*x + 1/2*c) - 4*B*a^3*tan(1/2*d*x + 1/2*c) - 16*(4*A*a^3 - 4*I*B*a^3)*log(
tan(1/2*d*x + 1/2*c) + I) + 8*(4*A*a^3 - 3*I*B*a^3)*log(abs(tan(1/2*d*x + 1
/2*c))) - (48*A*a^3*tan(1/2*d*x + 1/2*c)^2 - 36*I*B*a^3*tan(1/2*d*x + 1/2*c
)^2 - 12*I*A*a^3*tan(1/2*d*x + 1/2*c) - 4*B*a^3*tan(1/2*d*x + 1/2*c) - A*a^
3)/tan(1/2*d*x + 1/2*c)^2)/d
```

3.23 $\int \cot^4(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=134

$$\frac{a^3(17A-15iB)\cot(c+dx)}{6d}-\frac{4a^3(B+iA)\log(\sin(c+dx))}{d}-\frac{(3B+5iA)\cot^2(c+dx)\left(a^3+ia^3\tan(c+dx)\right)}{6d}+4a^3x(A$$

```
[Out] 4*a^3*(A - I*B)*x + (a^3*(17*A - (15*I)*B)*Cot[c + d*x])/(6*d) - (4*a^3*(I*
A + B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^2)
/(3*d) - (((5*I)*A + 3*B)*Cot[c + d*x]^2*(a^3 + I*a^3*Tan[c + d*x]))/(6*d)
```

Rubi [A] time = 0.364967, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3593, 3591, 3531, 3475}

$$\frac{a^3(17A-15iB)\cot(c+dx)}{6d}-\frac{4a^3(B+iA)\log(\sin(c+dx))}{d}-\frac{(3B+5iA)\cot^2(c+dx)\left(a^3+ia^3\tan(c+dx)\right)}{6d}+4a^3x(A$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] 4*a^3*(A - I*B)*x + (a^3*(17*A - (15*I)*B)*Cot[c + d*x])/(6*d) - (4*a^3*(I*
A + B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^2)
/(3*d) - (((5*I)*A + 3*B)*Cot[c + d*x]^2*(a^3 + I*a^3*Tan[c + d*x]))/(6*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
```

```
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^2}{3d} + \frac{1}{3}\int \cot^3(c+dx)$$

$$= -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^2}{3d} - \frac{(5iA+3B)\cot^2(c}{}$$

$$= \frac{a^3(17A-15iB)\cot(c+dx)}{6d} - \frac{aA\cot^3(c+dx)(a+ia\tan(c}{3d}$$

$$= 4a^3(A-iB)x + \frac{a^3(17A-15iB)\cot(c+dx)}{6d} - \frac{aA\cot^3(c+}{}$$

$$= 4a^3(A-iB)x + \frac{a^3(17A-15iB)\cot(c+dx)}{6d} - \frac{4a^3(iA+B)}{}$$

Mathematica [B] time = 4.68382, size = 442, normalized size = 3.3

$$\frac{a^3\csc\left(\frac{c}{2}\right)\sec\left(\frac{c}{2}\right)\csc^3(c+dx)(\cos(3dx)+i\sin(3dx))\left(-48(A-iB)\sin(c)\sin^3(c+dx)\tan^{-1}(\tan(4c+dx))+\cos(dx)\left((-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^3*Csc[c/2]*Csc[c + d*x]^3*Sec[c/2]*(Cos[3*d*x] + I*Sin[3*d*x])*((9*I)*A*
Cos[2*c + d*x] + 3*B*Cos[2*c + d*x] - 36*A*d*x*Cos[2*c + d*x] + (36*I)*B*d*
x*Cos[2*c + d*x] - 12*A*d*x*Cos[2*c + 3*d*x] + (12*I)*B*d*x*Cos[2*c + 3*d*x
] + 12*A*d*x*Cos[4*c + 3*d*x] - (12*I)*B*d*x*Cos[4*c + 3*d*x] + (9*I)*A*Cos
[2*c + d*x]*Log[Sin[c + d*x]^2] + 9*B*Cos[2*c + d*x]*Log[Sin[c + d*x]^2] +
(3*I)*A*Cos[2*c + 3*d*x]*Log[Sin[c + d*x]^2] + 3*B*Cos[2*c + 3*d*x]*Log[Sin
[c + d*x]^2] - (3*I)*A*Cos[4*c + 3*d*x]*Log[Sin[c + d*x]^2] - 3*B*Cos[4*c +
 3*d*x]*Log[Sin[c + d*x]^2] + Cos[d*x]*((-9*I)*A - 3*B + 36*A*d*x - (36*I)*
B*d*x + ((-9*I)*A - 9*B)*Log[Sin[c + d*x]^2]) - 24*A*Sin[d*x] + (18*I)*B*Si
n[d*x] - 48*(A - I*B)*ArcTan[Tan[4*c + d*x]]*Sin[c]*Sin[c + d*x]^3 - 15*A*S
in[2*c + d*x] + (9*I)*B*Sin[2*c + d*x] + 13*A*Sin[2*c + 3*d*x] - (9*I)*B*Si
n[2*c + 3*d*x]))/(24*d*(Cos[d*x] + I*Sin[d*x])^3)
```

Maple [A] time = 0.071, size = 154, normalized size = 1.2

$$\frac{-3\,iB\cot(dx+c)\,a^3}{d}-\frac{\frac{3\,i}{2}Aa^3\left(\cot(dx+c)\right)^2}{d}-\frac{4\,iBa^3c}{d}+4\,Aa^3x+4\,\frac{A\cot(dx+c)\,a^3}{d}+4\,\frac{Aa^3c}{d}-4\,\frac{Ba^3\ln(\sin(dx+c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -3*I/d*B*cot(d*x+c)*a^3-3/2*I/d*A*a^3*cot(d*x+c)^2-4*I/d*B*a^3*c+4*A*a^3*x+
4/d*A*cot(d*x+c)*a^3+4/d*A*a^3*c-4/d*B*a^3*ln(sin(d*x+c))-4*I*B*x*a^3-4*I/d
*A*a^3*ln(sin(d*x+c))-1/3/d*A*a^3*cot(d*x+c)^3-1/2/d*B*a^3*cot(d*x+c)^2
```

Maxima [A] time = 2.37918, size = 157, normalized size = 1.17

$$\frac{6\,(dx+c)(4\,A-4i\,B)a^3-12\,(-i\,A-B)a^3\log\left(\tan(dx+c)^2+1\right)-24\,(i\,A+B)a^3\log\left(\tan(dx+c)\right)+\frac{(24\,A-18i\,B)a^3\tan(dx}{}}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/6*(6*(d*x + c)*(4*A - 4*I*B)*a^3 - 12*(-I*A - B)*a^3*log(tan(d*x + c)^2 +
 1) - 24*(I*A + B)*a^3*log(tan(d*x + c)) + ((24*A - 18*I*B)*a^3*tan(d*x + c
```

```
)^2 + 3*(-3*I*A - B)*a^3*tan(d*x + c) - 2*A*a^3)/tan(d*x + c)^3)/d
```

Fricas [A] time = 1.38771, size = 504, normalized size = 3.76

$$\frac{(48i\,A+24\,B)a^3e^{(4i\,dx+4i\,c)}+(-66i\,A-42\,B)a^3e^{(2i\,dx+2i\,c)}+(26i\,A+18\,B)a^3+\left((-12i\,A-12\,B)a^3e^{(6i\,dx+6i\,c)}+(36i\,A+36\right.}{3\left(de^{(6i\,dx+6i\,c)}-3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/3*((48*I*A + 24*B)*a^3*e^(4*I*d*x + 4*I*c) + (-66*I*A - 42*B)*a^3*e^(2*I*
d*x + 2*I*c) + (26*I*A + 18*B)*a^3 + ((-12*I*A - 12*B)*a^3*e^(6*I*d*x + 6*I
*c) + (36*I*A + 36*B)*a^3*e^(4*I*d*x + 4*I*c) + (-36*I*A - 36*B)*a^3*e^(2*I
*d*x + 2*I*c) + (12*I*A + 12*B)*a^3)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*
I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 14.52, size = 170, normalized size = 1.27

$$-\frac{4a^3\,(iA+B)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{\frac{\left(16iAa^3+8Ba^3\right)e^{-2ic}e^{4idx}}{d}-\frac{\left(22iAa^3+14Ba^3\right)e^{-4ic}e^{2idx}}{d}+\frac{\left(26iAa^3+18Ba^3\right)e^{-6ic}}{3d}}{e^{6idx}-3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}-e^{-6ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] -4*a**3*(I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + ((16*I*A*a**3 + 8*B*a
**3)*exp(-2*I*c)*exp(4*I*d*x)/d - (22*I*A*a**3 + 14*B*a**3)*exp(-4*I*c)*exp
(2*I*d*x)/d + (26*I*A*a**3 + 18*B*a**3)*exp(-6*I*c)/(3*d))/(exp(6*I*d*x) -
3*exp(-2*I*c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*x) - exp(-6*I*c))
```

Giac [B] time = 1.71772, size = 344, normalized size = 2.57

$$Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-9i\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-3\,Ba^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-51\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+36i\,Ba^3\tan\left(\frac{1}{2}\,dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/24*(A*a^3*tan(1/2*d*x + 1/2*c)^3 - 9*I*A*a^3*tan(1/2*d*x + 1/2*c)^2 - 3*B
*a^3*tan(1/2*d*x + 1/2*c)^2 - 51*A*a^3*tan(1/2*d*x + 1/2*c) + 36*I*B*a^3*ta
n(1/2*d*x + 1/2*c) - 192*(-I*A*a^3 - B*a^3)*log(tan(1/2*d*x + 1/2*c) + I) -
 96*(I*A*a^3 + B*a^3)*log(abs(tan(1/2*d*x + 1/2*c))) - (-176*I*A*a^3*tan(1/
2*d*x + 1/2*c)^3 - 176*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 51*A*a^3*tan(1/2*d*x
+ 1/2*c)^2 + 36*I*B*a^3*tan(1/2*d*x + 1/2*c)^2 + 9*I*A*a^3*tan(1/2*d*x + 1/
2*c) + 3*B*a^3*tan(1/2*d*x + 1/2*c) + A*a^3)/tan(1/2*d*x + 1/2*c)^3)/d
```

3.24 $\int \cot^5(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=157

$$\frac{a^3(15A-14iB)\cot^2(c+dx)}{12d}+\frac{4a^3(B+iA)\cot(c+dx)}{d}+\frac{4a^3(A-iB)\log(\sin(c+dx))}{d}-\frac{(2B+3iA)\cot^3(c+dx)\left(a^3+\right.}{6d}$$

```
[Out] 4*a^3*(I*A + B)*x + (4*a^3*(I*A + B)*Cot[c + d*x])/d + (a^3*(15*A - (14*I)*
B)*Cot[c + d*x]^2)/(12*d) + (4*a^3*(A - I*B)*Log[Sin[c + d*x]])/d - (a*A*Co
t[c + d*x]^4*(a + I*a*Tan[c + d*x])^2)/(4*d) - (((3*I)*A + 2*B)*Cot[c + d*x
]^3*(a^3 + I*a^3*Tan[c + d*x]))/(6*d)
```

Rubi [A] time = 0.418088, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3591, 3529, 3531, 3475}

$$\frac{a^3(15A-14iB)\cot^2(c+dx)}{12d}+\frac{4a^3(B+iA)\cot(c+dx)}{d}+\frac{4a^3(A-iB)\log(\sin(c+dx))}{d}-\frac{(2B+3iA)\cot^3(c+dx)\left(a^3+\right.}{6d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] 4*a^3*(I*A + B)*x + (4*a^3*(I*A + B)*Cot[c + d*x])/d + (a^3*(15*A - (14*I)*
B)*Cot[c + d*x]^2)/(12*d) + (4*a^3*(A - I*B)*Log[Sin[c + d*x]])/d - (a*A*Co
t[c + d*x]^4*(a + I*a*Tan[c + d*x])^2)/(4*d) - (((3*I)*A + 2*B)*Cot[c + d*x
]^3*(a^3 + I*a^3*Tan[c + d*x]))/(6*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^5(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^4(c+dx)(a+ia\tan(c+dx))^2}{4d} + \frac{1}{4}\int \cot^4(c+dx)$$
$$= -\frac{aA\cot^4(c+dx)(a+ia\tan(c+dx))^2}{4d} - \frac{(3iA+2B)\cot^3(c}{}$$
$$= \frac{a^3(15A-14iB)\cot^2(c+dx)}{12d} - \frac{aA\cot^4(c+dx)(a+ia\tan(}{4d}$$
$$= \frac{4a^3(iA+B)\cot(c+dx)}{d} + \frac{a^3(15A-14iB)\cot^2(c+dx)}{12d} -$$
$$= 4a^3(iA+B)x + \frac{4a^3(iA+B)\cot(c+dx)}{d} + \frac{a^3(15A-14iB)}{12d}$$
$$= 4a^3(iA+B)x + \frac{4a^3(iA+B)\cot(c+dx)}{d} + \frac{a^3(15A-14iB)}{12d}$$

Mathematica [B] time = 8.49607, size = 1007, normalized size = 6.41

$$a^3\left(\frac{(\cot(c+dx)+i)^3(B+A\cot(c+dx))\left(A\cos\left(\frac{3c}{2}\right)-iB\cos\left(\frac{3c}{2}\right)-iA\sin\left(\frac{3c}{2}\right)-B\sin\left(\frac{3c}{2}\right)\right)\left(-4i\tan^{-1}(\tan(4c+dx))\right.}{d(\cos(dx)+i\sin(dx))^3(A\cos(c+dx)+B\sin(c+dx))}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^3*(((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*(-(A*Cos[3*c])/4 + (I/4)*A*
Sin[3*c]))/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
+ ((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*Csc[c/2]*Sec[c/2]*(Cos[3*c]/6
- (I/6)*Sin[3*c])*((3*I)*A*Sin[d*x] + B*Sin[d*x])*Sin[c + d*x])/(d*(Cos[d*x
] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^
3*(B + A*Cot[c + d*x])*Csc[c/2]*Sec[c/2]*((-6*I)*A*Cos[c] - 2*B*Cos[c] + 15
*A*Sin[c] - (9*I)*B*Sin[c])*(Cos[3*c]/12 - (I/12)*Sin[3*c])*Sin[c + d*x]^2)
/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Co
t[c + d*x])^3*(B + A*Cot[c + d*x])*Csc[c/2]*Sec[c/2]*(Cos[3*c]/6 - (I/6)*Si
n[3*c])*((-15*I)*A*Sin[d*x] - 13*B*Sin[d*x])*Sin[c + d*x]^3)/(d*(Cos[d*x] +
 I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^3*(
B + A*Cot[c + d*x])*(A*Cos[(3*c)/2] - I*B*Cos[(3*c)/2] - I*A*Sin[(3*c)/2] -
 B*Sin[(3*c)/2])*((-4*I)*ArcTan[Tan[4*c + d*x]]*Cos[(3*c)/2] - 4*ArcTan[Tan
[4*c + d*x]]*Sin[(3*c)/2])*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*
Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x]
)*(A*Cos[(3*c)/2] - I*B*Cos[(3*c)/2] - I*A*Sin[(3*c)/2] - B*Sin[(3*c)/2])*(
2*Cos[(3*c)/2]*Log[Sin[c + d*x]^2] - (2*I)*Log[Sin[c + d*x]^2]*Sin[(3*c)/2]
```

```
)*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c +
d*x])) + (x*(I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*((16*I)*A*Cos[c]^3 +
16*B*Cos[c]^3 - 4*A*Cos[c]^3*Cot[c] + (4*I)*B*Cos[c]^3*Cot[c] + 24*A*Cos[c]
^2*Sin[c] - (24*I)*B*Cos[c]^2*Sin[c] - (16*I)*A*Cos[c]*Sin[c]^2 - 16*B*Cos[
c]*Sin[c]^2 - 4*A*Sin[c]^3 + (4*I)*B*Sin[c]^3 + (A - I*B)*Cot[c]*(4*Cos[3*c
] - (4*I)*Sin[3*c]))*Sin[c + d*x]^4)/((Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c +
d*x] + B*Sin[c + d*x])) + ((I*A + B)*(I + Cot[c + d*x])^3*(B + A*Cot[c + d*
x])*(4*d*x*Cos[3*c] - (4*I)*d*x*Sin[3*c])*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*
Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.077, size = 189, normalized size = 1.2

$$\frac{4\,iAa^3c}{d}-\frac{\frac{3\,i}{2}Ba^3\,(\cot\,(dx+c))^2}{d}-\frac{iAa^3\,(\cot\,(dx+c))^3}{d}+\frac{4\,iA\cot\,(dx+c)\,a^3}{d}+2\,\frac{Aa^3\,(\cot\,(dx+c))^2}{d}+4\,\frac{Aa^3\ln\,(\sin\,(d}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*I/d*A*a^3*c-3/2*I/d*B*a^3*cot(d*x+c)^2-I/d*A*a^3*cot(d*x+c)^3+4*I/d*A*cot
(d*x+c)*a^3+2/d*A*a^3*cot(d*x+c)^2+4*a^3*A*ln(sin(d*x+c))/d+4*B*a^3*x+4/d*B
*cot(d*x+c)*a^3+4/d*B*a^3*c-4*I/d*B*a^3*ln(sin(d*x+c))+4*I*A*x*a^3-1/4/d*A*
a^3*cot(d*x+c)^4-1/3/d*B*a^3*cot(d*x+c)^3
```

Maxima [A] time = 2.3096, size = 185, normalized size = 1.18

$$-\frac{48\,(dx+c)(-i\,A-B)a^3+12\,(2\,A-2i\,B)a^3\log\left(\tan\,(dx+c)^2+1\right)-12\,(4\,A-4i\,B)a^3\log\,(\tan\,(dx+c))-\frac{48\,(i\,A+B)a^3\,\mathrm{ta}}{}}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/12*(48*(d*x + c)*(-I*A - B)*a^3 + 12*(2*A - 2*I*B)*a^3*log(tan(d*x + c)^
2 + 1) - 12*(4*A - 4*I*B)*a^3*log(tan(d*x + c)) - (48*(I*A + B)*a^3*tan(d*x
 + c)^3 + (24*A - 18*I*B)*a^3*tan(d*x + c)^2 + 4*(-3*I*A - B)*a^3*tan(d*x +
 c) - 3*A*a^3)/tan(d*x + c)^4)/d
```

Fricas [A] time = 1.64047, size = 626, normalized size = 3.99

$$-\frac{2\left(12\,(3\,A-2i\,B)a^3e^{(6i\,dx+6i\,c)}-3\,(23\,A-19i\,B)a^3e^{(4i\,dx+4i\,c)}+2\,(27\,A-23i\,B)a^3e^{(2i\,dx+2i\,c)}-(15\,A-13i\,B)a^3-6\left((A-i\right.\right.}{3\left(de^{(8i\,dx+8i\,c)}-4\,de^{(6i\,dx+6i\,c)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -2/3*(12*(3*A - 2*I*B)*a^3*e^(6*I*d*x + 6*I*c) - 3*(23*A - 19*I*B)*a^3*e^(4
*I*d*x + 4*I*c) + 2*(27*A - 23*I*B)*a^3*e^(2*I*d*x + 2*I*c) - (15*A - 13*I*
B)*a^3 - 6*((A - I*B)*a^3*e^(8*I*d*x + 8*I*c) - 4*(A - I*B)*a^3*e^(6*I*d*x
+ 6*I*c) + 6*(A - I*B)*a^3*e^(4*I*d*x + 4*I*c) - 4*(A - I*B)*a^3*e^(2*I*d*x
 + 2*I*c) + (A - I*B)*a^3)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(8*I*d*x + 8*
I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x +
 2*I*c) + d)
```

Sympy [A] time = 34.1315, size = 221, normalized size = 1.41

$$\frac{4a^3\,(A-iB)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{-\frac{\left(24Aa^3-16iBa^3\right)e^{-2ic}e^{6idx}}{d}+\frac{\left(30Aa^3-26iBa^3\right)e^{-8ic}}{3d}+\frac{\left(46Aa^3-38iBa^3\right)e^{-4ic}e^{4idx}}{d}-\frac{\left(108Aa^3-92iBa^3\right)e^{-6ic}e^{2idx}}{3d}}{e^{8idx}-4e^{-2ic}e^{6idx}+6e^{-4ic}e^{4idx}-4e^{-6ic}e^{2idx}+e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*a**3*(A - I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(24*A*a**3 - 16*I*B*
a**3)*exp(-2*I*c)*exp(6*I*d*x)/d + (30*A*a**3 - 26*I*B*a**3)*exp(-8*I*c)/(3
*d) + (46*A*a**3 - 38*I*B*a**3)*exp(-4*I*c)*exp(4*I*d*x)/d - (108*A*a**3 -
92*I*B*a**3)*exp(-6*I*c)*exp(2*I*d*x)/(3*d))/(exp(8*I*d*x) - 4*exp(-2*I*c)*
exp(6*I*d*x) + 6*exp(-4*I*c)*exp(4*I*d*x) - 4*exp(-6*I*c)*exp(2*I*d*x) + ex
p(-8*I*c))
```

<u>Giac</u> [B] time = 1.76959, size = 439, normalized size = 2.8

$$-\frac{3\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-24i\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-8\,Ba^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-108\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+72i\,Ba^3\,\mathrm{t}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/192*(3*A*a^3*tan(1/2*d*x + 1/2*c)^4 - 24*I*A*a^3*tan(1/2*d*x + 1/2*c)^3
- 8*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 108*A*a^3*tan(1/2*d*x + 1/2*c)^2 + 72*I*
B*a^3*tan(1/2*d*x + 1/2*c)^2 + 456*I*A*a^3*tan(1/2*d*x + 1/2*c) + 408*B*a^3
*tan(1/2*d*x + 1/2*c) + 384*(4*A*a^3 - 4*I*B*a^3)*log(tan(1/2*d*x + 1/2*c)
+ I) - 384*(2*A*a^3 - 2*I*B*a^3)*log(abs(tan(1/2*d*x + 1/2*c))) + (1600*A*a
^3*tan(1/2*d*x + 1/2*c)^4 - 1600*I*B*a^3*tan(1/2*d*x + 1/2*c)^4 - 456*I*A*a
^3*tan(1/2*d*x + 1/2*c)^3 - 408*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 108*A*a^3*ta
n(1/2*d*x + 1/2*c)^2 + 72*I*B*a^3*tan(1/2*d*x + 1/2*c)^2 + 24*I*A*a^3*tan(1
/2*d*x + 1/2*c) + 8*B*a^3*tan(1/2*d*x + 1/2*c) + 3*A*a^3)/tan(1/2*d*x + 1/2
*c)^4)/d
```

3.25 $\int \cot^6(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=180

$$\frac{a^3(47A-45iB)\cot^3(c+dx)}{60d}+\frac{2a^3(B+iA)\cot^2(c+dx)}{d}-\frac{4a^3(A-iB)\cot(c+dx)}{d}+\frac{4a^3(B+iA)\log(\sin(c+dx))}{d}-\frac{(5\ldots}{}$$

```
[Out] -4*a^3*(A - I*B)*x - (4*a^3*(A - I*B)*Cot[c + d*x])/d + (2*a^3*(I*A + B)*Co
t[c + d*x]^2)/d + (a^3*(47*A - (45*I)*B)*Cot[c + d*x]^3)/(60*d) + (4*a^3*(I
*A + B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^2
)/(5*d) - (((7*I)*A + 5*B)*Cot[c + d*x]^4*(a^3 + I*a^3*Tan[c + d*x]))/(20*d
)
```

Rubi [A] time = 0.460285, antiderivative size = 180, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3591, 3529, 3531, 3475}

$$\frac{a^3(47A-45iB)\cot^3(c+dx)}{60d}+\frac{2a^3(B+iA)\cot^2(c+dx)}{d}-\frac{4a^3(A-iB)\cot(c+dx)}{d}+\frac{4a^3(B+iA)\log(\sin(c+dx))}{d}-\frac{(5\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^6*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```



```
[Out] -4*a^3*(A - I*B)*x - (4*a^3*(A - I*B)*Cot[c + d*x])/d + (2*a^3*(I*A + B)*Co
t[c + d*x]^2)/d + (a^3*(47*A - (45*I)*B)*Cot[c + d*x]^3)/(60*d) + (4*a^3*(I
*A + B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^2
)/(5*d) - (((7*I)*A + 5*B)*Cot[c + d*x]^4*(a^3 + I*a^3*Tan[c + d*x]))/(20*d
)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^6(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^5(c+dx)(a+ia\tan(c+dx))^2}{5d} + \frac{1}{5}\int \cot^5(c+dx)$$

$$= -\frac{aA\cot^5(c+dx)(a+ia\tan(c+dx))^2}{5d} - \frac{(7iA+5B)\cot^4(c}{}$$

$$= \frac{a^3(47A-45iB)\cot^3(c+dx)}{60d} - \frac{aA\cot^5(c+dx)(a+ia\tan}{5d}$$

$$= \frac{2a^3(iA+B)\cot^2(c+dx)}{d} + \frac{a^3(47A-45iB)\cot^3(c+dx)}{60d} -$$

$$= -\frac{4a^3(A-iB)\cot(c+dx)}{d} + \frac{2a^3(iA+B)\cot^2(c+dx)}{d} + \frac{a^3}{}$$

$$= -4a^3(A-iB)x - \frac{4a^3(A-iB)\cot(c+dx)}{d} + \frac{2a^3(iA+B)\cot}{d}$$

$$= -4a^3(A-iB)x - \frac{4a^3(A-iB)\cot(c+dx)}{d} + \frac{2a^3(iA+B)\cot}{d}$$

Mathematica [B] time = 8.77901, size = 943, normalized size = 5.24

$$a^3\left(\frac{(\cot(c+dx)+i)^3(B+A\cot(c+dx))\left(iA\cos\left(\frac{3c}{2}\right)+B\cos\left(\frac{3c}{2}\right)+A\sin\left(\frac{3c}{2}\right)-iB\sin\left(\frac{3c}{2}\right)\right)\left(-4i\tan^{-1}(\tan(4c+dx))\right.}{d(\cos(dx)+i\sin(dx))^3(A\cos(c+dx)+B\sin(c+dx))}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^6*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^3*(((I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*(I*A*Cos[(3*c)/2] + B*Cos[(
3*c)/2] + A*Sin[(3*c)/2] - I*B*Sin[(3*c)/2])*((-4*I)*ArcTan[Tan[4*c + d*x]]
*Cos[(3*c)/2] - 4*ArcTan[Tan[4*c + d*x]]*Sin[(3*c)/2])*Sin[c + d*x]^4)/(d*(
Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c +
 d*x])^3*(B + A*Cot[c + d*x])*(I*A*Cos[(3*c)/2] + B*Cos[(3*c)/2] + A*Sin[(3
*c)/2] - I*B*Sin[(3*c)/2])*(2*Cos[(3*c)/2]*Log[Sin[c + d*x]^2] - (2*I)*Log[
Sin[c + d*x]^2]*Sin[(3*c)/2])*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])^3*
(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*(I + Cot[c + d*x])^3*(B + A*Cot[c +
 d*x])*(-16*A*Cos[c]^3 + (16*I)*B*Cos[c]^3 - (4*I)*A*Cos[c]^3*Cot[c] - 4*B*
Cos[c]^3*Cot[c] + (24*I)*A*Cos[c]^2*Sin[c] + 24*B*Cos[c]^2*Sin[c] + 16*A*Co
s[c]*Sin[c]^2 - (16*I)*B*Cos[c]*Sin[c]^2 - (4*I)*A*Sin[c]^3 - 4*B*Sin[c]^3
+ (I*A + B)*Cot[c]*(4*Cos[3*c] - (4*I)*Sin[3*c]))*Sin[c + d*x]^4)/((Cos[d*x
] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^
3*(B + A*Cot[c + d*x])*Csc[c]*Csc[c + d*x]*(Cos[3*c]/240 - (I/240)*Sin[3*c]
```

```
)*((225*I)*A*Cos[d*x] + 195*B*Cos[d*x] - 300*A*d*x*Cos[d*x] + (300*I)*B*d*x
*Cos[d*x] - (225*I)*A*Cos[2*c + d*x] - 195*B*Cos[2*c + d*x] + 300*A*d*x*Cos
[2*c + d*x] - (300*I)*B*d*x*Cos[2*c + d*x] - (105*I)*A*Cos[2*c + 3*d*x] - 7
5*B*Cos[2*c + 3*d*x] + 150*A*d*x*Cos[2*c + 3*d*x] - (150*I)*B*d*x*Cos[2*c +
 3*d*x] + (105*I)*A*Cos[4*c + 3*d*x] + 75*B*Cos[4*c + 3*d*x] - 150*A*d*x*Co
s[4*c + 3*d*x] + (150*I)*B*d*x*Cos[4*c + 3*d*x] - 30*A*d*x*Cos[4*c + 5*d*x]
 + (30*I)*B*d*x*Cos[4*c + 5*d*x] + 30*A*d*x*Cos[6*c + 5*d*x] - (30*I)*B*d*x
*Cos[6*c + 5*d*x] + 470*A*Sin[d*x] - (420*I)*B*Sin[d*x] + 360*A*Sin[2*c + d
*x] - (330*I)*B*Sin[2*c + d*x] - 280*A*Sin[2*c + 3*d*x] + (270*I)*B*Sin[2*c
 + 3*d*x] - 135*A*Sin[4*c + 3*d*x] + (105*I)*B*Sin[4*c + 3*d*x] + 83*A*Sin[
4*c + 5*d*x] - (75*I)*B*Sin[4*c + 5*d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*
Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.08, size = 224, normalized size = 1.2

$$4\,\frac{Ba^3\ln(\sin(dx+c))}{d}-4\,\frac{Aa^3c}{d}+\frac{4\,Aa^3(\cot(dx+c))^3}{3\,d}-4\,\frac{A\cot(dx+c)\,a^3}{d}+2\,\frac{Ba^3(\cot(dx+c))^2}{d}-\frac{Aa^3(\cot(dx+}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4/d*B*a^3*ln(sin(d*x+c))-4/d*A*a^3*c+4/3/d*A*a^3*cot(d*x+c)^3-4/d*A*cot(d*x
+c)*a^3+2/d*B*a^3*cot(d*x+c)^2-1/5/d*A*a^3*cot(d*x+c)^5-1/4/d*B*a^3*cot(d*x
+c)^4+4*I*B*x*a^3-3/4*I/d*A*a^3*cot(d*x+c)^4+4*I/d*B*a^3*c+4*I/d*B*cot(d*x+
c)*a^3+2*I/d*A*a^3*cot(d*x+c)^2-4*A*a^3*x+4*I/d*A*a^3*ln(sin(d*x+c))-I/d*B*
a^3*cot(d*x+c)^3
```

Maxima [A] time = 2.24459, size = 208, normalized size = 1.16

$$-\frac{60\,(dx+c)(4\,A-4i\,B)a^3+120\,(i\,A+B)a^3\log\left(\tan(dx+c)^2+1\right)+240\,(-i\,A-B)a^3\log(\tan(dx+c))+\frac{(240\,A-240i\,B)}{}}{60\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/60*(60*(d*x + c)*(4*A - 4*I*B)*a^3 + 120*(I*A + B)*a^3*log(tan(d*x + c)^
2 + 1) + 240*(-I*A - B)*a^3*log(tan(d*x + c)) + ((240*A - 240*I*B)*a^3*tan(
```

```
d*x + c)^4 - 120*(I*A + B)*a^3*tan(d*x + c)^3 - (80*A - 60*I*B)*a^3*tan(d*x
 + c)^2 - 15*(-3*I*A - B)*a^3*tan(d*x + c) + 12*A*a^3)/tan(d*x + c)^5)/d
```

Fricas [A] time = 1.64839, size = 844, normalized size = 4.69

$$\frac{(-480i\,A - 360\,B)a^3e^{(8i\,dx+8i\,c)} + (1170i\,A + 1050\,B)a^3e^{(6i\,dx+6i\,c)} + (-1390i\,A - 1230\,B)a^3e^{(4i\,dx+4i\,c)} + (770i\,A + 690\,B)a^3e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/15*((-480*I*A - 360*B)*a^3*e^(8*I*d*x + 8*I*c) + (1170*I*A + 1050*B)*a^3*
e^(6*I*d*x + 6*I*c) + (-1390*I*A - 1230*B)*a^3*e^(4*I*d*x + 4*I*c) + (770*I
*A + 690*B)*a^3*e^(2*I*d*x + 2*I*c) + (-166*I*A - 150*B)*a^3 + ((60*I*A + 6
0*B)*a^3*e^(10*I*d*x + 10*I*c) + (-300*I*A - 300*B)*a^3*e^(8*I*d*x + 8*I*c)
 + (600*I*A + 600*B)*a^3*e^(6*I*d*x + 6*I*c) + (-600*I*A - 600*B)*a^3*e^(4*
I*d*x + 4*I*c) + (300*I*A + 300*B)*a^3*e^(2*I*d*x + 2*I*c) + (-60*I*A - 60*
B)*a^3)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(10*I*d*x + 10*I*c) - 5*d*e^(8*I
*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) - 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e
^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 146.15, size = 272, normalized size = 1.51

$$\frac{4a^3\left(iA+B\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d} + \frac{-\frac{\left(32iAa^3+24Ba^3\right)e^{-2ic}e^{8idx}}{d} + \frac{\left(78iAa^3+70Ba^3\right)e^{-4ic}e^{6idx}}{d} + \frac{\left(154iAa^3+138Ba^3\right)e^{-8ic}e^{2idx}}{3d} - \frac{\left(166iAa^3+150Ba^3\right)e}{15d}}{e^{10idx} - 5e^{-2ic}e^{8idx} + 10e^{-4ic}e^{6idx} - 10e^{-6ic}e^{4idx} + 5e^{-8ic}e^{2idx} - e^{-}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**6*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*a**3*(I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(32*I*A*a**3 + 24*B*
a**3)*exp(-2*I*c)*exp(8*I*d*x)/d + (78*I*A*a**3 + 70*B*a**3)*exp(-4*I*c)*ex
p(6*I*d*x)/d + (154*I*A*a**3 + 138*B*a**3)*exp(-8*I*c)*exp(2*I*d*x)/(3*d) -
 (166*I*A*a**3 + 150*B*a**3)*exp(-10*I*c)/(15*d) - (278*I*A*a**3 + 246*B*a*
*3)*exp(-6*I*c)*exp(4*I*d*x)/(3*d))/(exp(10*I*d*x) - 5*exp(-2*I*c)*exp(8*I*
d*x) + 10*exp(-4*I*c)*exp(6*I*d*x) - 10*exp(-6*I*c)*exp(4*I*d*x) + 5*exp(-8
```

```
*I*c)*exp(2*I*d*x) - exp(-10*I*c))
```

Giac [B] time = 1.76694, size = 529, normalized size = 2.94

$$\frac{6\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^5-45i\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-15\,Ba^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-190\,Aa^3\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3+120i\,Ba^3\ \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/960*(6*A*a^3*tan(1/2*d*x + 1/2*c)^5 - 45*I*A*a^3*tan(1/2*d*x + 1/2*c)^4 -
 15*B*a^3*tan(1/2*d*x + 1/2*c)^4 - 190*A*a^3*tan(1/2*d*x + 1/2*c)^3 + 120*I
*B*a^3*tan(1/2*d*x + 1/2*c)^3 + 660*I*A*a^3*tan(1/2*d*x + 1/2*c)^2 + 540*B*
a^3*tan(1/2*d*x + 1/2*c)^2 + 2460*A*a^3*tan(1/2*d*x + 1/2*c) - 2280*I*B*a^3
*tan(1/2*d*x + 1/2*c) - 7680*(I*A*a^3 + B*a^3)*log(tan(1/2*d*x + 1/2*c) + I
) - 3840*(-I*A*a^3 - B*a^3)*log(abs(tan(1/2*d*x + 1/2*c))) + (-8768*I*A*a^3
*tan(1/2*d*x + 1/2*c)^5 - 8768*B*a^3*tan(1/2*d*x + 1/2*c)^5 - 2460*A*a^3*ta
n(1/2*d*x + 1/2*c)^4 + 2280*I*B*a^3*tan(1/2*d*x + 1/2*c)^4 + 660*I*A*a^3*ta
n(1/2*d*x + 1/2*c)^3 + 540*B*a^3*tan(1/2*d*x + 1/2*c)^3 + 190*A*a^3*tan(1/2
*d*x + 1/2*c)^2 - 120*I*B*a^3*tan(1/2*d*x + 1/2*c)^2 - 45*I*A*a^3*tan(1/2*d
*x + 1/2*c) - 15*B*a^3*tan(1/2*d*x + 1/2*c) - 6*A*a^3)/tan(1/2*d*x + 1/2*c)
^5)/d
```

3.26 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=225

$$-\frac{a^4(92A-93iB)\tan^3(c+dx)}{60d}+\frac{4a^4(B+iA)\tan^2(c+dx)}{d}-\frac{(2A-3iB)\tan^3(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{10d}-\frac{(12A-$$

```
[Out] -8*a^4*(A - I*B)*x + (8*a^4*(I*A + B)*Log[Cos[c + d*x]])/d + (8*a^4*(A - I*
B)*Tan[c + d*x])/d + (4*a^4*(I*A + B)*Tan[c + d*x]^2)/d - (a^4*(92*A - (93*
I)*B)*Tan[c + d*x]^3)/(60*d) + ((I/6)*a*B*Tan[c + d*x]^3*(a + I*a*Tan[c + d
*x])^3)/d - ((2*A - (3*I)*B)*Tan[c + d*x]^3*(a^2 + I*a^2*Tan[c + d*x])^2)/(
10*d) - ((12*A - (13*I)*B)*Tan[c + d*x]^3*(a^4 + I*a^4*Tan[c + d*x]))/(20*d
)
```

Rubi [A] time = 0.642305, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3594, 3592, 3528, 3525, 3475}

$$-\frac{a^4(92A-93iB)\tan^3(c+dx)}{60d}+\frac{4a^4(B+iA)\tan^2(c+dx)}{d}-\frac{(2A-3iB)\tan^3(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{10d}-\frac{(12A-1$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -8*a^4*(A - I*B)*x + (8*a^4*(I*A + B)*Log[Cos[c + d*x]])/d + (8*a^4*(A - I*
B)*Tan[c + d*x])/d + (4*a^4*(I*A + B)*Tan[c + d*x]^2)/d - (a^4*(92*A - (93*
I)*B)*Tan[c + d*x]^3)/(60*d) + ((I/6)*a*B*Tan[c + d*x]^3*(a + I*a*Tan[c + d
*x])^3)/d - ((2*A - (3*I)*B)*Tan[c + d*x]^3*(a^2 + I*a^2*Tan[c + d*x])^2)/(
10*d) - ((12*A - (13*I)*B)*Tan[c + d*x]^3*(a^4 + I*a^4*Tan[c + d*x]))/(20*d
)
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
```

```
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{iaB\tan^3(c+dx)(a+ia\tan(c+dx))^3}{6d} + \frac{1}{6}\int \tan^2(c+dx)($$

$$= \frac{iaB\tan^3(c+dx)(a+ia\tan(c+dx))^3}{6d} - \frac{(2A-3iB)\tan^3(c$$

$$= \frac{iaB\tan^3(c+dx)(a+ia\tan(c+dx))^3}{6d} - \frac{(2A-3iB)\tan^3(c$$

$$= -\frac{a^4(92A-93iB)\tan^3(c+dx)}{60d} + \frac{iaB\tan^3(c+dx)(a+ia\,\mathrm{t}}{6d}$$

$$= \frac{4a^4(iA+B)\tan^2(c+dx)}{d} - \frac{a^4(92A-93iB)\tan^3(c+dx)}{60d}$$

$$= -8a^4(A-iB)x + \frac{8a^4(A-iB)\tan(c+dx)}{d} + \frac{4a^4(iA+B)\,\mathrm{t}}{d}$$

$$= -8a^4(A-iB)x + \frac{8a^4(iA+B)\log(\cos(c+dx))}{d} + \frac{8a^4(A-}{}$$

Mathematica [B] time = 8.66036, size = 951, normalized size = 4.23

$$\frac{x\left(-4A\cos^4(c)+4iB\cos^4(c)+20iA\sin(c)\cos^3(c)+20B\sin(c)\cos^3(c)+40A\sin^2(c)\cos^2(c)-40iB\sin^2(c)\cos^2(c)+4A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]^5*(I*A*Cos[2*c] + B*Cos[2*c] + A*Sin[2*c] - I*B*Sin[2*c])*(4*
Cos[2*c]*Log[Cos[c + d*x]^2] - (4*I)*Log[Cos[c + d*x]^2]*Sin[2*c])*(a + I*a
*Tan[c + d*x])^4*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[
c + d*x] + B*Sin[c + d*x])) + (Sec[c]*Sec[c + d*x]*(Cos[4*c]/240 - (I/240)*
Sin[4*c])*((420*I)*A*Cos[c] + 490*B*Cos[c] - 600*A*d*x*Cos[c] + (600*I)*B*d
*x*Cos[c] + (300*I)*A*Cos[c + 2*d*x] + 345*B*Cos[c + 2*d*x] - 450*A*d*x*Cos
[c + 2*d*x] + (450*I)*B*d*x*Cos[c + 2*d*x] + (300*I)*A*Cos[3*c + 2*d*x] + 3
45*B*Cos[3*c + 2*d*x] - 450*A*d*x*Cos[3*c + 2*d*x] + (450*I)*B*d*x*Cos[3*c
+ 2*d*x] + (90*I)*A*Cos[3*c + 4*d*x] + 120*B*Cos[3*c + 4*d*x] - 180*A*d*x*C
os[3*c + 4*d*x] + (180*I)*B*d*x*Cos[3*c + 4*d*x] + (90*I)*A*Cos[5*c + 4*d*x
] + 120*B*Cos[5*c + 4*d*x] - 180*A*d*x*Cos[5*c + 4*d*x] + (180*I)*B*d*x*Cos
[5*c + 4*d*x] - 30*A*d*x*Cos[5*c + 6*d*x] + (30*I)*B*d*x*Cos[5*c + 6*d*x] -
 30*A*d*x*Cos[7*c + 6*d*x] + (30*I)*B*d*x*Cos[7*c + 6*d*x] - 790*A*Sin[c] +
 (860*I)*B*Sin[c] + 720*A*Sin[c + 2*d*x] - (780*I)*B*Sin[c + 2*d*x] - 465*A
```

```
*Sin[3*c + 2*d*x] + (510*I)*B*Sin[3*c + 2*d*x] + 354*A*Sin[3*c + 4*d*x] - (
366*I)*B*Sin[3*c + 4*d*x] - 120*A*Sin[5*c + 4*d*x] + (150*I)*B*Sin[5*c + 4*
d*x] + 79*A*Sin[5*c + 6*d*x] - (86*I)*B*Sin[5*c + 6*d*x])*(a + I*a*Tan[c +
d*x])^4*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x]
+ B*Sin[c + d*x])) + (x*Cos[c + d*x]^5*(4*A*Cos[c]^2 - (4*I)*B*Cos[c]^2 - 4
*A*Cos[c]^4 + (4*I)*B*Cos[c]^4 - (12*I)*A*Cos[c]*Sin[c] - 12*B*Cos[c]*Sin[c
] + (20*I)*A*Cos[c]^3*Sin[c] + 20*B*Cos[c]^3*Sin[c] - 12*A*Sin[c]^2 + (12*I
)*B*Sin[c]^2 + 40*A*Cos[c]^2*Sin[c]^2 - (40*I)*B*Cos[c]^2*Sin[c]^2 - (40*I)
*A*Cos[c]*Sin[c]^3 - 40*B*Cos[c]*Sin[c]^3 - 20*A*Sin[c]^4 + (20*I)*B*Sin[c]
^4 + (4*I)*A*Sin[c]^2*Tan[c] + 4*B*Sin[c]^2*Tan[c] + (4*I)*A*Sin[c]^4*Tan[c
] + 4*B*Sin[c]^4*Tan[c] - I*(A - I*B)*(8*Cos[4*c] - (8*I)*Sin[4*c])*Tan[c])
*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]))/((Cos[d*x] + I*Sin[d*x])^4*
(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.006, size = 264, normalized size = 1.2

$$\frac{-\frac{4i}{5}a^4B(\tan(dx+c))^5}{d}+\frac{a^4B(\tan(dx+c))^6}{6d}-\frac{ia^4A(\tan(dx+c))^4}{d}+\frac{a^4A(\tan(dx+c))^5}{5d}+\frac{\frac{8i}{3}a^4B(\tan(dx+c))^3}{d}-\frac{7\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -4/5*I/d*a^4*B*tan(d*x+c)^5+1/6/d*a^4*B*tan(d*x+c)^6-I/d*a^4*A*tan(d*x+c)^4
+1/5/d*a^4*A*tan(d*x+c)^5+8/3*I/d*a^4*B*tan(d*x+c)^3-7/4/d*a^4*B*tan(d*x+c)
^4+4*I/d*a^4*A*tan(d*x+c)^2-7/3/d*a^4*A*tan(d*x+c)^3-8*I/d*a^4*B*tan(d*x+c)
+4/d*a^4*B*tan(d*x+c)^2+8/d*a^4*A*tan(d*x+c)-4*I/d*a^4*A*ln(1+tan(d*x+c)^2)
-4/d*a^4*B*ln(1+tan(d*x+c)^2)+8*I/d*a^4*B*arctan(tan(d*x+c))-8/d*a^4*A*arct
an(tan(d*x+c))
```

Maxima [A] time = 2.17629, size = 208, normalized size = 0.92

$$\frac{10\,Ba^4\tan(dx+c)^6+(12\,A-48i\,B)a^4\tan(dx+c)^5-15\,(4i\,A+7\,B)a^4\tan(dx+c)^4-(140\,A-160i\,B)a^4\tan(dx+c)\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/60*(10*B*a^4*tan(d*x + c)^6 + (12*A - 48*I*B)*a^4*tan(d*x + c)^5 - 15*(4*
I*A + 7*B)*a^4*tan(d*x + c)^4 - (140*A - 160*I*B)*a^4*tan(d*x + c)^3 - 240*
(-I*A - B)*a^4*tan(d*x + c)^2 - 60*(d*x + c)*(8*A - 8*I*B)*a^4 - 240*(I*A +
 B)*a^4*log(tan(d*x + c)^2 + 1) + (480*A - 480*I*B)*a^4*tan(d*x + c))/d
```

Fricas [A] time = 1.7098, size = 1019, normalized size = 4.53

$$(840iA + 1080B)a^4e^{(10idx+10ic)} + (3060iA + 3420B)a^4e^{(8idx+8ic)} + (4840iA + 5400B)a^4e^{(6idx+6ic)} + (4080iA + 4500B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/15*((840*I*A + 1080*B)*a^4*e^(10*I*d*x + 10*I*c) + (3060*I*A + 3420*B)*a^
4*e^(8*I*d*x + 8*I*c) + (4840*I*A + 5400*B)*a^4*e^(6*I*d*x + 6*I*c) + (4080
*I*A + 4500*B)*a^4*e^(4*I*d*x + 4*I*c) + (1776*I*A + 1944*B)*a^4*e^(2*I*d*x
 + 2*I*c) + (316*I*A + 344*B)*a^4 + ((120*I*A + 120*B)*a^4*e^(12*I*d*x + 12
*I*c) + (720*I*A + 720*B)*a^4*e^(10*I*d*x + 10*I*c) + (1800*I*A + 1800*B)*a
^4*e^(8*I*d*x + 8*I*c) + (2400*I*A + 2400*B)*a^4*e^(6*I*d*x + 6*I*c) + (180
0*I*A + 1800*B)*a^4*e^(4*I*d*x + 4*I*c) + (720*I*A + 720*B)*a^4*e^(2*I*d*x
+ 2*I*c) + (120*I*A + 120*B)*a^4)*log(e^(2*I*d*x + 2*I*c) + 1))/(d*e^(12*I*
d*x + 12*I*c) + 6*d*e^(10*I*d*x + 10*I*c) + 15*d*e^(8*I*d*x + 8*I*c) + 20*d
*e^(6*I*d*x + 6*I*c) + 15*d*e^(4*I*d*x + 4*I*c) + 6*d*e^(2*I*d*x + 2*I*c) +
 d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 1.98238, size = 810, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/15*(120*I*A*a^4*e^(12*I*d*x + 12*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 120*
B*a^4*e^(12*I*d*x + 12*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 720*I*A*a^4*e^(1
0*I*d*x + 10*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 720*B*a^4*e^(10*I*d*x + 10
*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 1800*I*A*a^4*e^(8*I*d*x + 8*I*c)*log(e
^(2*I*d*x + 2*I*c) + 1) + 1800*B*a^4*e^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2
*I*c) + 1) + 2400*I*A*a^4*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1)
+ 2400*B*a^4*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 1800*I*A*a^
4*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 1800*B*a^4*e^(4*I*d*x
+ 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 720*I*A*a^4*e^(2*I*d*x + 2*I*c)*log
(e^(2*I*d*x + 2*I*c) + 1) + 720*B*a^4*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x +
2*I*c) + 1) + 840*I*A*a^4*e^(10*I*d*x + 10*I*c) + 1080*B*a^4*e^(10*I*d*x +
10*I*c) + 3060*I*A*a^4*e^(8*I*d*x + 8*I*c) + 3420*B*a^4*e^(8*I*d*x + 8*I*c)
 + 4840*I*A*a^4*e^(6*I*d*x + 6*I*c) + 5400*B*a^4*e^(6*I*d*x + 6*I*c) + 4080
*I*A*a^4*e^(4*I*d*x + 4*I*c) + 4500*B*a^4*e^(4*I*d*x + 4*I*c) + 1776*I*A*a^
4*e^(2*I*d*x + 2*I*c) + 1944*B*a^4*e^(2*I*d*x + 2*I*c) + 120*I*A*a^4*log(e^
(2*I*d*x + 2*I*c) + 1) + 120*B*a^4*log(e^(2*I*d*x + 2*I*c) + 1) + 316*I*A*a
^4 + 344*B*a^4)/(d*e^(12*I*d*x + 12*I*c) + 6*d*e^(10*I*d*x + 10*I*c) + 15*d
*e^(8*I*d*x + 8*I*c) + 20*d*e^(6*I*d*x + 6*I*c) + 15*d*e^(4*I*d*x + 4*I*c)
+ 6*d*e^(2*I*d*x + 2*I*c) + d)
```

3.27 $\int \tan(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=168

$$\frac{(A-iB)\left(a^2+ia^2\tan(c+dx)\right)^2}{d}+\frac{4a^4(B+iA)\tan(c+dx)}{d}-\frac{8a^4(A-iB)\log(\cos(c+dx))}{d}-8a^4x(B+iA)+\frac{a(A-iB)(}{}$$

```
[Out] -8*a^4*(I*A + B)*x - (8*a^4*(A - I*B)*Log[Cos[c + d*x]])/d + (4*a^4*(I*A +
B)*Tan[c + d*x])/d + (a*(A - I*B)*(a + I*a*Tan[c + d*x])^3)/(3*d) + (A*(a +
 I*a*Tan[c + d*x])^4)/(4*d) - ((I/5)*B*(a + I*a*Tan[c + d*x])^5)/(a*d) + ((
A - I*B)*(a^2 + I*a^2*Tan[c + d*x])^2)/d
```

Rubi [A] time = 0.157747, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3592, 3527, 3478, 3477, 3475}

$$\frac{(A-iB)\left(a^2+ia^2\tan(c+dx)\right)^2}{d}+\frac{4a^4(B+iA)\tan(c+dx)}{d}-\frac{8a^4(A-iB)\log(\cos(c+dx))}{d}-8a^4x(B+iA)+\frac{a(A-iB)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] -8*a^4*(I*A + B)*x - (8*a^4*(A - I*B)*Log[Cos[c + d*x]])/d + (4*a^4*(I*A +
B)*Tan[c + d*x])/d + (a*(A - I*B)*(a + I*a*Tan[c + d*x])^3)/(3*d) + (A*(a +
 I*a*Tan[c + d*x])^4)/(4*d) - ((I/5)*B*(a + I*a*Tan[c + d*x])^5)/(a*d) + ((
A - I*B)*(a^2 + I*a^2*Tan[c + d*x])^2)/d
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
```

```
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{iB(a+ia\tan(c+dx))^5}{5ad} + \int (a+ia\tan(c+dx))^4(-B+$$

$$= \frac{A(a+ia\tan(c+dx))^4}{4d} - \frac{iB(a+ia\tan(c+dx))^5}{5ad} - (iA+$$

$$= \frac{a(A-iB)(a+ia\tan(c+dx))^3}{3d} + \frac{A(a+ia\tan(c+dx))^4}{4d} -$$

$$= \frac{a(A-iB)(a+ia\tan(c+dx))^3}{3d} + \frac{A(a+ia\tan(c+dx))^4}{4d} -$$

$$= -8a^4(iA+B)x + \frac{4a^4(iA+B)\tan(c+dx)}{d} + \frac{a(A-iB)(a-$$

$$= -8a^4(iA+B)x - \frac{8a^4(A-iB)\log(\cos(c+dx))}{d} + \frac{4a^4(iA+$$

Mathematica [B] time = 4.52209, size = 589, normalized size = 3.51

$$\frac{a^4\sec(c)\sec^5(c+dx)\left(-15i\cos(dx)\left(-10i(A-iB)\log\left(\cos^2(c+dx)\right)+20Adx-11iA-20iBdx-14B\right)-15i\cos(2c+d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^4*Sec[c]*Sec[c + d*x]^5*(-60*A*Cos[2*c + 3*d*x] + (90*I)*B*Cos[2*c + 3*d
*x] - (150*I)*A*d*x*Cos[2*c + 3*d*x] - 150*B*d*x*Cos[2*c + 3*d*x] - 60*A*Co
s[4*c + 3*d*x] + (90*I)*B*Cos[4*c + 3*d*x] - (150*I)*A*d*x*Cos[4*c + 3*d*x]
 - 150*B*d*x*Cos[4*c + 3*d*x] - (30*I)*A*d*x*Cos[4*c + 5*d*x] - 30*B*d*x*Co
s[4*c + 5*d*x] - (30*I)*A*d*x*Cos[6*c + 5*d*x] - 30*B*d*x*Cos[6*c + 5*d*x]
- 75*A*Cos[2*c + 3*d*x]*Log[Cos[c + d*x]^2] + (75*I)*B*Cos[2*c + 3*d*x]*Log
[Cos[c + d*x]^2] - 75*A*Cos[4*c + 3*d*x]*Log[Cos[c + d*x]^2] + (75*I)*B*Cos
[4*c + 3*d*x]*Log[Cos[c + d*x]^2] - 15*A*Cos[4*c + 5*d*x]*Log[Cos[c + d*x]^
2] + (15*I)*B*Cos[4*c + 5*d*x]*Log[Cos[c + d*x]^2] - 15*A*Cos[6*c + 5*d*x]*
Log[Cos[c + d*x]^2] + (15*I)*B*Cos[6*c + 5*d*x]*Log[Cos[c + d*x]^2] - (15*I
)*Cos[d*x]*((-11*I)*A - 14*B + 20*A*d*x - (20*I)*B*d*x - (10*I)*(A - I*B)*L
og[Cos[c + d*x]^2]) - (15*I)*Cos[2*c + d*x]*((-11*I)*A - 14*B + 20*A*d*x -
(20*I)*B*d*x - (10*I)*(A - I*B)*Log[Cos[c + d*x]^2]) + (400*I)*A*Sin[d*x] +
 445*B*Sin[d*x] - (300*I)*A*Sin[2*c + d*x] - 345*B*Sin[2*c + d*x] + (260*I)
*A*Sin[2*c + 3*d*x] + 275*B*Sin[2*c + 3*d*x] - (90*I)*A*Sin[4*c + 3*d*x] -
120*B*Sin[4*c + 3*d*x] + (70*I)*A*Sin[4*c + 5*d*x] + 79*B*Sin[4*c + 5*d*x])
)/(120*d)
```

Maple [A] time = 0.006, size = 229, normalized size = 1.4

$$\frac{-ia^4B(\tan(dx+c))^4}{d}+\frac{a^4B(\tan(dx+c))^5}{5d}-\frac{\frac{4i}{3}a^4A(\tan(dx+c))^3}{d}+\frac{a^4A(\tan(dx+c))^4}{4d}+\frac{4\,ia^4B(\tan(dx+c))^2}{d}-\frac{7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -I/d*a^4*B*tan(d*x+c)^4+1/5/d*a^4*B*tan(d*x+c)^5-4/3*I/d*a^4*A*tan(d*x+c)^3
+1/4/d*a^4*A*tan(d*x+c)^4+4*I/d*a^4*B*tan(d*x+c)^2-7/3/d*a^4*B*tan(d*x+c)^3
+8*I/d*a^4*A*tan(d*x+c)-7/2/d*a^4*A*tan(d*x+c)^2+8/d*a^4*B*tan(d*x+c)-4*I/d
*a^4*B*ln(1+tan(d*x+c)^2)+4/d*a^4*A*ln(1+tan(d*x+c)^2)-8*I/d*a^4*A*arctan(t
an(d*x+c))-8/d*a^4*B*arctan(tan(d*x+c))
```

Maxima [A] time = 2.20945, size = 182, normalized size = 1.08

$$\frac{12\,Ba^4\tan(dx+c)^5+(15\,A-60i\,B)a^4\tan(dx+c)^4-20\,(4i\,A+7\,B)a^4\tan(dx+c)^3-(210\,A-240i\,B)a^4\tan(dx+c)^2}{60\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/60*(12*B*a^4*tan(d*x + c)^5 + (15*A - 60*I*B)*a^4*tan(d*x + c)^4 - 20*(4*
I*A + 7*B)*a^4*tan(d*x + c)^3 - (210*A - 240*I*B)*a^4*tan(d*x + c)^2 - 480*
(d*x + c)*(I*A + B)*a^4 + 60*(4*A - 4*I*B)*a^4*log(tan(d*x + c)^2 + 1) - 48
0*(-I*A - B)*a^4*tan(d*x + c))/d
```

Fricas [A] time = 1.76039, size = 790, normalized size = 4.7

$$-\frac{4\left(30\,(5\,A-7i\,B)a^4e^{(8i\,dx+8i\,c)}+15\,(31\,A-37i\,B)a^4e^{(6i\,dx+6i\,c)}+5\,(113\,A-131i\,B)a^4e^{(4i\,dx+4i\,c)}+5\,(64\,A-73i\,B)a^4e^{(2i\,d}\right.}{15\left(de\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -4/15*(30*(5*A - 7*I*B)*a^4*e^(8*I*d*x + 8*I*c) + 15*(31*A - 37*I*B)*a^4*e^
(6*I*d*x + 6*I*c) + 5*(113*A - 131*I*B)*a^4*e^(4*I*d*x + 4*I*c) + 5*(64*A -
 73*I*B)*a^4*e^(2*I*d*x + 2*I*c) + (70*A - 79*I*B)*a^4 + 30*((A - I*B)*a^4*
e^(10*I*d*x + 10*I*c) + 5*(A - I*B)*a^4*e^(8*I*d*x + 8*I*c) + 10*(A - I*B)*
a^4*e^(6*I*d*x + 6*I*c) + 10*(A - I*B)*a^4*e^(4*I*d*x + 4*I*c) + 5*(A - I*B
)*a^4*e^(2*I*d*x + 2*I*c) + (A - I*B)*a^4)*log(e^(2*I*d*x + 2*I*c) + 1))/(d
*e^(10*I*d*x + 10*I*c) + 5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c)
 + 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 1.62291, size = 680, normalized size = 4.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/15*(120*A*a^4*e^(10*I*d*x + 10*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 120*I
*B*a^4*e^(10*I*d*x + 10*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 600*A*a^4*e^(8*
I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 600*I*B*a^4*e^(8*I*d*x + 8*I*
c)*log(e^(2*I*d*x + 2*I*c) + 1) + 1200*A*a^4*e^(6*I*d*x + 6*I*c)*log(e^(2*I
*d*x + 2*I*c) + 1) - 1200*I*B*a^4*e^(6*I*d*x + 6*I*c)*log(e^(2*I*d*x + 2*I*
c) + 1) + 1200*A*a^4*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 120
0*I*B*a^4*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 600*A*a^4*e^(2
*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 600*I*B*a^4*e^(2*I*d*x + 2*I
*c)*log(e^(2*I*d*x + 2*I*c) + 1) + 600*A*a^4*e^(8*I*d*x + 8*I*c) - 840*I*B*
a^4*e^(8*I*d*x + 8*I*c) + 1860*A*a^4*e^(6*I*d*x + 6*I*c) - 2220*I*B*a^4*e^(
6*I*d*x + 6*I*c) + 2260*A*a^4*e^(4*I*d*x + 4*I*c) - 2620*I*B*a^4*e^(4*I*d*x
 + 4*I*c) + 1280*A*a^4*e^(2*I*d*x + 2*I*c) - 1460*I*B*a^4*e^(2*I*d*x + 2*I*
c) + 120*A*a^4*log(e^(2*I*d*x + 2*I*c) + 1) - 120*I*B*a^4*log(e^(2*I*d*x +
2*I*c) + 1) + 280*A*a^4 - 316*I*B*a^4)/(d*e^(10*I*d*x + 10*I*c) + 5*d*e^(8*
I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) + 10*d*e^(4*I*d*x + 4*I*c) + 5*d*
e^(2*I*d*x + 2*I*c) + d)
```

3.28 $\int (a + ia\tan(c + dx))^4 (A + B\tan(c + dx))\,dx$

Optimal. Leaf size=140

$$-\frac{4a^4(A-iB)\tan(c+dx)}{d}+\frac{(B+iA)\left(a^2+ia^2\tan(c+dx)\right)^2}{d}-\frac{8a^4(B+iA)\log(\cos(c+dx))}{d}+8a^4x(A-iB)+\frac{a(B+i$$

```
[Out] 8*a^4*(A - I*B)*x - (8*a^4*(I*A + B)*Log[Cos[c + d*x]])/d - (4*a^4*(A - I*B
)*Tan[c + d*x])/d + (a*(I*A + B)*(a + I*a*Tan[c + d*x])^3)/(3*d) + (B*(a +
I*a*Tan[c + d*x])^4)/(4*d) + ((I*A + B)*(a^2 + I*a^2*Tan[c + d*x])^2)/d
```

Rubi [A] time = 0.114768, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {3527, 3478, 3477, 3475}

$$-\frac{4a^4(A-iB)\tan(c+dx)}{d}+\frac{(B+iA)\left(a^2+ia^2\tan(c+dx)\right)^2}{d}-\frac{8a^4(B+iA)\log(\cos(c+dx))}{d}+8a^4x(A-iB)+\frac{a(B+i$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] 8*a^4*(A - I*B)*x - (8*a^4*(I*A + B)*Log[Cos[c + d*x]])/d - (4*a^4*(A - I*B
)*Tan[c + d*x])/d + (a*(I*A + B)*(a + I*a*Tan[c + d*x])^3)/(3*d) + (B*(a +
I*a*Tan[c + d*x])^4)/(4*d) + ((I*A + B)*(a^2 + I*a^2*Tan[c + d*x])^2)/d
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int (a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx &= \frac{B(a+ia\tan(c+dx))^4}{4d}-(-A+iB)\int (a+ia\tan(c+dx))^4\,dx\\ &= \frac{a(iA+B)(a+ia\tan(c+dx))^3}{3d}+\frac{B(a+ia\tan(c+dx))^4}{4d}+(2a(A-iB))\\ &= \frac{a(iA+B)(a+ia\tan(c+dx))^3}{3d}+\frac{B(a+ia\tan(c+dx))^4}{4d}+\frac{(iA+B)\left(a^2\right.}{}\\ &= 8a^4(A-iB)x-\frac{4a^4(A-iB)\tan(c+dx)}{d}+\frac{a(iA+B)(a+ia\tan(c+dx)}{3d}\\ &= 8a^4(A-iB)x-\frac{8a^4(iA+B)\log(\cos(c+dx))}{d}-\frac{4a^4(A-iB)\tan(c+dx)}{d}\end{aligned}$$

Mathematica [B] time = 3.22407, size = 448, normalized size = 3.2

$$\frac{a^4\sec(c)\sec^4(c+dx)\left(3\cos(c)\left((-6B-6iA)\log\left(\cos^2(c+dx)\right)+12Adx-4iA-12iBdx-7B\right)+6\cos(c+2dx)\left((-2B-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^4*Sec[c]*Sec[c + d*x]^4*((-6*I)*A*Cos[3*c + 2*d*x] - 12*B*Cos[3*c + 2*d*
x] + 24*A*d*x*Cos[3*c + 2*d*x] - (24*I)*B*d*x*Cos[3*c + 2*d*x] + 6*A*d*x*Co
s[3*c + 4*d*x] - (6*I)*B*d*x*Cos[3*c + 4*d*x] + 6*A*d*x*Cos[5*c + 4*d*x] -
(6*I)*B*d*x*Cos[5*c + 4*d*x] - (12*I)*A*Cos[3*c + 2*d*x]*Log[Cos[c + d*x]^2
] - 12*B*Cos[3*c + 2*d*x]*Log[Cos[c + d*x]^2] - (3*I)*A*Cos[3*c + 4*d*x]*Lo
g[Cos[c + d*x]^2] - 3*B*Cos[3*c + 4*d*x]*Log[Cos[c + d*x]^2] - (3*I)*A*Cos[
5*c + 4*d*x]*Log[Cos[c + d*x]^2] - 3*B*Cos[5*c + 4*d*x]*Log[Cos[c + d*x]^2]
 + 3*Cos[c]*((-4*I)*A - 7*B + 12*A*d*x - (12*I)*B*d*x + ((-6*I)*A - 6*B)*Lo
g[Cos[c + d*x]^2]) + 6*Cos[c + 2*d*x]*((-I)*A - 2*B + 4*A*d*x - (4*I)*B*d*x
```

```
 + ((-2*I)*A - 2*B)*Log[Cos[c + d*x]^2]) + 33*A*Sin[c] - (42*I)*B*Sin[c] -
32*A*Sin[c + 2*d*x] + (38*I)*B*Sin[c + 2*d*x] + 12*A*Sin[3*c + 2*d*x] - (18
*I)*B*Sin[3*c + 2*d*x] - 11*A*Sin[3*c + 4*d*x] + (14*I)*B*Sin[3*c + 4*d*x])
)/(12*d)
```

Maple [A] time = 0.003, size = 194, normalized size = 1.4

$$\frac{-\frac{4i}{3}a^4B(\tan(dx+c))^3}{d}+\frac{a^4B(\tan(dx+c))^4}{4d}-\frac{2ia^4A(\tan(dx+c))^2}{d}+\frac{a^4A(\tan(dx+c))^3}{3d}+\frac{8ia^4B\tan(dx+c)}{d}-\frac{7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -4/3*I/d*a^4*B*tan(d*x+c)^3+1/4/d*a^4*B*tan(d*x+c)^4-2*I/d*a^4*A*tan(d*x+c)
^2+1/3/d*a^4*A*tan(d*x+c)^3+8*I/d*a^4*B*tan(d*x+c)-7/2/d*a^4*B*tan(d*x+c)^2
-7/d*a^4*A*tan(d*x+c)+4*I/d*a^4*A*ln(1+tan(d*x+c)^2)+4/d*a^4*B*ln(1+tan(d*x
+c)^2)-8*I/d*a^4*B*arctan(tan(d*x+c))+8/d*a^4*A*arctan(tan(d*x+c))
```

Maxima [A] time = 2.06552, size = 158, normalized size = 1.13

$$\frac{3\,Ba^4\tan(dx+c)^4+(4\,A-16i\,B)a^4\tan(dx+c)^3-6\,(4i\,A+7\,B)a^4\tan(dx+c)^2+12\,(dx+c)(8\,A-8i\,B)a^4-48\,(-i\,}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/12*(3*B*a^4*tan(d*x + c)^4 + (4*A - 16*I*B)*a^4*tan(d*x + c)^3 - 6*(4*I*A
 + 7*B)*a^4*tan(d*x + c)^2 + 12*(d*x + c)*(8*A - 8*I*B)*a^4 - 48*(-I*A - B)
*a^4*log(tan(d*x + c)^2 + 1) - (84*A - 96*I*B)*a^4*tan(d*x + c))/d
```

Fricas [A] time = 1.71488, size = 670, normalized size = 4.79

$$\frac{(-72i\,A-120\,B)a^4e^{(6i\,dx+6i\,c)}+(-180i\,A-252\,B)a^4e^{(4i\,dx+4i\,c)}+(-152i\,A-200\,B)a^4e^{(2i\,dx+2i\,c)}+(-44i\,A-56\,B)a^4+\Big((}{3\left(de^{(8i\,dx+8}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/3*((-72*I*A - 120*B)*a^4*e^(6*I*d*x + 6*I*c) + (-180*I*A - 252*B)*a^4*e^(
4*I*d*x + 4*I*c) + (-152*I*A - 200*B)*a^4*e^(2*I*d*x + 2*I*c) + (-44*I*A -
56*B)*a^4 + ((-24*I*A - 24*B)*a^4*e^(8*I*d*x + 8*I*c) + (-96*I*A - 96*B)*a^
4*e^(6*I*d*x + 6*I*c) + (-144*I*A - 144*B)*a^4*e^(4*I*d*x + 4*I*c) + (-96*I
*A - 96*B)*a^4*e^(2*I*d*x + 2*I*c) + (-24*I*A - 24*B)*a^4)*log(e^(2*I*d*x +
 2*I*c) + 1))/(d*e^(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I
*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 48.7133, size = 223, normalized size = 1.59

$$-\frac{8a^4(iA+B)\log\left(e^{2idx}+e^{-2ic}\right)}{d}+\frac{-\frac{\left(24iAa^4+40Ba^4\right)e^{-2ic}e^{6idx}}{d}-\frac{\left(44iAa^4+56Ba^4\right)e^{-8ic}}{3d}-\frac{\left(60iAa^4+84Ba^4\right)e^{-4ic}e^{4idx}}{d}-\frac{\left(152iAa^4+200Ba^4\right)e^{-6ic}e^{2}}{3d}}{e^{8idx}+4e^{-2ic}e^{6idx}+6e^{-4ic}e^{4idx}+4e^{-6ic}e^{2idx}+e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] -8*a**4*(I*A + B)*log(exp(2*I*d*x) + exp(-2*I*c))/d + (-(24*I*A*a**4 + 40*B
*a**4)*exp(-2*I*c)*exp(6*I*d*x)/d - (44*I*A*a**4 + 56*B*a**4)*exp(-8*I*c)/(
3*d) - (60*I*A*a**4 + 84*B*a**4)*exp(-4*I*c)*exp(4*I*d*x)/d - (152*I*A*a**4
 + 200*B*a**4)*exp(-6*I*c)*exp(2*I*d*x)/(3*d))/(exp(8*I*d*x) + 4*exp(-2*I*c
)*exp(6*I*d*x) + 6*exp(-4*I*c)*exp(4*I*d*x) + 4*exp(-6*I*c)*exp(2*I*d*x) +
exp(-8*I*c))
```

Giac [B] time = 1.57072, size = 551, normalized size = 3.94

$$\frac{-24i\,Aa^4e^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-24\,Ba^4e^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-96i\,Aa^4e^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-96}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/3*(-24*I*A*a^4*e^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 24*B*a^
4*e^(8*I*d*x + 8*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 96*I*A*a^4*e^(6*I*d*x
```

```
+ 6*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 96*B*a^4*e^(6*I*d*x + 6*I*c)*log(e^
(2*I*d*x + 2*I*c) + 1) - 144*I*A*a^4*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2
*I*c) + 1) - 144*B*a^4*e^(4*I*d*x + 4*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 9
6*I*A*a^4*e^(2*I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 96*B*a^4*e^(2*
I*d*x + 2*I*c)*log(e^(2*I*d*x + 2*I*c) + 1) - 72*I*A*a^4*e^(6*I*d*x + 6*I*c
) - 120*B*a^4*e^(6*I*d*x + 6*I*c) - 180*I*A*a^4*e^(4*I*d*x + 4*I*c) - 252*B
*a^4*e^(4*I*d*x + 4*I*c) - 152*I*A*a^4*e^(2*I*d*x + 2*I*c) - 200*B*a^4*e^(2
*I*d*x + 2*I*c) - 24*I*A*a^4*log(e^(2*I*d*x + 2*I*c) + 1) - 24*B*a^4*log(e^
(2*I*d*x + 2*I*c) + 1) - 44*I*A*a^4 - 56*B*a^4)/(d*e^(8*I*d*x + 8*I*c) + 4*
d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c) +
 d)
```

3.29 $\int \cot(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=142

$$-\frac{(A-2iB)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}-\frac{(3A-4iB)\left(a^4+ia^4\tan(c+dx)\right)}{d}+\frac{a^4(7A-8iB)\log(\cos(c+dx))}{d}+8a^4x(B+iA)$$

```
[Out] 8*a^4*(I*A + B)*x + (a^4*(7*A - (8*I)*B)*Log[Cos[c + d*x]])/d + (a^4*A*Log[
Sin[c + d*x]])/d + ((I/3)*a*B*(a + I*a*Tan[c + d*x])^3)/d - ((A - (2*I)*B)*
(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d) - ((3*A - (4*I)*B)*(a^4 + I*a^4*Tan[c +
 d*x]))/d
```

Rubi [A] time = 0.420767, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3594, 3589, 3475, 3531}

$$-\frac{(A-2iB)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}-\frac{(3A-4iB)\left(a^4+ia^4\tan(c+dx)\right)}{d}+\frac{a^4(7A-8iB)\log(\cos(c+dx))}{d}+8a^4x(B+iA)$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] 8*a^4*(I*A + B)*x + (a^4*(7*A - (8*I)*B)*Log[Cos[c + d*x]])/d + (a^4*A*Log[
Sin[c + d*x]])/d + ((I/3)*a*B*(a + I*a*Tan[c + d*x])^3)/d - ((A - (2*I)*B)*
(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d) - ((3*A - (4*I)*B)*(a^4 + I*a^4*Tan[c +
 d*x]))/d
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{iaB(a+ia\tan(c+dx))^3}{3d} + \frac{1}{3}\int \cot(c+dx)(a+ia\tan(c+$$

$$= \frac{iaB(a+ia\tan(c+dx))^3}{3d} - \frac{(A-2iB)\left(a^2+ia^2\tan(c+dx)\right.}{2d}$$

$$= \frac{iaB(a+ia\tan(c+dx))^3}{3d} - \frac{(A-2iB)\left(a^2+ia^2\tan(c+dx)\right.}{2d}$$

$$= \frac{iaB(a+ia\tan(c+dx))^3}{3d} - \frac{(A-2iB)\left(a^2+ia^2\tan(c+dx)\right.}{2d}$$

$$= 8a^4(iA+B)x + \frac{a^4(7A-8iB)\log(\cos(c+dx))}{d} + \frac{iaB(a+i}{}$$

$$= 8a^4(iA+B)x + \frac{a^4(7A-8iB)\log(\cos(c+dx))}{d} + \frac{a^4A\log(}{}$$

Mathematica [B] time = 6.97096, size = 429, normalized size = 3.02

$$\frac{a^4\sec(c)\sec^3(c+dx)(\cos(4dx)+i\sin(4dx))\left(3\cos(dx)\left(3(7A-8iB)\log\left(\cos^2(c+dx)\right)+3A\log\left(\sin^2(c+dx)\right)+48iA\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^4*Sec[c]*Sec[c + d*x]^3*(Cos[4*d*x] + I*Sin[4*d*x])*((48*I)*A*d*x*Cos[2*
c + 3*d*x] + 48*B*d*x*Cos[2*c + 3*d*x] + (48*I)*A*d*x*Cos[4*c + 3*d*x] + 48
*B*d*x*Cos[4*c + 3*d*x] + 21*A*Cos[2*c + 3*d*x]*Log[Cos[c + d*x]^2] - (24*I
)*B*Cos[2*c + 3*d*x]*Log[Cos[c + d*x]^2] + 21*A*Cos[4*c + 3*d*x]*Log[Cos[c
+ d*x]^2] - (24*I)*B*Cos[4*c + 3*d*x]*Log[Cos[c + d*x]^2] + 3*A*Cos[2*c + 3
*d*x]*Log[Sin[c + d*x]^2] + 3*A*Cos[4*c + 3*d*x]*Log[Sin[c + d*x]^2] + 3*Co
s[d*x]*(4*A - (16*I)*B + (48*I)*A*d*x + 48*B*d*x + 3*(7*A - (8*I)*B)*Log[Co
s[c + d*x]^2] + 3*A*Log[Sin[c + d*x]^2]) + 3*Cos[2*c + d*x]*(4*A - (16*I)*B
 + (48*I)*A*d*x + 48*B*d*x + 3*(7*A - (8*I)*B)*Log[Cos[c + d*x]^2] + 3*A*Lo
g[Sin[c + d*x]^2]) - (96*I)*A*Sin[d*x] - 168*B*Sin[d*x] + (48*I)*A*Sin[2*c
+ d*x] + 96*B*Sin[2*c + d*x] - (48*I)*A*Sin[2*c + 3*d*x] - 88*B*Sin[2*c + 3
*d*x]))/(48*d*(Cos[d*x] + I*Sin[d*x])^4)
```

Maple [A] time = 0.074, size = 169, normalized size = 1.2

$$\frac{Aa^4(\tan(dx+c))^2}{2d}+7\frac{Aa^4\ln(\cos(dx+c))}{d}+\frac{Ba^4(\tan(dx+c))^3}{3d}-7\frac{Ba^4\tan(dx+c)}{d}+8Ba^4x+8\frac{Ba^4c}{d}-\frac{4iA\tan(\cdots}{d\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*a^4*A*tan(d*x+c)^2+7/d*A*a^4*ln(cos(d*x+c))+1/3/d*a^4*B*tan(d*x+c)^3-
7/d*a^4*B*tan(d*x+c)+8*B*a^4*x+8/d*B*a^4*c-4*I/d*A*tan(d*x+c)*a^4+8*I*A*x*a
^4-2*I/d*B*a^4*tan(d*x+c)^2+8*I/d*A*a^4*c-8*I/d*B*a^4*ln(cos(d*x+c))+a^4*A*
ln(sin(d*x+c))/d
```

Maxima [A] time = 2.18017, size = 149, normalized size = 1.05

$$\frac{2Ba^4\tan(dx+c)^3+(3A-12iB)a^4\tan(dx+c)^2-48(dx+c)(-iA-B)a^4-6(4A-4iB)a^4\log\left(\tan(dx+c)^2+1\right)+\cdots}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/6*(2*B*a^4*tan(d*x + c)^3 + (3*A - 12*I*B)*a^4*tan(d*x + c)^2 - 48*(d*x +
 c)*(-I*A - B)*a^4 - 6*(4*A - 4*I*B)*a^4*log(tan(d*x + c)^2 + 1) + 6*A*a^4*
log(tan(d*x + c)) - 6*(4*I*A + 7*B)*a^4*tan(d*x + c))/d
```

Fricas [B] time = 1.48668, size = 672, normalized size = 4.73

$$\frac{6\,(5\,A-12i\,B)a^4e^{(4i\,dx+4i\,c)}+54\,(A-2i\,B)a^4e^{(2i\,dx+2i\,c)}+4\,(6\,A-11i\,B)a^4+3\left((7\,A-8i\,B)a^4e^{(6i\,dx+6i\,c)}+3\,(7\,A-8i\,B)a\right.}{3\left(de\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/3*(6*(5*A - 12*I*B)*a^4*e^(4*I*d*x + 4*I*c) + 54*(A - 2*I*B)*a^4*e^(2*I*d
*x + 2*I*c) + 4*(6*A - 11*I*B)*a^4 + 3*((7*A - 8*I*B)*a^4*e^(6*I*d*x + 6*I*
c) + 3*(7*A - 8*I*B)*a^4*e^(4*I*d*x + 4*I*c) + 3*(7*A - 8*I*B)*a^4*e^(2*I*d
*x + 2*I*c) + (7*A - 8*I*B)*a^4)*log(e^(2*I*d*x + 2*I*c) + 1) + 3*(A*a^4*e^
(6*I*d*x + 6*I*c) + 3*A*a^4*e^(4*I*d*x + 4*I*c) + 3*A*a^4*e^(2*I*d*x + 2*I*
c) + A*a^4)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4
*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [B] time = 29.7044, size = 262, normalized size = 1.85

$$\frac{\frac{(10Aa^4-24iBa^4)e^{-2ic}e^{4idx}}{d}+\frac{(18Aa^4-36iBa^4)e^{-4ic}e^{2idx}}{d}+\frac{(24Aa^4-44iBa^4)e^{-6ic}}{3d}}{e^{6idx}+3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}+e^{-6ic}}+\mathrm{RootSum}\left(z^2d^2+z\left(-8Aa^4d+8iBa^4d\right)+7A^2a^8-8\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] ((10*A*a**4 - 24*I*B*a**4)*exp(-2*I*c)*exp(4*I*d*x)/d + (18*A*a**4 - 36*I*B
*a**4)*exp(-4*I*c)*exp(2*I*d*x)/d + (24*A*a**4 - 44*I*B*a**4)*exp(-6*I*c)/(
3*d))/(exp(6*I*d*x) + 3*exp(-2*I*c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*
x) + exp(-6*I*c)) + RootSum(_z**2*d**2 + _z*(-8*A*a**4*d + 8*I*B*a**4*d) +
7*A**2*a**8 - 8*I*A*B*a**8, Lambda(_i, _i*log(_i*I*d/(3*I*A*a**4*exp(2*I*c)
 + 4*B*a**4*exp(2*I*c)) - (4*I*A + 4*B)/(3*I*A*exp(2*I*c) + 4*B*exp(2*I*c))
 + exp(2*I*d*x))))
```

Giac [B] time = 1.64026, size = 454, normalized size = 3.2

$$6\,Aa^4\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)-12\left(8\,Aa^4-8i\,Ba^4\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+i\right)+6\left(7\,Aa^4-8i\,Ba^4\right)\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/6*(6*A*a^4*log(abs(tan(1/2*d*x + 1/2*c))) - 12*(8*A*a^4 - 8*I*B*a^4)*log(
tan(1/2*d*x + 1/2*c) + I) + 6*(7*A*a^4 - 8*I*B*a^4)*log(abs(tan(1/2*d*x + 1
/2*c) + 1)) + 6*(7*A*a^4 - 8*I*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c) - 1)) -
(77*A*a^4*tan(1/2*d*x + 1/2*c)^6 - 88*I*B*a^4*tan(1/2*d*x + 1/2*c)^6 - 48*I
*A*a^4*tan(1/2*d*x + 1/2*c)^5 - 84*B*a^4*tan(1/2*d*x + 1/2*c)^5 - 243*A*a^4
*tan(1/2*d*x + 1/2*c)^4 + 312*I*B*a^4*tan(1/2*d*x + 1/2*c)^4 + 96*I*A*a^4*t
an(1/2*d*x + 1/2*c)^3 + 184*B*a^4*tan(1/2*d*x + 1/2*c)^3 + 243*A*a^4*tan(1/
2*d*x + 1/2*c)^2 - 312*I*B*a^4*tan(1/2*d*x + 1/2*c)^2 - 48*I*A*a^4*tan(1/2*
d*x + 1/2*c) - 84*B*a^4*tan(1/2*d*x + 1/2*c) - 77*A*a^4 + 88*I*B*a^4)/(tan(
1/2*d*x + 1/2*c)^2 - 1)^3)/d
```

3.30 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=144

$$\frac{(-B+2iA)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}+\frac{a^4(B+4iA)\log(\sin(c+dx))}{d}+\frac{a^4(7B+4iA)\log(\cos(c+dx))}{d}-8a^4x(A-iB)-$$

```
[Out] -8*a^4*(A - I*B)*x + (a^4*((4*I)*A + 7*B)*Log[Cos[c + d*x]])/d + (a^4*((4*I
)*A + B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^3)
/d + (((2*I)*A - B)*(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d) - (3*B*(a^4 + I*a^4
*Tan[c + d*x]))/d
```

Rubi [A] time = 0.432015, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3594, 3589, 3475, 3531}

$$\frac{(-B+2iA)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}+\frac{a^4(B+4iA)\log(\sin(c+dx))}{d}+\frac{a^4(7B+4iA)\log(\cos(c+dx))}{d}-8a^4x(A-iB)-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] -8*a^4*(A - I*B)*x + (a^4*((4*I)*A + 7*B)*Log[Cos[c + d*x]])/d + (a^4*((4*I
)*A + B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^3)
/d + (((2*I)*A - B)*(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d) - (3*B*(a^4 + I*a^4
*Tan[c + d*x]))/d
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^3}{d} + \int \cot(c+dx)(a$$

$$= -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^3}{d} + \frac{(2iA-B)\left(a^2+i\right.}{2}$$

$$= -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^3}{d} + \frac{(2iA-B)\left(a^2+i\right.}{2}$$

$$= -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^3}{d} + \frac{(2iA-B)\left(a^2+i\right.}{2}$$

$$= -8a^4(A-iB)x + \frac{a^4(4iA+7B)\log(\cos(c+dx))}{d} - \frac{aA\cot}{}$$

$$= -8a^4(A-iB)x + \frac{a^4(4iA+7B)\log(\cos(c+dx))}{d} + \frac{a^4(4iA}{}$$

Mathematica [B] time = 10.5206, size = 1122, normalized size = 7.79

$$a^4\left(\frac{x(\cot(c+dx)+i)^4(B+A\cot(c+dx))\left(-22A\cos^4(c)+\frac{17}{2}iB\cos^4(c)-4iA\cot(c)\cos^4(c)-B\cot(c)\cos^4(c)+50iA\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^4*((A*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Csc[c]*(Cos[4*c] - I*Sin[
4*c])*Sin[d*x]*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x]
 + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*((4*I)*A*C
os[2*c] + B*Cos[2*c] + 4*A*Sin[2*c] - I*B*Sin[2*c])*((-I)*ArcTan[Tan[5*c +
d*x]]*Cos[2*c] - ArcTan[Tan[5*c + d*x]]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d
*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x]
)^4*(B + A*Cot[c + d*x])*((4*I)*A*Cos[2*c] + 7*B*Cos[2*c] + 4*A*Sin[2*c] -
(7*I)*B*Sin[2*c])*((Cos[2*c]*Log[Cos[c + d*x]^2])/2 - (I/2)*Log[Cos[c + d*x
]^2]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x]
 + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*((4*I)*A*C
os[2*c] + B*Cos[2*c] + 4*A*Sin[2*c] - I*B*Sin[2*c])*((Cos[2*c]*Log[Sin[c +
d*x]^2])/2 - (I/2)*Log[Sin[c + d*x]^2]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*
x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((A - I*B)*(I + Cot
[c + d*x])^4*(B + A*Cot[c + d*x])*(-8*d*x*Cos[4*c] + (8*I)*d*x*Sin[4*c])*Si
n[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x]
)) + (x*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Sin[c + d*x]^5*(2*A*Cos[c
```

```
]^2 - ((7*I)/2)*B*Cos[c]^2 - 22*A*Cos[c]^4 + ((17*I)/2)*B*Cos[c]^4 - (4*I)*
A*Cos[c]^4*Cot[c] - B*Cos[c]^4*Cot[c] - (6*I)*A*Cos[c]*Sin[c] - (21*B*Cos[c
]*Sin[c])/2 + (50*I)*A*Cos[c]^3*Sin[c] + (55*B*Cos[c]^3*Sin[c])/2 - 6*A*Sin
[c]^2 + ((21*I)/2)*B*Sin[c]^2 + 60*A*Cos[c]^2*Sin[c]^2 - (45*I)*B*Cos[c]^2*
Sin[c]^2 - (40*I)*A*Cos[c]*Sin[c]^3 - 40*B*Cos[c]*Sin[c]^3 - 14*A*Sin[c]^4
+ ((37*I)/2)*B*Sin[c]^4 + (-3*B + (4*I)*A*Cos[2*c] + 4*B*Cos[2*c])*Csc[c]*S
ec[c]*(Cos[4*c] - I*Sin[4*c]) + (2*I)*A*Sin[c]^2*Tan[c] + (7*B*Sin[c]^2*Tan
[c])/2 + (2*I)*A*Sin[c]^4*Tan[c] + (7*B*Sin[c]^4*Tan[c])/2))/((Cos[d*x] + I
*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B
+ A*Cot[c + d*x])*Sec[c]*(Cos[4*c] - I*Sin[4*c])*(A*Sin[d*x] - (4*I)*B*Sin[
d*x])*Sin[c + d*x]^4*Tan[c + d*x])/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c +
d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*((B*Co
s[4*c])/2 - (I/2)*B*Sin[4*c])*Sin[c + d*x]^3*Tan[c + d*x]^2)/(d*(Cos[d*x] +
 I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.066, size = 165, normalized size = 1.2

$$-8\,Aa^4x+\frac{Aa^4\tan(dx+c)}{d}-8\,\frac{Aa^4c}{d}+\frac{Ba^4(\tan(dx+c))^2}{2\,d}+7\,\frac{Ba^4\ln(\cos(dx+c))}{d}+\frac{4\,iAa^4\ln(\cos(dx+c))}{d}+\frac{4\,iAa^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -8*A*a^4*x+1/d*a^4*A*tan(d*x+c)-8/d*A*a^4*c+1/2/d*a^4*B*tan(d*x+c)^2+7*a^4*
B*ln(cos(d*x+c))/d+4*I/d*A*a^4*ln(cos(d*x+c))+4*I/d*A*a^4*ln(sin(d*x+c))+8*
I/d*B*a^4*c+8*I*B*x*a^4-4*I/d*B*tan(d*x+c)*a^4-1/d*A*cot(d*x+c)*a^4+1/d*B*a
^4*ln(sin(d*x+c))
```

Maxima [A] time = 2.13928, size = 142, normalized size = 0.99

$$\frac{Ba^4\tan(dx+c)^2-2\,(dx+c)(8\,A-8i\,B)a^4-8\,(i\,A+B)a^4\log\left(\tan(dx+c)^2+1\right)+2\,(4i\,A+B)a^4\log(\tan(dx+c))+(}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/2*(B*a^4*tan(d*x + c)^2 - 2*(d*x + c)*(8*A - 8*I*B)*a^4 - 8*(I*A + B)*a^4
*log(tan(d*x + c)^2 + 1) + 2*(4*I*A + B)*a^4*log(tan(d*x + c)) + (2*A - 8*I
*B)*a^4*tan(d*x + c) - 2*A*a^4/tan(d*x + c))/d
```

Fricas [B] time = 1.54956, size = 686, normalized size = 4.76

$$\frac{10\,Ba^4e^{(4i\,dx+4i\,c)} + (-4i\,A - 2\,B)a^4e^{(2i\,dx+2i\,c)} + (-4i\,A - 8\,B)a^4 + \Big((4i\,A + 7\,B)a^4e^{(6i\,dx+6i\,c)} + (4i\,A + 7\,B)a^4e^{(4i\,dx+4i\,c)} + (\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] (10*B*a^4*e^(4*I*d*x + 4*I*c) + (-4*I*A - 2*B)*a^4*e^(2*I*d*x + 2*I*c) + (-
4*I*A - 8*B)*a^4 + ((4*I*A + 7*B)*a^4*e^(6*I*d*x + 6*I*c) + (4*I*A + 7*B)*a
^4*e^(4*I*d*x + 4*I*c) + (-4*I*A - 7*B)*a^4*e^(2*I*d*x + 2*I*c) + (-4*I*A -
 7*B)*a^4)*log(e^(2*I*d*x + 2*I*c) + 1) + ((4*I*A + B)*a^4*e^(6*I*d*x + 6*I
*c) + (4*I*A + B)*a^4*e^(4*I*d*x + 4*I*c) + (-4*I*A - B)*a^4*e^(2*I*d*x + 2
*I*c) + (-4*I*A - B)*a^4)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*I*d*x + 6*I
*c) + d*e^(4*I*d*x + 4*I*c) - d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 8.58648, size = 230, normalized size = 1.6

$$\frac{\frac{10Ba^4e^{-2ic}e^{4idx}}{d} - \frac{\left(4iAa^4+2Ba^4\right)e^{-4ic}e^{2idx}}{d} - \frac{\left(4iAa^4+8Ba^4\right)e^{-6ic}}{d}}{e^{6idx} + e^{-2ic}e^{4idx} - e^{-4ic}e^{2idx} - e^{-6ic}} + \operatorname{RootSum}\Big(z^2d^2 + z\left(-8iAa^4d - 8Ba^4d\right) - 16A^2a^8 + 32iABa^8 + 7\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] (10*B*a**4*exp(-2*I*c)*exp(4*I*d*x)/d - (4*I*A*a**4 + 2*B*a**4)*exp(-4*I*c)
*exp(2*I*d*x)/d - (4*I*A*a**4 + 8*B*a**4)*exp(-6*I*c)/d)/(exp(6*I*d*x) + ex
p(-2*I*c)*exp(4*I*d*x) - exp(-4*I*c)*exp(2*I*d*x) - exp(-6*I*c)) + RootSum(
_z**2*d**2 + _z*(-8*I*A*a**4*d - 8*B*a**4*d) - 16*A**2*a**8 + 32*I*A*B*a**8
 + 7*B**2*a**8, Lambda(_i, _i*log(_i*d*exp(-2*I*c)/(3*B*a**4) + exp(2*I*d*x
) - (4*I*A + 4*B)*exp(-2*I*c)/(3*B))))
```

Giac [B] time = 1.68531, size = 458, normalized size = 3.18

$$Aa^4\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)-32\left(iAa^4+Ba^4\right)\log\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+i\right)+2\left(4iAa^4+7Ba^4\right)\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+1\right|\right)-2\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/2*(A*a^4*tan(1/2*d*x + 1/2*c) - 32*(I*A*a^4 + B*a^4)*log(tan(1/2*d*x + 1/
2*c) + I) + 2*(4*I*A*a^4 + 7*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c) + 1)) - 2*
(-4*I*A*a^4 - 7*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c) - 1)) - 2*(-4*I*A*a^4 -
 B*a^4)*log(abs(tan(1/2*d*x + 1/2*c))) - (8*I*A*a^4*tan(1/2*d*x + 1/2*c) +
2*B*a^4*tan(1/2*d*x + 1/2*c) + A*a^4)/tan(1/2*d*x + 1/2*c) - (12*I*A*a^4*ta
n(1/2*d*x + 1/2*c)^4 + 21*B*a^4*tan(1/2*d*x + 1/2*c)^4 + 4*A*a^4*tan(1/2*d*
x + 1/2*c)^3 - 16*I*B*a^4*tan(1/2*d*x + 1/2*c)^3 - 24*I*A*a^4*tan(1/2*d*x +
 1/2*c)^2 - 46*B*a^4*tan(1/2*d*x + 1/2*c)^2 - 4*A*a^4*tan(1/2*d*x + 1/2*c)
+ 16*I*B*a^4*tan(1/2*d*x + 1/2*c) + 12*I*A*a^4 + 21*B*a^4)/(tan(1/2*d*x + 1
/2*c)^2 - 1)^2)/d
```

3.31 $\int \cot^3(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=156

$$-\frac{a^4(7A-4iB)\log(\sin(c+dx))}{d}-\frac{a^4(A-4iB)\log(\cos(c+dx))}{d}-\frac{(2B+5iA)\cot(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}-8a^4$$

```
[Out] -8*a^4*(I*A + B)*x - (a^4*(A - (4*I)*B)*Log[Cos[c + d*x]])/d - (a^4*(7*A -
(4*I)*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^
3)/(2*d) - (((5*I)*A + 2*B)*Cot[c + d*x]*(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d
) - (3*A*(a^4 + I*a^4*Tan[c + d*x]))/d
```

Rubi [A] time = 0.442379, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3594, 3589, 3475, 3531}

$$-\frac{a^4(7A-4iB)\log(\sin(c+dx))}{d}-\frac{a^4(A-4iB)\log(\cos(c+dx))}{d}-\frac{(2B+5iA)\cot(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}-8a^4$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] -8*a^4*(I*A + B)*x - (a^4*(A - (4*I)*B)*Log[Cos[c + d*x]])/d - (a^4*(7*A -
(4*I)*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^
3)/(2*d) - (((5*I)*A + 2*B)*Cot[c + d*x]*(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d
) - (3*A*(a^4 + I*a^4*Tan[c + d*x]))/d
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^3}{2d} + \frac{1}{2}\int \cot^2(c+dx$$

$$= -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^3}{2d} - \frac{(5iA+2B)\cot(}{}$$

$$= -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^3}{2d} - \frac{(5iA+2B)\cot(}{}$$

$$= -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^3}{2d} - \frac{(5iA+2B)\cot(}{}$$

$$= -8a^4(iA+B)x - \frac{a^4(A-4iB)\log(\cos(c+dx))}{d} - \frac{aA\cot^2}{}$$

$$= -8a^4(iA+B)x - \frac{a^4(A-4iB)\log(\cos(c+dx))}{d} - \frac{a^4(7A-}{}$$

Mathematica [B] time = 10.3433, size = 1116, normalized size = 7.15

$$a^4\left(\frac{x(\cot(c+dx)+i)^4(B+A\cot(c+dx))\left(-\frac{71}{2}iA\cos^4(c)-22B\cos^4(c)+7A\cot(c)\cos^4(c)-4iB\cot(c)\cos^4(c)-\frac{145}{2}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^4*(((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*(-(A*Cos[4*c])/2 + (I/2)*A*
Sin[4*c])*Sin[c + d*x]^3)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*
Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Csc[c]*(Cos[4*c
] - I*Sin[4*c])*((4*I)*A*Sin[d*x] + B*Sin[d*x])*Sin[c + d*x]^4)/(d*(Cos[d*x
] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^
4*(B + A*Cot[c + d*x])*(7*A*Cos[2*c] - (4*I)*B*Cos[2*c] - (7*I)*A*Sin[2*c]
- 4*B*Sin[2*c])*(I*ArcTan[Tan[5*c + d*x]]*Cos[2*c] + ArcTan[Tan[5*c + d*x]]
*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B
*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*(A*Cos[2*c] -
(4*I)*B*Cos[2*c] - I*A*Sin[2*c] - 4*B*Sin[2*c])*(-(Cos[2*c]*Log[Cos[c + d*x
]^2])/2 + (I/2)*Log[Cos[c + d*x]^2]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*x]
+ I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*
(B + A*Cot[c + d*x])*(7*A*Cos[2*c] - (4*I)*B*Cos[2*c] - (7*I)*A*Sin[2*c] -
4*B*Sin[2*c])*(-(Cos[2*c]*Log[Sin[c + d*x]^2])/2 + (I/2)*Log[Sin[c + d*x]^2
]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] +
B*Sin[c + d*x])) + ((A - I*B)*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*((-
```

```
8*I)*d*x*Cos[4*c] - 8*d*x*Sin[4*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*
x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*(I + Cot[c + d*x])^4*(B + A*C
ot[c + d*x])*Sin[c + d*x]^5*((I/2)*A*Cos[c]^2 + 2*B*Cos[c]^2 - ((71*I)/2)*A
*Cos[c]^4 - 22*B*Cos[c]^4 + 7*A*Cos[c]^4*Cot[c] - (4*I)*B*Cos[c]^4*Cot[c] +
 (3*A*Cos[c]*Sin[c])/2 - (6*I)*B*Cos[c]*Sin[c] - (145*A*Cos[c]^3*Sin[c])/2
+ (50*I)*B*Cos[c]^3*Sin[c] - ((3*I)/2)*A*Sin[c]^2 - 6*B*Sin[c]^2 + (75*I)*A
*Cos[c]^2*Sin[c]^2 + 60*B*Cos[c]^2*Sin[c]^2 + 40*A*Cos[c]*Sin[c]^3 - (40*I)
*B*Cos[c]*Sin[c]^3 - ((19*I)/2)*A*Sin[c]^4 - 14*B*Sin[c]^4 + (3*A + 4*A*Cos
[2*c] - (4*I)*B*Cos[2*c])*Csc[c]*Sec[c]*(-Cos[4*c] + I*Sin[4*c]) - (A*Sin[c
]^2*Tan[c])/2 + (2*I)*B*Sin[c]^2*Tan[c] - (A*Sin[c]^4*Tan[c])/2 + (2*I)*B*S
in[c]^4*Tan[c]))/((Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x
])) + (B*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Sec[c]*(Cos[4*c] - I*Sin
[4*c])*Sin[d*x]*Sin[c + d*x]^4*Tan[c + d*x])/(d*(Cos[d*x] + I*Sin[d*x])^4*(
A*Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.074, size = 166, normalized size = 1.1

$$-\frac{Aa^4\ln(\cos(dx+c))}{d} - 8\,Ba^4x + \frac{Ba^4\tan(dx+c)}{d} - 8\,\frac{Ba^4c}{d} + \frac{4\,iBa^4\ln(\cos(dx+c))}{d} - \frac{4\,iA\cot(dx+c)\,a^4}{d} + \frac{4\,iBa^4\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/d*A*a^4*ln(cos(d*x+c))-8*B*a^4*x+1/d*a^4*B*tan(d*x+c)-8/d*B*a^4*c+4*I/d*
B*a^4*ln(cos(d*x+c))-4*I/d*A*cot(d*x+c)*a^4+4*I/d*B*a^4*ln(sin(d*x+c))-7*a^
4*A*ln(sin(d*x+c))/d-8*I*A*x*a^4-8*I/d*A*a^4*c-1/2/d*A*a^4*cot(d*x+c)^2-1/d
*B*cot(d*x+c)*a^4
```

Maxima [A] time = 2.10328, size = 149, normalized size = 0.96

$$-\frac{16\,(dx+c)(i\,A+B)a^4 - 2\,(4\,A-4i\,B)a^4\log\left(\tan(dx+c)^2+1\right) + 2\,(7\,A-4i\,B)a^4\log(\tan(dx+c)) - 2\,Ba^4\tan(dx+c}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/2*(16*(d*x + c)*(I*A + B)*a^4 - 2*(4*A - 4*I*B)*a^4*log(tan(d*x + c)^2 +
 1) + 2*(7*A - 4*I*B)*a^4*log(tan(d*x + c)) - 2*B*a^4*tan(d*x + c) - (2*(-4
*I*A - B)*a^4*tan(d*x + c) - A*a^4)/tan(d*x + c)^2)/d
```

Fricas [A] time = 1.54735, size = 678, normalized size = 4.35

$$\frac{10\,Aa^4e^{(4i\,dx+4i\,c)} + 2\,(A-2i\,B)a^4e^{(2i\,dx+2i\,c)} - 4\,(2\,A-i\,B)a^4 - \left((A-4i\,B)a^4e^{(6i\,dx+6i\,c)} - (A-4i\,B)a^4e^{(4i\,dx+4i\,c)} - (A-4i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] (10*A*a^4*e^(4*I*d*x + 4*I*c) + 2*(A - 2*I*B)*a^4*e^(2*I*d*x + 2*I*c) - 4*(
2*A - I*B)*a^4 - ((A - 4*I*B)*a^4*e^(6*I*d*x + 6*I*c) - (A - 4*I*B)*a^4*e^(
4*I*d*x + 4*I*c) - (A - 4*I*B)*a^4*e^(2*I*d*x + 2*I*c) + (A - 4*I*B)*a^4)*l
og(e^(2*I*d*x + 2*I*c) + 1) - ((7*A - 4*I*B)*a^4*e^(6*I*d*x + 6*I*c) - (7*A
 - 4*I*B)*a^4*e^(4*I*d*x + 4*I*c) - (7*A - 4*I*B)*a^4*e^(2*I*d*x + 2*I*c) +
 (7*A - 4*I*B)*a^4)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*I*d*x + 6*I*c) -
d*e^(4*I*d*x + 4*I*c) - d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [A] time = 16.9671, size = 228, normalized size = 1.46

$$\frac{\frac{10Aa^4e^{-2ic}e^{4idx}}{d} + \frac{\left(2Aa^4-4iBa^4\right)e^{-4ic}e^{2idx}}{d} - \frac{\left(8Aa^4-4iBa^4\right)e^{-6ic}}{d}}{e^{6idx} - e^{-2ic}e^{4idx} - e^{-4ic}e^{2idx} + e^{-6ic}} + \operatorname{RootSum}\left(z^2d^2 + z\left(8Aa^4d - 8iBa^4d\right) + 7A^2a^8 - 32iABa^8 - 16B\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] (10*A*a**4*exp(-2*I*c)*exp(4*I*d*x)/d + (2*A*a**4 - 4*I*B*a**4)*exp(-4*I*c)
*exp(2*I*d*x)/d - (8*A*a**4 - 4*I*B*a**4)*exp(-6*I*c)/d)/(exp(6*I*d*x) - ex
p(-2*I*c)*exp(4*I*d*x) - exp(-4*I*c)*exp(2*I*d*x) + exp(-6*I*c)) + RootSum(
_z**2*d**2 + _z*(8*A*a**4*d - 8*I*B*a**4*d) + 7*A**2*a**8 - 32*I*A*B*a**8 -
 16*B**2*a**8, Lambda(_i, _i*log(_i*d*exp(-2*I*c)/(3*A*a**4) + exp(2*I*d*x)
 + (4*A - 4*I*B)*exp(-2*I*c)/(3*A))))
```

Giac [B] time = 1.73924, size = 433, normalized size = 2.78

$$-\frac{Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-16i\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-4\,Ba^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-16\left(8\,Aa^4-8i\,Ba^4\right)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/8*(A*a^4*tan(1/2*d*x + 1/2*c)^2 - 16*I*A*a^4*tan(1/2*d*x + 1/2*c) - 4*B*
a^4*tan(1/2*d*x + 1/2*c) - 16*(8*A*a^4 - 8*I*B*a^4)*log(tan(1/2*d*x + 1/2*c
) + I) + 8*(A*a^4 - 4*I*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c) + 1)) + 8*(A*a^
4 - 4*I*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c) - 1)) + 8*(7*A*a^4 - 4*I*B*a^4)
*log(abs(tan(1/2*d*x + 1/2*c))) - 8*(A*a^4*tan(1/2*d*x + 1/2*c)^2 - 4*I*B*a
^4*tan(1/2*d*x + 1/2*c)^2 - 2*B*a^4*tan(1/2*d*x + 1/2*c) - A*a^4 + 4*I*B*a^
4)/(tan(1/2*d*x + 1/2*c)^2 - 1) - (84*A*a^4*tan(1/2*d*x + 1/2*c)^2 - 48*I*B
*a^4*tan(1/2*d*x + 1/2*c)^2 - 16*I*A*a^4*tan(1/2*d*x + 1/2*c) - 4*B*a^4*tan
(1/2*d*x + 1/2*c) - A*a^4)/tan(1/2*d*x + 1/2*c)^2)/d
```

3.32 $\int \cot^4(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=163

$$-\frac{a^4(7B+8iA)\log(\sin(c+dx))}{d}-\frac{(B+2iA)\cot^2(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}+\frac{(4A-3iB)\cot(c+dx)\left(a^4+ia^4\tan\right.}{d}$$

```
[Out] 8*a^4*(A - I*B)*x - (a^4*B*Log[Cos[c + d*x]])/d - (a^4*((8*I)*A + 7*B)*Log[
Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^3)/(3*d) - ((
(2*I)*A + B)*Cot[c + d*x]^2*(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d) + ((4*A - (
3*I)*B)*Cot[c + d*x]*(a^4 + I*a^4*Tan[c + d*x]))/d
```

Rubi [A] time = 0.452709, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3593, 3589, 3475, 3531}

$$-\frac{a^4(7B+8iA)\log(\sin(c+dx))}{d}-\frac{(B+2iA)\cot^2(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{2d}+\frac{(4A-3iB)\cot(c+dx)\left(a^4+ia^4\tan\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] 8*a^4*(A - I*B)*x - (a^4*B*Log[Cos[c + d*x]])/d - (a^4*((8*I)*A + 7*B)*Log[
Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^3)/(3*d) - ((
(2*I)*A + B)*Cot[c + d*x]^2*(a^2 + I*a^2*Tan[c + d*x])^2)/(2*d) + ((4*A - (
3*I)*B)*Cot[c + d*x]*(a^4 + I*a^4*Tan[c + d*x]))/d
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot^4(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^3}{3d} + \frac{1}{3}\int \cot^3(c+dx)$$

$$= -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^3}{3d} - \frac{(2iA+B)\cot^2(c}{}$$

$$= -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^3}{3d} - \frac{(2iA+B)\cot^2(c}{}$$

$$= -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^3}{3d} - \frac{(2iA+B)\cot^2(c}{}$$

$$= 8a^4(A-iB)x - \frac{a^4B\log(\cos(c+dx))}{d} - \frac{aA\cot^3(c+dx)(a}{3a}$$

$$= 8a^4(A-iB)x - \frac{a^4B\log(\cos(c+dx))}{d} - \frac{a^4(8iA+7B)\log(\mathrm{si}}{d}$$

Mathematica [B] time = 9.59529, size = 1138, normalized size = 6.98

$$a^4\left(\frac{x(\cot(c+dx)+i)^4(B+A\cot(c+dx))\left(40A\cos^4(c)-\frac{71}{2}iB\cos^4(c)+8iA\cot(c)\cos^4(c)+7B\cot(c)\cos^4(c)-80iA\,\mathrm{si}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^4*((A*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Csc[c]*(Cos[4*c]/3 - (I/3
)*Sin[4*c])*Sin[d*x]*Sin[c + d*x]^2)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c
+ d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Csc[
c]*(-2*A*Cos[c] - (12*I)*A*Sin[c] - 3*B*Sin[c])*(Cos[4*c]/6 - (I/6)*Sin[4*c
])*Sin[c + d*x]^3)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c +
 d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Csc[c]*((-2*Cos[4*c])/
3 + ((2*I)/3)*Sin[4*c])*(11*A*Sin[d*x] - (6*I)*B*Sin[d*x])*Sin[c + d*x]^4)/
(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) - (B*Cos[4*
c]*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Log[Cos[c + d*x]^2]*Sin[c + d*
x]^5)/(2*d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (
(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*(8*A*Cos[2*c] - (7*I)*B*Cos[2*c]
- (8*I)*A*Sin[2*c] - 7*B*Sin[2*c])*(-(ArcTan[Tan[5*c + d*x]]*Cos[2*c]) + I*
ArcTan[Tan[5*c + d*x]]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])
^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c
+ d*x])*(8*A*Cos[2*c] - (7*I)*B*Cos[2*c] - (8*I)*A*Sin[2*c] - 7*B*Sin[2*c])
*((-I/2)*Cos[2*c]*Log[Sin[c + d*x]^2] - (Log[Sin[c + d*x]^2]*Sin[2*c])/2)*S
in[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x
])) + ((I/2)*B*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Log[Cos[c + d*x]^2
]*Sin[4*c]*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B
*Sin[c + d*x])) + ((A - I*B)*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*(8*d
*x*Cos[4*c] - (8*I)*d*x*Sin[4*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x]
)^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*(I + Cot[c + d*x])^4*(B + A*Cot
[c + d*x])*Sin[c + d*x]^5*((I/2)*B*Cos[c]^2 + 40*A*Cos[c]^4 - ((71*I)/2)*B*
Cos[c]^4 + (8*I)*A*Cos[c]^4*Cot[c] + 7*B*Cos[c]^4*Cot[c] + (3*B*Cos[c]*Sin[
c])/2 - (80*I)*A*Cos[c]^3*Sin[c] - (145*B*Cos[c]^3*Sin[c])/2 - ((3*I)/2)*B*
Sin[c]^2 - 80*A*Cos[c]^2*Sin[c]^2 + (75*I)*B*Cos[c]^2*Sin[c]^2 + (40*I)*A*C
os[c]*Sin[c]^3 + 40*B*Cos[c]*Sin[c]^3 + 8*A*Sin[c]^4 - ((19*I)/2)*B*Sin[c]^
4 - I*(4*A - (3*I)*B + 4*A*Cos[2*c] - (4*I)*B*Cos[2*c])*Csc[c]*Sec[c]*(Cos[
4*c] - I*Sin[4*c]) - (B*Sin[c]^2*Tan[c])/2 - (B*Sin[c]^4*Tan[c])/2))/((Cos[
d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.074, size = 170, normalized size = 1.

$$8\,Aa^4x+8\,\frac{Aa^4c}{d}-\frac{Ba^4\ln(\cos(dx+c))}{d}-8\,iBxa^4-\frac{8\,iBa^4c}{d}-\frac{2\,iAa^4(\cot(dx+c))^2}{d}+7\,\frac{A\cot(dx+c)\,a^4}{d}-7\,\frac{Ba^4\ln(s}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 8*A*a^4*x+8/d*A*a^4*c-a^4*B*ln(cos(d*x+c))/d-8*I*B*x*a^4-8*I/d*B*a^4*c-2*I/
d*A*a^4*cot(d*x+c)^2+7/d*A*cot(d*x+c)*a^4-7/d*B*a^4*ln(sin(d*x+c))-8*I/d*A*
a^4*ln(sin(d*x+c))-4*I/d*B*cot(d*x+c)*a^4-1/3/d*A*a^4*cot(d*x+c)^3-1/2/d*B*
a^4*cot(d*x+c)^2
```

Maxima [A] time = 2.37657, size = 159, normalized size = 0.98

$$\frac{6\,(dx+c)(8\,A-8i\,B)a^4-24\,(-i\,A-B)a^4\log\left(\tan\left(dx+c\right)^2+1\right)+6\,(-8i\,A-7\,B)a^4\log\left(\tan\left(dx+c\right)\right)+\frac{(42\,A-24i\,B)a^4\tan(}{}}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/6*(6*(d*x + c)*(8*A - 8*I*B)*a^4 - 24*(-I*A - B)*a^4*log(tan(d*x + c)^2 +
 1) + 6*(-8*I*A - 7*B)*a^4*log(tan(d*x + c)) + ((42*A - 24*I*B)*a^4*tan(d*x
 + c)^2 + 3*(-4*I*A - B)*a^4*tan(d*x + c) - 2*A*a^4)/tan(d*x + c)^3)/d
```

Fricas [A] time = 1.53453, size = 679, normalized size = 4.17

$$\frac{(72i\,A+30\,B)a^4e^{(4i\,dx+4i\,c)}+(-108i\,A-54\,B)a^4e^{(2i\,dx+2i\,c)}+(44i\,A+24\,B)a^4-3\left(Ba^4e^{(6i\,dx+6i\,c)}-3\,Ba^4e^{(4i\,dx+4i\,c)}+3\,Ba^4\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/3*((72*I*A + 30*B)*a^4*e^(4*I*d*x + 4*I*c) + (-108*I*A - 54*B)*a^4*e^(2*I
*d*x + 2*I*c) + (44*I*A + 24*B)*a^4 - 3*(B*a^4*e^(6*I*d*x + 6*I*c) - 3*B*a^
4*e^(4*I*d*x + 4*I*c) + 3*B*a^4*e^(2*I*d*x + 2*I*c) - B*a^4)*log(e^(2*I*d*x
 + 2*I*c) + 1) + ((-24*I*A - 21*B)*a^4*e^(6*I*d*x + 6*I*c) + (72*I*A + 63*B
)*a^4*e^(4*I*d*x + 4*I*c) + (-72*I*A - 63*B)*a^4*e^(2*I*d*x + 2*I*c) + (24*
I*A + 21*B)*a^4)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(6*I*d*x + 6*I*c) - 3*d
*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 28.4718, size = 262, normalized size = 1.61

$$\frac{\frac{(24iAa^4+10Ba^4)e^{-2ic}e^{4idx}}{d}-\frac{(36iAa^4+18Ba^4)e^{-4ic}e^{2idx}}{d}+\frac{(44iAa^4+24Ba^4)e^{-6ic}}{3d}}{e^{6idx}-3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}-e^{-6ic}}+\operatorname{RootSum}\left(z^2d^2+z\left(8iAa^4d+8Ba^4d\right)+8iABa^8+7\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] ((24*I*A*a**4 + 10*B*a**4)*exp(-2*I*c)*exp(4*I*d*x)/d - (36*I*A*a**4 + 18*B
*a**4)*exp(-4*I*c)*exp(2*I*d*x)/d + (44*I*A*a**4 + 24*B*a**4)*exp(-6*I*c)/(
3*d))/(exp(6*I*d*x) - 3*exp(-2*I*c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*
x) - exp(-6*I*c)) + RootSum(_z**2*d**2 + _z*(8*I*A*a**4*d + 8*B*a**4*d) + 8
*I*A*B*a**8 + 7*B**2*a**8, Lambda(_i, _i*log(-_i*I*d/(4*A*a**4*exp(2*I*c) -
 3*I*B*a**4*exp(2*I*c)) + (4*A - 4*I*B)/(4*A*exp(2*I*c) - 3*I*B*exp(2*I*c))
 + exp(2*I*d*x))))
```

Giac [B] time = 1.90507, size = 397, normalized size = 2.44

$$\frac{Aa^4\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^3-12i\,Aa^4\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-3\,Ba^4\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-24\,Ba^4\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+1\right|\right)-24\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/24*(A*a^4*tan(1/2*d*x + 1/2*c)^3 - 12*I*A*a^4*tan(1/2*d*x + 1/2*c)^2 - 3*
B*a^4*tan(1/2*d*x + 1/2*c)^2 - 24*B*a^4*log(abs(tan(1/2*d*x + 1/2*c) + 1))
- 24*B*a^4*log(abs(tan(1/2*d*x + 1/2*c) - 1)) - 87*A*a^4*tan(1/2*d*x + 1/2*
c) + 48*I*B*a^4*tan(1/2*d*x + 1/2*c) - 384*(-I*A*a^4 - B*a^4)*log(tan(1/2*d
*x + 1/2*c) + I) - 24*(8*I*A*a^4 + 7*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c)))
- (-352*I*A*a^4*tan(1/2*d*x + 1/2*c)^3 - 308*B*a^4*tan(1/2*d*x + 1/2*c)^3 -
 87*A*a^4*tan(1/2*d*x + 1/2*c)^2 + 48*I*B*a^4*tan(1/2*d*x + 1/2*c)^2 + 12*I
*A*a^4*tan(1/2*d*x + 1/2*c) + 3*B*a^4*tan(1/2*d*x + 1/2*c) + A*a^4)/tan(1/2
*d*x + 1/2*c)^3)/d
```

3.33 $\int \cot^5(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=177

$$\frac{a^4(64B+67iA)\cot(c+dx)}{12d}+\frac{8a^4(A-iB)\log(\sin(c+dx))}{d}-\frac{(4B+7iA)\cot^3(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{12d}+\frac{(19A-$$

```
[Out] 8*a^4*(I*A + B)*x + (a^4*((67*I)*A + 64*B)*Cot[c + d*x])/(12*d) + (8*a^4*(A
 - I*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^3
)/(4*d) - (((7*I)*A + 4*B)*Cot[c + d*x]^3*(a^2 + I*a^2*Tan[c + d*x])^2)/(12
*d) + ((19*A - (16*I)*B)*Cot[c + d*x]^2*(a^4 + I*a^4*Tan[c + d*x]))/(12*d)
```

Rubi [A] time = 0.531504, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3593, 3591, 3531, 3475}

$$\frac{a^4(64B+67iA)\cot(c+dx)}{12d}+\frac{8a^4(A-iB)\log(\sin(c+dx))}{d}-\frac{(4B+7iA)\cot^3(c+dx)\left(a^2+ia^2\tan(c+dx)\right)^2}{12d}+\frac{(19A-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```



```
[Out] 8*a^4*(I*A + B)*x + (a^4*((67*I)*A + 64*B)*Cot[c + d*x])/(12*d) + (8*a^4*(A
 - I*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^3
)/(4*d) - (((7*I)*A + 4*B)*Cot[c + d*x]^3*(a^2 + I*a^2*Tan[c + d*x])^2)/(12
*d) + ((19*A - (16*I)*B)*Cot[c + d*x]^2*(a^4 + I*a^4*Tan[c + d*x]))/(12*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^5(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^4(c+dx)(a+ia\tan(c+dx))^3}{4d}+\frac{1}{4}\int \cot^4(c+dx$$

$$= -\frac{aA\cot^4(c+dx)(a+ia\tan(c+dx))^3}{4d}-\frac{(7iA+4B)\cot^3}{}$$

$$= -\frac{aA\cot^4(c+dx)(a+ia\tan(c+dx))^3}{4d}-\frac{(7iA+4B)\cot^3}{}$$

$$= \frac{a^4(67iA+64B)\cot(c+dx)}{12d}-\frac{aA\cot^4(c+dx)(a+ia\tan}{4d}$$

$$= 8a^4(iA+B)x+\frac{a^4(67iA+64B)\cot(c+dx)}{12d}-\frac{aA\cot^4(c}{}$$

$$= 8a^4(iA+B)x+\frac{a^4(67iA+64B)\cot(c+dx)}{12d}+\frac{8a^4(A-iB}{}$$

Mathematica [A] time = 5.82022, size = 319, normalized size = 1.8

$$\frac{a^4\sin(c+dx)(\cot(c+dx)+i)^4(A\cot(c+dx)+B)\left(192dx(A-iB)(\sin(4c)+i\cos(4c))\sin^4(c+dx)+48(A-iB)(\cos(4c\ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^4*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*Sin[c + d*x]*(-3*A*Cos[4*c]
+ (3*I)*A*Sin[4*c] + 4*((4*I)*A + B)*Csc[c]*(Cos[4*c] - I*Sin[4*c])*Sin[d*x
]*Sin[c + d*x] + 4*(12*A - (6*I)*B + ((-4*I)*A - B)*Cot[c])*(Cos[4*c] - I*S
in[4*c])*Sin[c + d*x]^2 - (8*I)*(14*A - (11*I)*B)*Csc[c]*(Cos[4*c] - I*Sin[
4*c])*Sin[d*x]*Sin[c + d*x]^3 - (96*I)*(A - I*B)*ArcTan[Tan[5*c + d*x]]*(Co
s[4*c] - I*Sin[4*c])*Sin[c + d*x]^4 + 48*(A - I*B)*Log[Sin[c + d*x]^2]*(Cos
[4*c] - I*Sin[4*c])*Sin[c + d*x]^4 + 192*(A - I*B)*d*x*(I*Cos[4*c] + Sin[4*
c])*Sin[c + d*x]^4))/(12*d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Si
n[c + d*x]))
```

Maple [A] time = 0.079, size = 189, normalized size = 1.1

$$8\,{\frac{A{a}^{4}\ln \left(\sin \left(dx+c \right) \right) }{d}}-{\frac{A{a}^{4} \left(\cot \left(dx+c \right) \right) ^{4}}{4\,d}}-{\frac{B{a}^{4} \left(\cot \left(dx+c \right) \right) ^{3}}{3\,d}}+{\frac{7\,A{a}^{4} \left(\cot \left(dx+c \right) \right) ^{2}}{2\,d}}+8\,{\frac{B{a}^{4}c}{d}}+7\,{\frac{\cot \left(dx+c \right) B{a}^{4}}{d}}\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 8*a^4*A*ln(sin(d*x+c))/d-1/4/d*A*a^4*cot(d*x+c)^4-1/3/d*B*a^4*cot(d*x+c)^3+
7/2/d*A*a^4*cot(d*x+c)^2+8/d*B*a^4*c+7/d*B*cot(d*x+c)*a^4-2*I/d*B*a^4*cot(d
*x+c)^2+8*I/d*A*cot(d*x+c)*a^4+8*I/d*A*a^4*c-8*I/d*B*a^4*ln(sin(d*x+c))+8*I
*A*x*a^4+8*B*a^4*x-4/3*I/d*A*a^4*cot(d*x+c)^3
```

Maxima [A] time = 2.10027, size = 188, normalized size = 1.06

$$-\frac{96\,(dx+c)(-i\,A-B)a^4+12\,(4\,A-4i\,B)a^4\log\left(\tan\left(dx+c\right)^2+1\right)-12\,(8\,A-8i\,B)a^4\log\left(\tan\left(dx+c\right)\right)-\frac{12\,(8i\,A+7\,B)a^4\,\mathrm{t}\ldots}{}}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/12*(96*(d*x + c)*(-I*A - B)*a^4 + 12*(4*A - 4*I*B)*a^4*log(tan(d*x + c)^
2 + 1) - 12*(8*A - 8*I*B)*a^4*log(tan(d*x + c)) - (12*(8*I*A + 7*B)*a^4*tan
(d*x + c)^3 + (42*A - 24*I*B)*a^4*tan(d*x + c)^2 + 4*(-4*I*A - B)*a^4*tan(d
*x + c) - 3*A*a^4)/tan(d*x + c)^4)/d
```

Fricas [A] time = 1.42994, size = 622, normalized size = 3.51

$$-\frac{4\left(6\left(5A-3iB\right)a^4e^{(6i\,dx+6i\,c)}-9\left(7A-5iB\right)a^4e^{(4i\,dx+4i\,c)}+2\left(25A-19iB\right)a^4e^{(2i\,dx+2i\,c)}-\left(14A-11iB\right)a^4-6\left(\left(A-iB\right.\right.\right.}{3\left(de^{(8i\,dx+8i\,c)}-4\,de^{(6i\,dx+6i\,c)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -4/3*(6*(5*A - 3*I*B)*a^4*e^(6*I*d*x + 6*I*c) - 9*(7*A - 5*I*B)*a^4*e^(4*I*
d*x + 4*I*c) + 2*(25*A - 19*I*B)*a^4*e^(2*I*d*x + 2*I*c) - (14*A - 11*I*B)*
a^4 - 6*((A - I*B)*a^4*e^(8*I*d*x + 8*I*c) - 4*(A - I*B)*a^4*e^(6*I*d*x + 6
*I*c) + 6*(A - I*B)*a^4*e^(4*I*d*x + 4*I*c) - 4*(A - I*B)*a^4*e^(2*I*d*x +
2*I*c) + (A - I*B)*a^4)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(8*I*d*x + 8*I*c
) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*
I*c) + d)
```

Sympy [A] time = 20.1324, size = 221, normalized size = 1.25

$$\frac{8a^4\left(A-iB\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{-\frac{\left(40Aa^4-24iBa^4\right)e^{-2ic}e^{6idx}}{d}+\frac{\left(56Aa^4-44iBa^4\right)e^{-8ic}}{3d}+\frac{\left(84Aa^4-60iBa^4\right)e^{-4ic}e^{4idx}}{d}-\frac{\left(200Aa^4-152iBa^4\right)e^{-6ic}e^{2i}}{3d}}{e^{8idx}-4e^{-2ic}e^{6idx}+6e^{-4ic}e^{4idx}-4e^{-6ic}e^{2idx}+e^{-8ic}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] 8*a**4*(A - I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(40*A*a**4 - 24*I*B*
a**4)*exp(-2*I*c)*exp(6*I*d*x)/d + (56*A*a**4 - 44*I*B*a**4)*exp(-8*I*c)/(3
*d) + (84*A*a**4 - 60*I*B*a**4)*exp(-4*I*c)*exp(4*I*d*x)/d - (200*A*a**4 -
```

```
152*I*B*a**4)*exp(-6*I*c)*exp(2*I*d*x)/(3*d))/(exp(8*I*d*x) - 4*exp(-2*I*c)
*exp(6*I*d*x) + 6*exp(-4*I*c)*exp(4*I*d*x) - 4*exp(-6*I*c)*exp(2*I*d*x) + e
xp(-8*I*c))
```

Giac [B] time = 1.89542, size = 439, normalized size = 2.48

$$-\frac{3\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-32i\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-8\,Ba^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3-180\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+96i\,Ba^4\tan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/192*(3*A*a^4*tan(1/2*d*x + 1/2*c)^4 - 32*I*A*a^4*tan(1/2*d*x + 1/2*c)^3
- 8*B*a^4*tan(1/2*d*x + 1/2*c)^3 - 180*A*a^4*tan(1/2*d*x + 1/2*c)^2 + 96*I*
B*a^4*tan(1/2*d*x + 1/2*c)^2 + 864*I*A*a^4*tan(1/2*d*x + 1/2*c) + 696*B*a^4
*tan(1/2*d*x + 1/2*c) + 384*(8*A*a^4 - 8*I*B*a^4)*log(tan(1/2*d*x + 1/2*c)
+ I) - 384*(4*A*a^4 - 4*I*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c))) + (3200*A*a
^4*tan(1/2*d*x + 1/2*c)^4 - 3200*I*B*a^4*tan(1/2*d*x + 1/2*c)^4 - 864*I*A*a
^4*tan(1/2*d*x + 1/2*c)^3 - 696*B*a^4*tan(1/2*d*x + 1/2*c)^3 - 180*A*a^4*ta
n(1/2*d*x + 1/2*c)^2 + 96*I*B*a^4*tan(1/2*d*x + 1/2*c)^2 + 32*I*A*a^4*tan(1
/2*d*x + 1/2*c) + 8*B*a^4*tan(1/2*d*x + 1/2*c) + 3*A*a^4)/tan(1/2*d*x + 1/2
*c)^4)/d
```

3.34 $\int \cot^6(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=200

$$\frac{a^4(145B+148iA)\cot^2(c+dx)}{60d}-\frac{8a^4(A-iB)\cot(c+dx)}{d}+\frac{8a^4(B+iA)\log(\sin(c+dx))}{d}-\frac{(5B+8iA)\cot^4(c+dx)\left(a\right.}{20d}$$

```
[Out] -8*a^4*(A - I*B)*x - (8*a^4*(A - I*B)*Cot[c + d*x])/d + (a^4*((148*I)*A + 1
45*B)*Cot[c + d*x]^2)/(60*d) + (8*a^4*(I*A + B)*Log[Sin[c + d*x]])/d - (a*A
*Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^3)/(5*d) - (((8*I)*A + 5*B)*Cot[c +
d*x]^4*(a^2 + I*a^2*Tan[c + d*x])^2)/(20*d) + ((28*A - (25*I)*B)*Cot[c + d*
x]^3*(a^4 + I*a^4*Tan[c + d*x]))/(30*d)
```

Rubi [A] time = 0.591938, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3591, 3529, 3531, 3475}

$$\frac{a^4(145B+148iA)\cot^2(c+dx)}{60d}-\frac{8a^4(A-iB)\cot(c+dx)}{d}+\frac{8a^4(B+iA)\log(\sin(c+dx))}{d}-\frac{(5B+8iA)\cot^4(c+dx)\left(a\right.}{20d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^6*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] -8*a^4*(A - I*B)*x - (8*a^4*(A - I*B)*Cot[c + d*x])/d + (a^4*((148*I)*A + 1
45*B)*Cot[c + d*x]^2)/(60*d) + (8*a^4*(I*A + B)*Log[Sin[c + d*x]])/d - (a*A
*Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^3)/(5*d) - (((8*I)*A + 5*B)*Cot[c +
d*x]^4*(a^2 + I*a^2*Tan[c + d*x])^2)/(20*d) + ((28*A - (25*I)*B)*Cot[c + d*
x]^3*(a^4 + I*a^4*Tan[c + d*x]))/(30*d)
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^6(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^5(c+dx)(a+ia\tan(c+dx))^3}{5d} + \frac{1}{5}\int \cot^5(c+dx)$$

$$= -\frac{aA\cot^5(c+dx)(a+ia\tan(c+dx))^3}{5d} - \frac{(8iA+5B)\cot^4}{}$$

$$= -\frac{aA\cot^5(c+dx)(a+ia\tan(c+dx))^3}{5d} - \frac{(8iA+5B)\cot^4}{}$$

$$= \frac{a^4(148iA+145B)\cot^2(c+dx)}{60d} - \frac{aA\cot^5(c+dx)(a+ia}{5d}$$

$$= -\frac{8a^4(A-iB)\cot(c+dx)}{d} + \frac{a^4(148iA+145B)\cot^2(c+d}{60d}$$

$$= -8a^4(A-iB)x - \frac{8a^4(A-iB)\cot(c+dx)}{d} + \frac{a^4(148iA+1}{}$$

$$= -8a^4(A-iB)x - \frac{8a^4(A-iB)\cot(c+dx)}{d} + \frac{a^4(148iA+1}{}$$

Mathematica [B] time = 8.23866, size = 542, normalized size = 2.71

$$\frac{a^4(\cot(c+dx)+i)^4(A\cot(c+dx)+B)\left(-8dx(A-iB)(\cos(4c)-i\sin(4c))\sin^5(c+dx)+4(A-iB)(\sin(4c)+i\cos(4c)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^6*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^4*(I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*(-8*(A - I*B)*d*x*(Cos[4*c]
- I*Sin[4*c])*Sin[c + d*x]^5 + 8*(A - I*B)*ArcTan[Tan[5*c + d*x]]*(Cos[4*c]
 - I*Sin[4*c])*Sin[c + d*x]^5 + 4*(A - I*B)*Log[Sin[c + d*x]^2]*(I*Cos[4*c]
 + Sin[4*c])*Sin[c + d*x]^5 + (Csc[c]*(Cos[4*c] - I*Sin[4*c])*(15*(A*(14*I
- 20*d*x) + B*(11 + (20*I)*d*x))*Cos[d*x] + 15*((-14*I)*A - 11*B + 20*A*d*x
 - (20*I)*B*d*x)*Cos[2*c + d*x] - (90*I)*A*Cos[2*c + 3*d*x] - 60*B*Cos[2*c
+ 3*d*x] + 150*A*d*x*Cos[2*c + 3*d*x] - (150*I)*B*d*x*Cos[2*c + 3*d*x] + (9
0*I)*A*Cos[4*c + 3*d*x] + 60*B*Cos[4*c + 3*d*x] - 150*A*d*x*Cos[4*c + 3*d*x
] + (150*I)*B*d*x*Cos[4*c + 3*d*x] - 30*A*d*x*Cos[4*c + 5*d*x] + (30*I)*B*d
*x*Cos[4*c + 5*d*x] + 30*A*d*x*Cos[6*c + 5*d*x] - (30*I)*B*d*x*Cos[6*c + 5*
d*x] + 445*A*Sin[d*x] - (400*I)*B*Sin[d*x] + 345*A*Sin[2*c + d*x] - (300*I)
*B*Sin[2*c + d*x] - 275*A*Sin[2*c + 3*d*x] + (260*I)*B*Sin[2*c + 3*d*x] - 1
20*A*Sin[4*c + 3*d*x] + (90*I)*B*Sin[4*c + 3*d*x] + 79*A*Sin[4*c + 5*d*x] -
 (70*I)*B*Sin[4*c + 5*d*x]))/120))/(d*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c +
```

```
d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.081, size = 224, normalized size = 1.1

$$8\,\frac{Ba^{4}\ln\left(\sin\left(dx+c\right)\right)}{d}+\frac{8\,iBa^{4}c}{d}+\frac{8\,iB\cot\left(dx+c\right)a^{4}}{d}-\frac{iAa^{4}\left(\cot\left(dx+c\right)\right)^{4}}{d}+\frac{8\,iAa^{4}\ln\left(\sin\left(dx+c\right)\right)}{d}-\frac{Aa^{4}\left(\cot\left(dx+\right.\right.}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 8/d*B*a^4*ln(sin(d*x+c))+8*I/d*B*a^4*c+8*I/d*B*cot(d*x+c)*a^4-I/d*A*a^4*cot
(d*x+c)^4+8*I/d*A*a^4*ln(sin(d*x+c))-1/5/d*A*a^4*cot(d*x+c)^5-1/4/d*B*a^4*c
ot(d*x+c)^4+7/3/d*A*a^4*cot(d*x+c)^3+7/2/d*B*a^4*cot(d*x+c)^2-8/d*A*a^4*c-8
/d*A*cot(d*x+c)*a^4+8*I*B*x*a^4-4/3*I/d*B*a^4*cot(d*x+c)^3-8*A*a^4*x+4*I/d*
A*a^4*cot(d*x+c)^2
```

Maxima [A] time = 2.00317, size = 211, normalized size = 1.05

$$-\frac{60\left(dx+c\right)(8\,A-8i\,B)a^{4}+240\,(i\,A+B)a^{4}\log\left(\tan\left(dx+c\right)^{2}+1\right)+480\,(-i\,A-B)a^{4}\log\left(\tan\left(dx+c\right)\right)+\frac{(480\,A-480i\,B)a^{4}}{}}{60\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/60*(60*(d*x + c)*(8*A - 8*I*B)*a^4 + 240*(I*A + B)*a^4*log(tan(d*x + c)^
2 + 1) + 480*(-I*A - B)*a^4*log(tan(d*x + c)) + ((480*A - 480*I*B)*a^4*tan(
d*x + c)^4 - 30*(8*I*A + 7*B)*a^4*tan(d*x + c)^3 - (140*A - 80*I*B)*a^4*tan
(d*x + c)^2 - 15*(-4*I*A - B)*a^4*tan(d*x + c) + 12*A*a^4)/tan(d*x + c)^5)/
d
```

Fricas [A] time = 1.46433, size = 857, normalized size = 4.28

$$\frac{(-840i\,A-600\,B)a^{4}e^{(8i\,dx+8i\,c)}+(2220i\,A+1860\,B)a^{4}e^{(6i\,dx+6i\,c)}+(-2620i\,A-2260\,B)a^{4}e^{(4i\,dx+4i\,c)}+(1460i\,A+1280\,B)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/15*((-840*I*A - 600*B)*a^4*e^(8*I*d*x + 8*I*c) + (2220*I*A + 1860*B)*a^4*
e^(6*I*d*x + 6*I*c) + (-2620*I*A - 2260*B)*a^4*e^(4*I*d*x + 4*I*c) + (1460*
I*A + 1280*B)*a^4*e^(2*I*d*x + 2*I*c) + (-316*I*A - 280*B)*a^4 + ((120*I*A
+ 120*B)*a^4*e^(10*I*d*x + 10*I*c) + (-600*I*A - 600*B)*a^4*e^(8*I*d*x + 8*
I*c) + (1200*I*A + 1200*B)*a^4*e^(6*I*d*x + 6*I*c) + (-1200*I*A - 1200*B)*a
^4*e^(4*I*d*x + 4*I*c) + (600*I*A + 600*B)*a^4*e^(2*I*d*x + 2*I*c) + (-120*
I*A - 120*B)*a^4)*log(e^(2*I*d*x + 2*I*c) - 1))/(d*e^(10*I*d*x + 10*I*c) -
5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) - 10*d*e^(4*I*d*x + 4*I*
c) + 5*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [A] time = 146.132, size = 272, normalized size = 1.36

$$\frac{8a^4\left(iA+B\right)\log\left(e^{2idx}-e^{-2ic}\right)}{d}+\frac{-\frac{\left(56iAa^4+40Ba^4\right)e^{-2ic}e^{8idx}}{d}+\frac{\left(148iAa^4+124Ba^4\right)e^{-4ic}e^{6idx}}{d}+\frac{\left(292iAa^4+256Ba^4\right)e^{-8ic}e^{2idx}}{3d}-\frac{\left(316iAa^4+280B\right.}{15d}}{e^{10idx}-5e^{-2ic}e^{8idx}+10e^{-4ic}e^{6idx}-10e^{-6ic}e^{4idx}+5e^{-8ic}e^{2idx}-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**6*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] 8*a**4*(I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c))/d + (-(56*I*A*a**4 + 40*B*
a**4)*exp(-2*I*c)*exp(8*I*d*x)/d + (148*I*A*a**4 + 124*B*a**4)*exp(-4*I*c)*
exp(6*I*d*x)/d + (292*I*A*a**4 + 256*B*a**4)*exp(-8*I*c)*exp(2*I*d*x)/(3*d)
 - (316*I*A*a**4 + 280*B*a**4)*exp(-10*I*c)/(15*d) - (524*I*A*a**4 + 452*B*
a**4)*exp(-6*I*c)*exp(4*I*d*x)/(3*d))/(exp(10*I*d*x) - 5*exp(-2*I*c)*exp(8*
I*d*x) + 10*exp(-4*I*c)*exp(6*I*d*x) - 10*exp(-6*I*c)*exp(4*I*d*x) + 5*exp(
-8*I*c)*exp(2*I*d*x) - exp(-10*I*c))
```

Giac [B] time = 1.86528, size = 529, normalized size = 2.64

$$\frac{6\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^5-60i\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-15\,Ba^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4-310\,Aa^4\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3+160i\,Ba^4\,\mathrm{t}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")

[Out] 1/960*(6*A*a^4*tan(1/2*d*x + 1/2*c)^5 - 60*I*A*a^4*tan(1/2*d*x + 1/2*c)^4 -
 15*B*a^4*tan(1/2*d*x + 1/2*c)^4 - 310*A*a^4*tan(1/2*d*x + 1/2*c)^3 + 160*I
*B*a^4*tan(1/2*d*x + 1/2*c)^3 + 1200*I*A*a^4*tan(1/2*d*x + 1/2*c)^2 + 900*B
*a^4*tan(1/2*d*x + 1/2*c)^2 + 4740*A*a^4*tan(1/2*d*x + 1/2*c) - 4320*I*B*a^
4*tan(1/2*d*x + 1/2*c) - 15360*(I*A*a^4 + B*a^4)*log(tan(1/2*d*x + 1/2*c) +
 I) - 7680*(-I*A*a^4 - B*a^4)*log(abs(tan(1/2*d*x + 1/2*c))) + (-17536*I*A*
a^4*tan(1/2*d*x + 1/2*c)^5 - 17536*B*a^4*tan(1/2*d*x + 1/2*c)^5 - 4740*A*a^
4*tan(1/2*d*x + 1/2*c)^4 + 4320*I*B*a^4*tan(1/2*d*x + 1/2*c)^4 + 1200*I*A*a
^4*tan(1/2*d*x + 1/2*c)^3 + 900*B*a^4*tan(1/2*d*x + 1/2*c)^3 + 310*A*a^4*ta
n(1/2*d*x + 1/2*c)^2 - 160*I*B*a^4*tan(1/2*d*x + 1/2*c)^2 - 60*I*A*a^4*tan(
1/2*d*x + 1/2*c) - 15*B*a^4*tan(1/2*d*x + 1/2*c) - 6*A*a^4)/tan(1/2*d*x + 1
/2*c)^5)/d
```

3.35 $\int \cot^7(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=223

$$\frac{a^4(92B+93iA)\cot^3(c+dx)}{60d}-\frac{4a^4(A-iB)\cot^2(c+dx)}{d}-\frac{8a^4(B+iA)\cot(c+dx)}{d}-\frac{8a^4(A-iB)\log(\sin(c+dx))}{d}-($$

```
[Out] -8*a^4*(I*A + B)*x - (8*a^4*(I*A + B)*Cot[c + d*x])/d - (4*a^4*(A - I*B)*Co
t[c + d*x]^2)/d + (a^4*((93*I)*A + 92*B)*Cot[c + d*x]^3)/(60*d) - (8*a^4*(A
 - I*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^6*(a + I*a*Tan[c + d*x])^3
)/(6*d) - (((3*I)*A + 2*B)*Cot[c + d*x]^5*(a^2 + I*a^2*Tan[c + d*x])^2)/(10
*d) + ((13*A - (12*I)*B)*Cot[c + d*x]^4*(a^4 + I*a^4*Tan[c + d*x]))/(20*d)
```

Rubi [A] time = 0.645658, antiderivative size = 223, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3593, 3591, 3529, 3531, 3475}

$$\frac{a^4(92B+93iA)\cot^3(c+dx)}{60d}-\frac{4a^4(A-iB)\cot^2(c+dx)}{d}-\frac{8a^4(B+iA)\cot(c+dx)}{d}-\frac{8a^4(A-iB)\log(\sin(c+dx))}{d}-($$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^7*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -8*a^4*(I*A + B)*x - (8*a^4*(I*A + B)*Cot[c + d*x])/d - (4*a^4*(A - I*B)*Co
t[c + d*x]^2)/d + (a^4*((93*I)*A + 92*B)*Cot[c + d*x]^3)/(60*d) - (8*a^4*(A
 - I*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^6*(a + I*a*Tan[c + d*x])^3
)/(6*d) - (((3*I)*A + 2*B)*Cot[c + d*x]^5*(a^2 + I*a^2*Tan[c + d*x])^2)/(10
*d) + ((13*A - (12*I)*B)*Cot[c + d*x]^4*(a^4 + I*a^4*Tan[c + d*x]))/(20*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^7(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^6(c+dx)(a+ia\tan(c+dx))^3}{6d} + \frac{1}{6}\int \cot^6(c+dx$$

$$= -\frac{aA\cot^6(c+dx)(a+ia\tan(c+dx))^3}{6d} - \frac{(3iA+2B)\cot^5}{}$$

$$= -\frac{aA\cot^6(c+dx)(a+ia\tan(c+dx))^3}{6d} - \frac{(3iA+2B)\cot^5}{}$$

$$= \frac{a^4(93iA+92B)\cot^3(c+dx)}{60d} - \frac{aA\cot^6(c+dx)(a+ia\,\mathrm{ta}}{6d}$$

$$= -\frac{4a^4(A-iB)\cot^2(c+dx)}{d} + \frac{a^4(93iA+92B)\cot^3(c+dx}{60d}$$

$$= -\frac{8a^4(iA+B)\cot(c+dx)}{d} - \frac{4a^4(A-iB)\cot^2(c+dx)}{d} +$$

$$= -8a^4(iA+B)x - \frac{8a^4(iA+B)\cot(c+dx)}{d} - \frac{4a^4(A-iB)}{d}$$

$$= -8a^4(iA+B)x - \frac{8a^4(iA+B)\cot(c+dx)}{d} - \frac{4a^4(A-iB)}{d}$$

Mathematica [B] time = 9.4112, size = 1009, normalized size = 4.52

$$a^4\left(\frac{(\cot(c+dx)+i)^4(B+A\cot(c+dx))(A\cos(2c)-iB\cos(2c)-iA\sin(2c)-B\sin(2c))\left(8i\tan^{-1}(\tan(5c+dx))\cos(2\right.}{d(\cos(dx)+i\sin(dx))^4(A\cos(c+dx)+B\sin(c+dx))}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^7*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] a^4*(((I + Cot[c + d*x])^4*(B + A*Cot[c + d*x])*(A*Cos[2*c] - I*B*Cos[2*c]
- I*A*Sin[2*c] - B*Sin[2*c])*((8*I)*ArcTan[Tan[5*c + d*x]]*Cos[2*c] + 8*Arc
Tan[Tan[5*c + d*x]]*Sin[2*c])*Sin[c + d*x]^5)/(d*(Cos[d*x] + I*Sin[d*x])^4*
(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c + d*x])^4*(B + A*Cot[c + d
*x])*(A*Cos[2*c] - I*B*Cos[2*c] - I*A*Sin[2*c] - B*Sin[2*c])*(-4*Cos[2*c]*L
og[Sin[c + d*x]^2] + (4*I)*Log[Sin[c + d*x]^2]*Sin[2*c])*Sin[c + d*x]^5)/(d
*(Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (x*(I + Cot
[c + d*x])^4*(B + A*Cot[c + d*x])*((-40*I)*A*Cos[c]^4 - 40*B*Cos[c]^4 + 8*A
*Cos[c]^4*Cot[c] - (8*I)*B*Cos[c]^4*Cot[c] - 80*A*Cos[c]^3*Sin[c] + (80*I)*
B*Cos[c]^3*Sin[c] + (80*I)*A*Cos[c]^2*Sin[c]^2 + 80*B*Cos[c]^2*Sin[c]^2 + 4
```

```
0*A*Cos[c]*Sin[c]^3 - (40*I)*B*Cos[c]*Sin[c]^3 - (8*I)*A*Sin[c]^4 - 8*B*Sin
[c]^4 + (A - I*B)*Cot[c]*(-8*Cos[4*c] + (8*I)*Sin[4*c]))*Sin[c + d*x]^5)/((
Cos[d*x] + I*Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])) + ((I + Cot[c +
 d*x])^4*(B + A*Cot[c + d*x])*Csc[c]*Csc[c + d*x]*(Cos[4*c]/240 - (I/240)*S
in[4*c])*((860*I)*A*Cos[c] + 790*B*Cos[c] - (780*I)*A*Cos[c + 2*d*x] - 720*
B*Cos[c + 2*d*x] - (510*I)*A*Cos[3*c + 2*d*x] - 465*B*Cos[3*c + 2*d*x] + (3
66*I)*A*Cos[3*c + 4*d*x] + 354*B*Cos[3*c + 4*d*x] + (150*I)*A*Cos[5*c + 4*d
*x] + 120*B*Cos[5*c + 4*d*x] - (86*I)*A*Cos[5*c + 6*d*x] - 79*B*Cos[5*c + 6
*d*x] - 490*A*Sin[c] + (420*I)*B*Sin[c] - (600*I)*A*d*x*Sin[c] - 600*B*d*x*
Sin[c] - 345*A*Sin[c + 2*d*x] + (300*I)*B*Sin[c + 2*d*x] - (450*I)*A*d*x*Si
n[c + 2*d*x] - 450*B*d*x*Sin[c + 2*d*x] + 345*A*Sin[3*c + 2*d*x] - (300*I)*
B*Sin[3*c + 2*d*x] + (450*I)*A*d*x*Sin[3*c + 2*d*x] + 450*B*d*x*Sin[3*c + 2
*d*x] + 120*A*Sin[3*c + 4*d*x] - (90*I)*B*Sin[3*c + 4*d*x] + (180*I)*A*d*x*
Sin[3*c + 4*d*x] + 180*B*d*x*Sin[3*c + 4*d*x] - 120*A*Sin[5*c + 4*d*x] + (9
0*I)*B*Sin[5*c + 4*d*x] - (180*I)*A*d*x*Sin[5*c + 4*d*x] - 180*B*d*x*Sin[5*
c + 4*d*x] - (30*I)*A*d*x*Sin[5*c + 6*d*x] - 30*B*d*x*Sin[5*c + 6*d*x] + (3
0*I)*A*d*x*Sin[7*c + 6*d*x] + 30*B*d*x*Sin[7*c + 6*d*x]))/(d*(Cos[d*x] + I*
Sin[d*x])^4*(A*Cos[c + d*x] + B*Sin[c + d*x])))
```

Maple [A] time = 0.087, size = 259, normalized size = 1.2

$$\frac{4\,iBa^4\left(\cot\left(dx+c\right)\right)^2}{d}+\frac{\frac{8\,i}{3}Aa^4\left(\cot\left(dx+c\right)\right)^3}{d}-8\,\frac{Aa^4\ln\left(\sin\left(dx+c\right)\right)}{d}-\frac{Ba^4\left(\cot\left(dx+c\right)\right)^5}{5\,d}-4\,\frac{Aa^4\left(\cot\left(dx+c\right)\right)^2}{d}-8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^7*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*I/d*B*a^4*cot(d*x+c)^2+8/3*I/d*A*a^4*cot(d*x+c)^3-8*a^4*A*ln(sin(d*x+c))/
d-1/5/d*B*a^4*cot(d*x+c)^5-4/d*A*a^4*cot(d*x+c)^2-8/d*B*a^4*c-8/d*B*cot(d*x
+c)*a^4-1/6/d*A*a^4*cot(d*x+c)^6+7/4/d*A*a^4*cot(d*x+c)^4+7/3/d*B*a^4*cot(d
*x+c)^3-4/5*I/d*A*a^4*cot(d*x+c)^5-8*I/d*A*a^4*cot(d*x+c)+8*I/d*B*a^4*ln(si
n(d*x+c))-8*B*a^4*x-8*I/d*A*a^4*c-I/d*B*a^4*cot(d*x+c)^4-8*I*A*x*a^4
```

Maxima [A] time = 2.04492, size = 239, normalized size = 1.07

$$-\frac{480\left(dx+c\right)\left(i\,A+B\right)a^4-60\left(4\,A-4i\,B\right)a^4\log\left(\tan\left(dx+c\right)^2+1\right)+60\left(8\,A-8i\,B\right)a^4\log\left(\tan\left(dx+c\right)\right)-\frac{480\left(-i\,A-B\right)a^4\,\mathrm{ta}}{}}{60\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^7*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/60*(480*(d*x + c)*(I*A + B)*a^4 - 60*(4*A - 4*I*B)*a^4*log(tan(d*x + c)^
2 + 1) + 60*(8*A - 8*I*B)*a^4*log(tan(d*x + c)) - (480*(-I*A - B)*a^4*tan(d
*x + c)^5 - (240*A - 240*I*B)*a^4*tan(d*x + c)^4 + 20*(8*I*A + 7*B)*a^4*tan
(d*x + c)^3 + (105*A - 60*I*B)*a^4*tan(d*x + c)^2 + 12*(-4*I*A - B)*a^4*tan
(d*x + c) - 10*A*a^4)/tan(d*x + c)^6)/d
```

Fricas [A] time = 1.36707, size = 948, normalized size = 4.25

$$\frac{4\left(30\,(9\,A-7i\,B)a^4e^{(10i\,dx+10i\,c)}-45\,(19\,A-17i\,B)a^4e^{(8i\,dx+8i\,c)}+10\,(135\,A-121i\,B)a^4e^{(6i\,dx+6i\,c)}-15\,(75\,A-68i\,B)a^4e^{(}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^7*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 4/15*(30*(9*A - 7*I*B)*a^4*e^(10*I*d*x + 10*I*c) - 45*(19*A - 17*I*B)*a^4*e
^(8*I*d*x + 8*I*c) + 10*(135*A - 121*I*B)*a^4*e^(6*I*d*x + 6*I*c) - 15*(75*
A - 68*I*B)*a^4*e^(4*I*d*x + 4*I*c) + 6*(81*A - 74*I*B)*a^4*e^(2*I*d*x + 2*
I*c) - (86*A - 79*I*B)*a^4 - 30*((A - I*B)*a^4*e^(12*I*d*x + 12*I*c) - 6*(A
 - I*B)*a^4*e^(10*I*d*x + 10*I*c) + 15*(A - I*B)*a^4*e^(8*I*d*x + 8*I*c) -
20*(A - I*B)*a^4*e^(6*I*d*x + 6*I*c) + 15*(A - I*B)*a^4*e^(4*I*d*x + 4*I*c)
 - 6*(A - I*B)*a^4*e^(2*I*d*x + 2*I*c) + (A - I*B)*a^4)*log(e^(2*I*d*x + 2*
I*c) - 1))/(d*e^(12*I*d*x + 12*I*c) - 6*d*e^(10*I*d*x + 10*I*c) + 15*d*e^(8
*I*d*x + 8*I*c) - 20*d*e^(6*I*d*x + 6*I*c) + 15*d*e^(4*I*d*x + 4*I*c) - 6*d
*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**7*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.11067, size = 624, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^7*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/1920*(5*A*a^4*tan(1/2*d*x + 1/2*c)^6 - 48*I*A*a^4*tan(1/2*d*x + 1/2*c)^5
 - 12*B*a^4*tan(1/2*d*x + 1/2*c)^5 - 240*A*a^4*tan(1/2*d*x + 1/2*c)^4 + 120
*I*B*a^4*tan(1/2*d*x + 1/2*c)^4 + 880*I*A*a^4*tan(1/2*d*x + 1/2*c)^3 + 620*
B*a^4*tan(1/2*d*x + 1/2*c)^3 + 2835*A*a^4*tan(1/2*d*x + 1/2*c)^2 - 2400*I*B
*a^4*tan(1/2*d*x + 1/2*c)^2 - 10080*I*A*a^4*tan(1/2*d*x + 1/2*c) - 9480*B*a
^4*tan(1/2*d*x + 1/2*c) - 3840*(8*A*a^4 - 8*I*B*a^4)*log(tan(1/2*d*x + 1/2*
c) + I) + 3840*(4*A*a^4 - 4*I*B*a^4)*log(abs(tan(1/2*d*x + 1/2*c))) - (3763
2*A*a^4*tan(1/2*d*x + 1/2*c)^6 - 37632*I*B*a^4*tan(1/2*d*x + 1/2*c)^6 - 100
80*I*A*a^4*tan(1/2*d*x + 1/2*c)^5 - 9480*B*a^4*tan(1/2*d*x + 1/2*c)^5 - 283
5*A*a^4*tan(1/2*d*x + 1/2*c)^4 + 2400*I*B*a^4*tan(1/2*d*x + 1/2*c)^4 + 880*
I*A*a^4*tan(1/2*d*x + 1/2*c)^3 + 620*B*a^4*tan(1/2*d*x + 1/2*c)^3 + 240*A*a
^4*tan(1/2*d*x + 1/2*c)^2 - 120*I*B*a^4*tan(1/2*d*x + 1/2*c)^2 - 48*I*A*a^4
*tan(1/2*d*x + 1/2*c) - 12*B*a^4*tan(1/2*d*x + 1/2*c) - 5*A*a^4)/tan(1/2*d*
x + 1/2*c)^6)/d
```

3.36 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=129

$$\frac{(-B+iA)\tan^3(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(A+2iB)\tan^2(c+dx)}{2ad}-\frac{3(-B+iA)\tan(c+dx)}{2ad}-\frac{(A+2iB)\log(\cos(c+dx))}{ad}+\frac{3x(-B+i}{2a}$$

```
[Out] (3*(I*A - B)*x)/(2*a) - ((A + (2*I)*B)*Log[Cos[c + d*x]])/(a*d) - (3*(I*A -
 B)*Tan[c + d*x])/(2*a*d) - ((A + (2*I)*B)*Tan[c + d*x]^2)/(2*a*d) + ((I*A
- B)*Tan[c + d*x]^3)/(2*d*(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.173158, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3595, 3528, 3525, 3475}

$$\frac{(-B+iA)\tan^3(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(A+2iB)\tan^2(c+dx)}{2ad}-\frac{3(-B+iA)\tan(c+dx)}{2ad}-\frac{(A+2iB)\log(\cos(c+dx))}{ad}+\frac{3x(-B+i}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] (3*(I*A - B)*x)/(2*a) - ((A + (2*I)*B)*Log[Cos[c + d*x]])/(a*d) - (3*(I*A -
 B)*Tan[c + d*x])/(2*a*d) - ((A + (2*I)*B)*Tan[c + d*x]^2)/(2*a*d) + ((I*A
- B)*Tan[c + d*x]^3)/(2*d*(a + I*a*Tan[c + d*x]))
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
```

```
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx &= \frac{(iA-B)\tan^3(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \tan^2(c+dx)(3a(iA-B)+2a(A+2iB)\tan(c+dx)}{2a^2}\\ &= -\frac{(A+2iB)\tan^2(c+dx)}{2ad} + \frac{(iA-B)\tan^3(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \tan(c+dx)(-2a(A+2}{}\\ &= \frac{3(iA-B)x}{2a} - \frac{3(iA-B)\tan(c+dx)}{2ad} - \frac{(A+2iB)\tan^2(c+dx)}{2ad} + \frac{(iA-B)\tan^3}{2d(a+ia\tan}\\ &= \frac{3(iA-B)x}{2a} - \frac{(A+2iB)\log(\cos(c+dx))}{ad} - \frac{3(iA-B)\tan(c+dx)}{2ad} - \frac{(A+2iB)}{}\end{aligned}$$

Mathematica [B] time = 7.1989, size = 898, normalized size = 6.96

$$\frac{\left(\frac{1}{2}B\sin(c)-\frac{1}{2}iB\cos(c)\right)(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\sec^2(c+dx)}{d(A\cos(c+dx)+B\sin(c+dx))(i\tan(c+dx)a+a)} + \frac{(\cos(dx)+i\sin(dx))(A\cos(c-dx)+iB}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((A*Cos[c/2] + (2*I)*B*Cos[c/2] + I*A*Sin[c/2] - 2*B*Sin[c/2])*(I*ArcTan[Ta
n[d*x]]*Cos[c/2] - ArcTan[Tan[d*x]]*Sin[c/2])*(Cos[d*x] + I*Sin[d*x])*(A +
B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]
)) + ((A*Cos[c/2] + (2*I)*B*Cos[c/2] + I*A*Sin[c/2] - 2*B*Sin[c/2])*(-(Cos[
```

```
c/2]*Log[Cos[c + d*x]^2])/2 - (I/2)*Log[Cos[c + d*x]^2]*Sin[c/2])*(Cos[d*x]
 + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(
a + I*a*Tan[c + d*x])) + ((A + I*B)*Cos[2*d*x]*(Cos[c]/4 - (I/4)*Sin[c])*(C
os[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c +
d*x])*(a + I*a*Tan[c + d*x])) + (Sec[c + d*x]^2*((-I/2)*B*Cos[c] + (B*Sin[c
])/2)*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + ((A + I*B)*(((3*I)/2)*d*x*Cos[c] -
(3*d*x*Sin[c])/2)*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c
 + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + (((-I)*A + B)*(Cos[c]/4
 - (I/4)*Sin[c])*(Cos[d*x] + I*Sin[d*x])*Sin[2*d*x]*(A + B*Tan[c + d*x]))/(
d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + (Sec[c + d*x]
*(Cos[d*x] + I*Sin[d*x])*(A*Cos[c - d*x] + I*B*Cos[c - d*x] - A*Cos[c + d*x
] - I*B*Cos[c + d*x] + I*A*Sin[c - d*x] - B*Sin[c - d*x] - I*A*Sin[c + d*x]
 + B*Sin[c + d*x])*(A + B*Tan[c + d*x]))/(2*d*(Cos[c/2] - Sin[c/2])*(Cos[c/
2] + Sin[c/2])*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) +
(x*(Cos[d*x] + I*Sin[d*x])*((-I)*A*Sec[c] + 2*B*Sec[c] + (A + (2*I)*B)*(Cos
[c] + I*Sin[c])*Tan[c])*(A + B*Tan[c + d*x]))/((A*Cos[c + d*x] + B*Sin[c +
d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.033, size = 169, normalized size = 1.3

$$\frac{B\tan(dx+c)}{ad} - \frac{\frac{i}{2}B(\tan(dx+c))^2}{ad} - \frac{iA\tan(dx+c)}{ad} + \frac{5\ln(\tan(dx+c)-i)A}{4ad} + \frac{\frac{7i}{4}\ln(\tan(dx+c)-i)B}{ad} - \frac{\quad}{ad(\tan}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/d/a*B*tan(d*x+c)-1/2*I/d/a*B*tan(d*x+c)^2-I/d/a*A*tan(d*x+c)+5/4/d/a*ln(t
an(d*x+c)-I)*A+7/4*I/d/a*ln(tan(d*x+c)-I)*B-1/2*I/d/a/(tan(d*x+c)-I)*A+1/2/
d/a/(tan(d*x+c)-I)*B-1/4/d/a*A*ln(tan(d*x+c)+I)+1/4*I/d/a*B*ln(tan(d*x+c)+I
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.46816, size = 527, normalized size = 4.09

$$\frac{(10i\,A-14\,B)dxe^{(6i\,dx+6i\,c)}+((20i\,A-28\,B)dx+9\,A+i\,B)e^{(4i\,dx+4i\,c)}+((10i\,A-14\,B)dx+10\,A+10i\,B)e^{(2i\,dx+2i\,c)}-4\left((A\right.}{4\left(ade^{(6i\,dx+6i\,c)}+2\,ade^{(4i\,dx+4i\,c)}+ad\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/4*((10*I*A - 14*B)*d*x*e^(6*I*d*x + 6*I*c) + ((20*I*A - 28*B)*d*x + 9*A +
 I*B)*e^(4*I*d*x + 4*I*c) + ((10*I*A - 14*B)*d*x + 10*A + 10*I*B)*e^(2*I*d*
x + 2*I*c) - 4*((A + 2*I*B)*e^(6*I*d*x + 6*I*c) + 2*(A + 2*I*B)*e^(4*I*d*x
+ 4*I*c) + (A + 2*I*B)*e^(2*I*d*x + 2*I*c))*log(e^(2*I*d*x + 2*I*c) + 1) +
A + I*B)/(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*
d*x + 2*I*c))
```

Sympy [A] time = 13.3631, size = 196, normalized size = 1.52

$$\frac{\frac{2Ae^{-2ic}e^{2idx}}{ad}+\frac{(2A+2iB)e^{-4ic}}{ad}}{e^{4idx}+2e^{-2ic}e^{2idx}+e^{-4ic}}+\frac{\left(\begin{cases}5iAxe^{2ic}+\frac{Ae^{-2idx}}{2d}-7Bxe^{2ic}+\frac{iBe^{-2idx}}{2d} & \text{for } d\neq 0\\ x\left(5iAe^{2ic}-iA-7Be^{2ic}+B\right) & \text{otherwise}\end{cases}\right)e^{-2ic}}{2a}-\frac{(A+2iB)\log\left(e^{2idx}+e^{-2ic}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] (2*A*exp(-2*I*c)*exp(2*I*d*x)/(a*d) + (2*A + 2*I*B)*exp(-4*I*c)/(a*d))/(exp
(4*I*d*x) + 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c)) + Piecewise((5*I*A*x*
exp(2*I*c) + A*exp(-2*I*d*x)/(2*d) - 7*B*x*exp(2*I*c) + I*B*exp(-2*I*d*x)/(
2*d), Ne(d, 0)), (x*(5*I*A*exp(2*I*c) - I*A - 7*B*exp(2*I*c) + B), True))*e
xp(-2*I*c)/(2*a) - (A + 2*I*B)*log(exp(2*I*d*x) + exp(-2*I*c))/(a*d)
```

Giac [A] time = 2.01044, size = 169, normalized size = 1.31

$$\frac{\frac{(5A+7iB)\log(\tan(dx+c)-i)}{a} - \frac{(A-iB)\log(-i\tan(dx+c)+1)}{a} - \frac{2\left(iBa\tan(dx+c)^2+2iAa\tan(dx+c)-2Ba\tan(dx+c)\right)}{a^2} - \frac{5A\tan(dx+c)+7iB\tan(dx+c)-3i}{a(\tan(dx+c)-i)}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/4*((5*A + 7*I*B)*log(tan(d*x + c) - I)/a - (A - I*B)*log(-I*tan(d*x + c)
+ 1)/a - 2*(I*B*a*tan(d*x + c)^2 + 2*I*A*a*tan(d*x + c) - 2*B*a*tan(d*x + c
))/a^2 - (5*A*tan(d*x + c) + 7*I*B*tan(d*x + c) - 3*I*A + 5*B)/(a*(tan(d*x
+ c) - I)))/d
```

3.37 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=101

$$\frac{(-B+iA)\tan^2(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(A+3iB)\tan(c+dx)}{2ad}+\frac{(-B+iA)\log(\cos(c+dx))}{ad}+\frac{x(A+3iB)}{2a}$$

```
[Out] ((A + (3*I)*B)*x)/(2*a) + ((I*A - B)*Log[Cos[c + d*x]])/(a*d) - ((A + (3*I)
*B)*Tan[c + d*x])/(2*a*d) + ((I*A - B)*Tan[c + d*x]^2)/(2*d*(a + I*a*Tan[c
+ d*x]))
```

Rubi [A] time = 0.124644, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {3595, 3525, 3475}

$$\frac{(-B+iA)\tan^2(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(A+3iB)\tan(c+dx)}{2ad}+\frac{(-B+iA)\log(\cos(c+dx))}{ad}+\frac{x(A+3iB)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((A + (3*I)*B)*x)/(2*a) + ((I*A - B)*Log[Cos[c + d*x]])/(a*d) - ((A + (3*I)
*B)*Tan[c + d*x])/(2*a*d) + ((I*A - B)*Tan[c + d*x]^2)/(2*d*(a + I*a*Tan[c
+ d*x]))
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
```

```
x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx &= \frac{(iA-B)\tan^2(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \tan(c+dx)(2a(iA-B)+a(A+3iB)\tan(c+dx)}{2a^2} \\ &= \frac{(A+3iB)x}{2a} - \frac{(A+3iB)\tan(c+dx)}{2ad} + \frac{(iA-B)\tan^2(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{(iA-B)\int \mathrm{t}}{} \\ &= \frac{(A+3iB)x}{2a} + \frac{(iA-B)\log(\cos(c+dx))}{ad} - \frac{(A+3iB)\tan(c+dx)}{2ad} + \frac{(iA-B)}{2d(a+ia}\end{aligned}$$

Mathematica [B] time = 4.35677, size = 240, normalized size = 2.38

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left((B-iA)(\cos(c)-i\sin(c))\cos(2dx)+2dx(A+3iB)(\cos(c)+i\sin(c))+(A+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(-4*A*d*x*Sec[c] - (4*I)*B*d*x*Sec[c] + ((-I)*A +
B)*Cos[2*d*x]*(Cos[c] - I*Sin[c]) + 2*(A + (3*I)*B)*d*x*(Cos[c] + I*Sin[c])
 + 4*(A + I*B)*ArcTan[Tan[d*x]]*(Cos[c] + I*Sin[c]) + (2*I)*(A + I*B)*Log[C
os[c + d*x]^2]*(Cos[c] + I*Sin[c]) + (A + I*B)*(-Cos[c] + I*Sin[c])*Sin[2*d
*x] + 4*(A + I*B)*d*x*((-I)*Cos[c] + Sin[c])*Tan[c] + 4*B*Sec[c + d*x]*Sin[
d*x]*(-I + Tan[c]))*(A + B*Tan[c + d*x]))/(4*d*(A*Cos[c + d*x] + B*Sin[c +
d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.028, size = 137, normalized size = 1.4

$$\frac{-iB\tan(dx+c)}{ad} - \frac{A}{2\,ad(\tan(dx+c)-i)} - \frac{\frac{i}{2}B}{ad(\tan(dx+c)-i)} - \frac{\frac{3\,i}{4}\ln(\tan(dx+c)-i)\,A}{ad} + \frac{5\,\ln(\tan(dx+c)-i)\,B}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -I/d/a*B*tan(d*x+c)-1/2/d/a/(tan(d*x+c)-I)*A-1/2*I/d/a/(tan(d*x+c)-I)*B-3/4
*I/d/a*ln(tan(d*x+c)-I)*A+5/4/d/a*ln(tan(d*x+c)-I)*B-1/4/d/a*B*ln(tan(d*x+c
)+I)-1/4*I/d/a*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.4707, size = 362, normalized size = 3.58

$$\frac{2\,(3\,A+5i\,B)dxe^{(4i\,dx+4i\,c)}+(2\,(3\,A+5i\,B)dx-i\,A+9\,B)e^{(2i\,dx+2i\,c)}+\left((4i\,A-4\,B)e^{(4i\,dx+4i\,c)}+(4i\,A-4\,B)e^{(2i\,dx+2i\,c)}\right)\log}{4\left(ade^{(4i\,dx+4i\,c)}+ade^{(2i\,dx+2i\,c)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/4*(2*(3*A + 5*I*B)*d*x*e^(4*I*d*x + 4*I*c) + (2*(3*A + 5*I*B)*d*x - I*A +
 9*B)*e^(2*I*d*x + 2*I*c) + ((4*I*A - 4*B)*e^(4*I*d*x + 4*I*c) + (4*I*A - 4
*B)*e^(2*I*d*x + 2*I*c))*log(e^(2*I*d*x + 2*I*c) + 1) - I*A + B)/(a*d*e^(4*
I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [A] time = 7.31978, size = 150, normalized size = 1.49

$$\frac{2Be^{-2ic}}{ad\left(e^{2idx}+e^{-2ic}\right)}+\frac{\left(\begin{cases}3Axe^{2ic}-\frac{iAe^{-2idx}}{2d}+5iBxe^{2ic}+\frac{Be^{-2idx}}{2d} & \text{for } d\neq 0\\ x\left(3Ae^{2ic}-A+5iBe^{2ic}-iB\right) & \text{otherwise}\end{cases}\right)e^{-2ic}}{2a}+\frac{(iA-B)\log\left(e^{2idx}+e^{-2ic}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 2*B*exp(-2*I*c)/(a*d*(exp(2*I*d*x) + exp(-2*I*c))) + Piecewise((3*A*x*exp(2
*I*c) - I*A*exp(-2*I*d*x)/(2*d) + 5*I*B*x*exp(2*I*c) + B*exp(-2*I*d*x)/(2*d
), Ne(d, 0)), (x*(3*A*exp(2*I*c) - A + 5*I*B*exp(2*I*c) - I*B), True))*exp(
-2*I*c)/(2*a) + (I*A - B)*log(exp(2*I*d*x) + exp(-2*I*c))/(a*d)
```

Giac [A] time = 1.63444, size = 136, normalized size = 1.35

$$\frac{\frac{(-i\,A-B)\log(\tan(dx+c)+i)}{a}-\frac{(3i\,A-5\,B)\log(-i\,\tan(dx+c)-1)}{a}-\frac{4i\,B\tan(dx+c)}{a}-\frac{-3i\,A\tan(dx+c)+5\,B\tan(dx+c)-A-3i\,B}{a(\tan(dx+c)-i)}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/4*((-I*A - B)*log(tan(d*x + c) + I)/a - (3*I*A - 5*B)*log(-I*tan(d*x + c)
 - 1)/a - 4*I*B*tan(d*x + c)/a - (-3*I*A*tan(d*x + c) + 5*B*tan(d*x + c) -
A - 3*I*B)/(a*(tan(d*x + c) - I)))/d
```

3.38 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=67

$$-\frac{A+iB}{2ad(1+i\tan(c+dx))}-\frac{x(-B+iA)}{2a}+\frac{iB\log(\cos(c+dx))}{ad}$$

```
[Out] -((I*A - B)*x)/(2*a) + (I*B*Log[Cos[c + d*x]])/(a*d) - (A + I*B)/(2*a*d*(1
+ I*Tan[c + d*x]))
```

Rubi [A] time = 0.093083, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3589, 3475, 12, 3526, 8}

$$-\frac{A+iB}{2ad(1+i\tan(c+dx))}-\frac{x(-B+iA)}{2a}+\frac{iB\log(\cos(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] -((I*A - B)*x)/(2*a) + (I*B*Log[Cos[c + d*x]])/(a*d) - (A + I*B)/(2*a*d*(1
+ I*Tan[c + d*x]))
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 12

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

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx &= -\frac{i\int \frac{a(iA-B)\tan(c+dx)}{a+ia\tan(c+dx)}\,dx}{a} - \frac{(iB)\int \tan(c+dx)\,dx}{a} \\
&= \frac{iB\log(\cos(c+dx))}{ad} - (-A-iB)\int \frac{\tan(c+dx)}{a+ia\tan(c+dx)}\,dx \\
&= \frac{iB\log(\cos(c+dx))}{ad} - \frac{A+iB}{2d(a+ia\tan(c+dx))} - \frac{(iA-B)\int 1\,dx}{2a} \\
&= -\frac{(iA-B)x}{2a} + \frac{iB\log(\cos(c+dx))}{ad} - \frac{A+iB}{2d(a+ia\tan(c+dx))}
\end{aligned}
$$

Mathematica [B] time = 0.918988, size = 148, normalized size = 2.21

$$
\frac{\cos(c+dx)(A+B\tan(c+dx))\left(\tan(c+dx)\left(-2iAdx+A+2iB\log\left(\cos^2(c+dx)\right)-2Bdx+iB\right)-2Adx+iA+4B\,\mathrm{ta}\right.}{4ad(\tan(c+dx)-i)(A\cos(c+dx)+B\sin(c+dx))}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]*(A + B*Tan[c + d*x])*(I*A - B - 2*A*d*x + (2*I)*B*d*x + 2*B*L
og[Cos[c + d*x]^2] + (A + I*B - (2*I)*A*d*x - 2*B*d*x + (2*I)*B*Log[Cos[c +
 d*x]^2])*Tan[c + d*x] + 4*B*ArcTan[Tan[d*x]]*(-I + Tan[c + d*x])))/(4*a*d*
(A*Cos[c + d*x] + B*Sin[c + d*x])*(-I + Tan[c + d*x]))
```

Maple [A] time = 0.027, size = 121, normalized size = 1.8

$$-\frac{\ln\left(\tan\left(dx+c\right)-i\right)A}{4\,ad}-\frac{\frac{3i}{4}\ln\left(\tan\left(dx+c\right)-i\right)B}{ad}+\frac{\frac{i}{2}A}{ad\left(\tan\left(dx+c\right)-i\right)}-\frac{B}{2\,ad\left(\tan\left(dx+c\right)-i\right)}+\frac{A\ln\left(\tan\left(dx+c\right)\right.}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/4/d/a*ln(tan(d*x+c)-I)*A-3/4*I/d/a*ln(tan(d*x+c)-I)*B+1/2*I/d/a/(tan(d*x
+c)-I)*A-1/2/d/a/(tan(d*x+c)-I)*B+1/4/d/a*A*ln(tan(d*x+c)+I)-1/4*I/d/a*B*ln
(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.55483, size = 189, normalized size = 2.82

$$\frac{\left((-2i\,A+6\,B)dxe^{(2i\,dx+2i\,c)}+4i\,Be^{(2i\,dx+2i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-A-i\,B\right)e^{(-2i\,dx-2i\,c)}}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/4*((-2*I*A + 6*B)*d*x*e^(2*I*d*x + 2*I*c) + 4*I*B*e^(2*I*d*x + 2*I*c)*log
(e^(2*I*d*x + 2*I*c) + 1) - A - I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [A] time = 4.19816, size = 114, normalized size = 1.7

$$\frac{iB\log\left(e^{2idx}+e^{-2ic}\right)}{ad}-\frac{\left(\begin{cases}iAxe^{2ic}+\frac{Ae^{-2idx}}{2d}-3Bxe^{2ic}+\frac{iBe^{-2idx}}{2d} & \text{for } d\neq 0\\ x\left(iAe^{2ic}-iA-3Be^{2ic}+B\right) & \text{otherwise}\end{cases}\right)e^{-2ic}}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] I*B*log(exp(2*I*d*x) + exp(-2*I*c))/(a*d) - Piecewise((I*A*x*exp(2*I*c) + A
*exp(-2*I*d*x)/(2*d) - 3*B*x*exp(2*I*c) + I*B*exp(-2*I*d*x)/(2*d), Ne(d, 0)
), (x*(I*A*exp(2*I*c) - I*A - 3*B*exp(2*I*c) + B), True))*exp(-2*I*c)/(2*a)
```

Giac [A] time = 1.44311, size = 111, normalized size = 1.66

$$-\frac{\frac{(A+3iB)\log(\tan(dx+c)-i)}{a}-\frac{(A-iB)\log(i\tan(dx+c)-1)}{a}-\frac{A\tan(dx+c)+3iB\tan(dx+c)+iA+B}{a(\tan(dx+c)-i)}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/4*((A + 3*I*B)*log(tan(d*x + c) - I)/a - (A - I*B)*log(I*tan(d*x + c) -
1)/a - (A*tan(d*x + c) + 3*I*B*tan(d*x + c) + I*A + B)/(a*(tan(d*x + c) - I
)))/d
```

3.39 $\int \frac{A+B\tan(c+dx)}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=47

$$\frac{-B+iA}{2d(a+ia\tan(c+dx))}+\frac{x(A-iB)}{2a}$$

```
[Out] ((A - I*B)*x)/(2*a) + (I*A - B)/(2*d*(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.0427031, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {3526, 8}

$$\frac{-B+iA}{2d(a+ia\tan(c+dx))}+\frac{x(A-iB)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((A - I*B)*x)/(2*a) + (I*A - B)/(2*d*(a + I*a*Tan[c + d*x]))
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\begin{aligned}\int \frac{A+B\tan(c+dx)}{a+ia\tan(c+dx)}\,dx &= \frac{iA-B}{2d(a+ia\tan(c+dx))}+\frac{(A-iB)\int 1\,dx}{2a}\\ &= \frac{(A-iB)x}{2a}+\frac{iA-B}{2d(a+ia\tan(c+dx))}\end{aligned}$$

Mathematica [B] time = 0.452348, size = 102, normalized size = 2.17

$$\frac{\cos(c+dx)(A+B\tan(c+dx))((A(2dx-i)-2iBdx+B)\tan(c+dx)-2iAdx+A+B(-2dx+i))}{4ad(\tan(c+dx)-i)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]*(A + B*Tan[c + d*x])*(A - (2*I)*A*d*x + B*(I - 2*d*x) + (B -
(2*I)*B*d*x + A*(-I + 2*d*x))*Tan[c + d*x]))/(4*a*d*(A*Cos[c + d*x] + B*Sin
[c + d*x])*(-I + Tan[c + d*x]))
```

Maple [B] time = 0.027, size = 121, normalized size = 2.6

$$\frac{A}{2\,ad\,(\tan(dx+c)-i)}+\frac{\frac{i}{2}B}{ad\,(\tan(dx+c)-i)}-\frac{\frac{i}{4}\ln(\tan(dx+c)-i)\,A}{ad}-\frac{\ln(\tan(dx+c)-i)\,B}{4\,ad}+\frac{B\ln(\tan(dx+c)+}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/2/d/a/(tan(d*x+c)-I)*A+1/2*I/d/a/(tan(d*x+c)-I)*B-1/4*I/d/a*ln(tan(d*x+c)
-I)*A-1/4/d/a*ln(tan(d*x+c)-I)*B+1/4/d/a*B*ln(tan(d*x+c)+I)+1/4*I/d/a*A*ln(
tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.39061, size = 108, normalized size = 2.3

$$\frac{\left(2\,(A-i\,B)dxe^{(2i\,dx+2i\,c)}+i\,A-B\right)e^{(-2i\,dx-2i\,c)}}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(A - I*B)*d*x*e^(2*I*d*x + 2*I*c) + I*A - B)*e^(-2*I*d*x - 2*I*c)/(a
*d)
```

Sympy [A] time = 1.43027, size = 88, normalized size = 1.87

$$\begin{cases} \frac{(iA-B)e^{-2ic}e^{-2idx}}{4ad} & \text{for } 4ade^{2ic}\neq 0 \\ x\left(-\frac{A-iB}{2a}+\frac{\left(Ae^{2ic}+A-iBe^{2ic}+iB\right)e^{-2ic}}{2a}\right) & \text{otherwise} \end{cases}+\frac{x\,(A-iB)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Piecewise((((I*A - B)*exp(-2*I*c)*exp(-2*I*d*x)/(4*a*d), Ne(4*a*d*exp(2*I*c)
, 0)), (x*(-(A - I*B)/(2*a) + (A*exp(2*I*c) + A - I*B*exp(2*I*c) + I*B)*exp
(-2*I*c)/(2*a)), True)) + x*(A - I*B)/(2*a)
```

Giac [B] time = 1.42467, size = 115, normalized size = 2.45

$$-\frac{\frac{(i\,A+B)\log(\tan(dx+c)-i)}{a}+\frac{(-i\,A-B)\log(-i\,\tan(dx+c)+1)}{a}+\frac{-i\,A\tan(dx+c)-B\tan(dx+c)-3\,A-i\,B}{a(\tan(dx+c)-i)}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/4*((I*A + B)*log(tan(d*x + c) - I)/a + (-I*A - B)*log(-I*tan(d*x + c) +
1)/a + (-I*A*tan(d*x + c) - B*tan(d*x + c) - 3*A - I*B)/(a*(tan(d*x + c) -
I)))/d
```

3.40 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=62

$$\frac{A+iB}{2d(a+ia\tan(c+dx))}-\frac{x(-B+iA)}{2a}+\frac{A\log(\sin(c+dx))}{ad}$$

```
[Out] -((I*A - B)*x)/(2*a) + (A*Log[Sin[c + d*x]])/(a*d) + (A + I*B)/(2*d*(a + I*
a*Tan[c + d*x]))
```

Rubi [A] time = 0.109208, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3596, 3531, 3475}

$$\frac{A+iB}{2d(a+ia\tan(c+dx))}-\frac{x(-B+iA)}{2a}+\frac{A\log(\sin(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] -((I*A - B)*x)/(2*a) + (A*Log[Sin[c + d*x]])/(a*d) + (A + I*B)/(2*d*(a + I*
a*Tan[c + d*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
```

```
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx &= \frac{A+iB}{2d(a+ia\tan(c+dx))}+\frac{\int \cot(c+dx)(2aA-a(iA-B)\tan(c+dx))\,dx}{2a^2}\\ &= -\frac{(iA-B)x}{2a}+\frac{A+iB}{2d(a+ia\tan(c+dx))}+\frac{A\int\cot(c+dx)\,dx}{a}\\ &= -\frac{(iA-B)x}{2a}+\frac{A\log(\sin(c+dx))}{ad}+\frac{A+iB}{2d(a+ia\tan(c+dx))}\end{aligned}$$

Mathematica [B] time = 0.938486, size = 150, normalized size = 2.42

$$\frac{\cos(c+dx)(A+B\tan(c+dx))\left(\tan(c+dx)\left(2A\log\left(\sin^2(c+dx)\right)+2iAdx-A+2Bdx-iB\right)-4iA\tan^{-1}(\tan(dx))(\tan\right.}{4ad(\tan(c+dx)-i)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]*(A + B*Tan[c + d*x])*((-I)*A + B + 2*A*d*x - (2*I)*B*d*x - (2
*I)*A*Log[Sin[c + d*x]^2] + (-A - I*B + (2*I)*A*d*x + 2*B*d*x + 2*A*Log[Sin
[c + d*x]^2])*Tan[c + d*x] - (4*I)*A*ArcTan[Tan[d*x]]*(-I + Tan[c + d*x])))
/(4*a*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(-I + Tan[c + d*x]))
```

Maple [B] time = 0.103, size = 136, normalized size = 2.2

$$-\frac{3\,\ln(\tan(dx+c)-i)\,A}{4\,ad}-\frac{\frac{i}{4}\ln(\tan(dx+c)-i)\,B}{ad}-\frac{\frac{i}{2}A}{ad\,(\tan(dx+c)-i)}+\frac{B}{2\,ad\,(\tan(dx+c)-i)}-\frac{A\ln(\tan(dx+c}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -3/4/d/a*ln(tan(d*x+c)-I)*A-1/4*I/a/d*ln(tan(d*x+c)-I)*B-1/2*I/d/a/(tan(d*x
+c)-I)*A+1/2/d/a/(tan(d*x+c)-I)*B-1/4/d/a*A*ln(tan(d*x+c)+I)+1/4*I/d/a*B*ln
(tan(d*x+c)+I)+1/a/d*A*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.41324, size = 186, normalized size = 3.

$$\frac{\left((-6i\,A+2\,B)dxe^{(2i\,dx+2i\,c)}+4\,Ae^{(2i\,dx+2i\,c)}\log\left(e^{(2i\,dx+2i\,c)}-1\right)+A+i\,B\right)e^{(-2i\,dx-2i\,c)}}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/4*((-6*I*A + 2*B)*d*x*e^(2*I*d*x + 2*I*c) + 4*A*e^(2*I*d*x + 2*I*c)*log(e
^(2*I*d*x + 2*I*c) - 1) + A + I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [A] time = 2.15723, size = 117, normalized size = 1.89

$$\frac{A\log\left(e^{2idx}-e^{-2ic}\right)}{ad}+\begin{cases}\frac{(A+iB)e^{-2ic}e^{-2idx}}{4ad} & \text{for}\ 4ade^{2ic}\neq 0\\ x\left(\frac{3iA-B}{2a}-\frac{\left(3iAe^{2ic}+iA-Be^{2ic}-B\right)e^{-2ic}}{2a}\right) & \text{otherwise}\end{cases}+\frac{x\,(-3iA+B)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] A*log(exp(2*I*d*x) - exp(-2*I*c))/(a*d) + Piecewise(((A + I*B)*exp(-2*I*c)*
exp(-2*I*d*x)/(4*a*d), Ne(4*a*d*exp(2*I*c), 0)), (x*((3*I*A - B)/(2*a) - (3
*I*A*exp(2*I*c) + I*A - B*exp(2*I*c) - B)*exp(-2*I*c)/(2*a)), True)) + x*(-
3*I*A + B)/(2*a)
```

Giac [A] time = 1.37828, size = 135, normalized size = 2.18

$$-\frac{\frac{(3A+iB)\log(\tan(dx+c)-i)}{a}+\frac{(A-iB)\log(-i\tan(dx+c)+1)}{a}-\frac{4A\log(|\tan(dx+c)|)}{a}-\frac{3A\tan(dx+c)+iB\tan(dx+c)-5iA+3B}{a(\tan(dx+c)-i)}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/4*((3*A + I*B)*log(tan(d*x + c) - I)/a + (A - I*B)*log(-I*tan(d*x + c) +
 1)/a - 4*A*log(abs(tan(d*x + c)))/a - (3*A*tan(d*x + c) + I*B*tan(d*x + c)
 - 5*I*A + 3*B)/(a*(tan(d*x + c) - I)))/d
```

3.41 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=102

$$-\frac{(3A+iB)\cot(c+dx)}{2ad}-\frac{(-B+iA)\log(\sin(c+dx))}{ad}+\frac{(A+iB)\cot(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{x(3A+iB)}{2a}$$

```
[Out] -((3*A + I*B)*x)/(2*a) - ((3*A + I*B)*Cot[c + d*x])/(2*a*d) - ((I*A - B)*Lo
g[Sin[c + d*x]])/(a*d) + ((A + I*B)*Cot[c + d*x])/(2*d*(a + I*a*Tan[c + d*x
]))
```

Rubi [A] time = 0.174708, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(3A+iB)\cot(c+dx)}{2ad}-\frac{(-B+iA)\log(\sin(c+dx))}{ad}+\frac{(A+iB)\cot(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{x(3A+iB)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] -((3*A + I*B)*x)/(2*a) - ((3*A + I*B)*Cot[c + d*x])/(2*a*d) - ((I*A - B)*Lo
g[Sin[c + d*x]])/(a*d) + ((A + I*B)*Cot[c + d*x])/(2*d*(a + I*a*Tan[c + d*x
]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
```

```
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx &= \frac{(A+iB)\cot(c+dx)}{2d(a+ia\tan(c+dx))}+\frac{\int \cot^2(c+dx)(a(3A+iB)-2a(iA-B)\tan(c+dx))}{2a^2}\\ &= -\frac{(3A+iB)\cot(c+dx)}{2ad}+\frac{(A+iB)\cot(c+dx)}{2d(a+ia\tan(c+dx))}+\frac{\int \cot(c+dx)(-2a(iA-B)}{2}\\ &= -\frac{(3A+iB)x}{2a}-\frac{(3A+iB)\cot(c+dx)}{2ad}+\frac{(A+iB)\cot(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(iA-B)\int \mathrm{co}}{a}\\ &= -\frac{(3A+iB)x}{2a}-\frac{(3A+iB)\cot(c+dx)}{2ad}-\frac{(iA-B)\log(\sin(c+dx))}{ad}+\frac{(A+iB)}{2d(a+ia}\end{aligned}$$

Mathematica [B] time = 2.70133, size = 225, normalized size = 2.21

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(\frac{1}{2}(B-iA)(\cos(c)-i\sin(c))\cos(2dx)-\frac{1}{2}(A+iB)(\cos(c)-i\sin(c))\sin(2dx)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*((((-I)*A + B)*Cos[2*d*x]*(Cos[c] - I*Sin[c]))/2 +
 2*(A + I*B)*d*x*(Cos[c] + I*Sin[c]) - (3*A + I*B)*d*x*(Cos[c] + I*Sin[c])
- 2*(A + I*B)*ArcTan[Tan[d*x]]*(Cos[c] + I*Sin[c]) + ((-I)*A + B)*Log[Sin[c
```

```
 + d*x]^2]*(Cos[c] + I*Sin[c]) + 2*A*(I + Cot[c])*Csc[c + d*x]*Sin[d*x] - (
(A + I*B)*(Cos[c] - I*Sin[c])*Sin[2*d*x])/2)*(A + B*Tan[c + d*x]))/(2*d*(A*
Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.096, size = 170, normalized size = 1.7

$$-\frac{A}{2\,ad\,(\tan(dx+c)-i)}-\frac{\frac{i}{2}B}{ad\,(\tan(dx+c)-i)}+\frac{\frac{5\,i}{4}\ln(\tan(dx+c)-i)\,A}{ad}-\frac{3\,\ln(\tan(dx+c)-i)\,B}{4\,ad}-\frac{B\ln(\tan(dx+}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/2/d/a/(tan(d*x+c)-I)*A-1/2*I/d/a/(tan(d*x+c)-I)*B+5/4*I/d/a*ln(tan(d*x+c
)-I)*A-3/4/d/a*ln(tan(d*x+c)-I)*B-1/4/d/a*B*ln(tan(d*x+c)+I)-1/4*I/d/a*A*ln
(tan(d*x+c)+I)-1/d/a*A/tan(d*x+c)-I/d/a*A*ln(tan(d*x+c))+1/d/a*B*ln(tan(d*x
+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.54263, size = 365, normalized size = 3.58

$$-\frac{2\,(5\,A+3i\,B)dxe^{(4i\,dx+4i\,c)}-(2\,(5\,A+3i\,B)dx-9i\,A+B)e^{(2i\,dx+2i\,c)}-\left((-4i\,A+4\,B)e^{(4i\,dx+4i\,c)}+(4i\,A-4\,B)e^{(2i\,dx+2i\,c)}\right)}{4\left(ade^{(4i\,dx+4i\,c)}-ade^{(2i\,dx+2i\,c)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/4*(2*(5*A + 3*I*B)*d*x*e^(4*I*d*x + 4*I*c) - (2*(5*A + 3*I*B)*d*x - 9*I*
A + B)*e^(2*I*d*x + 2*I*c) - ((-4*I*A + 4*B)*e^(4*I*d*x + 4*I*c) + (4*I*A -
 4*B)*e^(2*I*d*x + 2*I*c))*log(e^(2*I*d*x + 2*I*c) - 1) - I*A + B)/(a*d*e^(
4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [A] time = 3.99142, size = 151, normalized size = 1.48

$$-\frac{2iAe^{-2ic}}{ad\left(e^{2idx}-e^{-2ic}\right)}-\frac{\left(\begin{cases}5Axe^{2ic}+\frac{iAe^{-2idx}}{2d}+3iBxe^{2ic}-\frac{Be^{-2idx}}{2d} & \text{for } d\neq 0\\ x\left(5Ae^{2ic}+A+3iBe^{2ic}+iB\right) & \text{otherwise}\end{cases}\right)e^{-2ic}}{2a}+\frac{(-iA+B)\log\left(e^{2idx}-e^{-2ic}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -2*I*A*exp(-2*I*c)/(a*d*(exp(2*I*d*x) - exp(-2*I*c))) - Piecewise((5*A*x*ex
p(2*I*c) + I*A*exp(-2*I*d*x)/(2*d) + 3*I*B*x*exp(2*I*c) - B*exp(-2*I*d*x)/(
2*d), Ne(d, 0)), (x*(5*A*exp(2*I*c) + A + 3*I*B*exp(2*I*c) + I*B), True))*e
xp(-2*I*c)/(2*a) + (-I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c))/(a*d)
```

Giac [A] time = 1.40134, size = 184, normalized size = 1.8

$$-\frac{\frac{2(-5iA+3B)\log(\tan(dx+c)-i)}{a}+\frac{2(iA+B)\log(-i\tan(dx+c)+1)}{a}+\frac{8(iA-B)\log(|\tan(dx+c)|)}{a}+\frac{A\tan(dx+c)^2-iB\tan(dx+c)^2-13iA\tan(dx+c)+3B\tan}{\left(-i\tan(dx+c)^2-\tan(dx+c)\right)a}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/8*(2*(-5*I*A + 3*B)*log(tan(d*x + c) - I)/a + 2*(I*A + B)*log(-I*tan(d*x
 + c) + 1)/a + 8*(I*A - B)*log(abs(tan(d*x + c)))/a + (A*tan(d*x + c)^2 - I
*B*tan(d*x + c)^2 - 13*I*A*tan(d*x + c) + 3*B*tan(d*x + c) - 8*A)/((-I*tan(
d*x + c)^2 - tan(d*x + c))*a))/d
```

3.42 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=131

$$-\frac{(2A+iB)\cot^2(c+dx)}{2ad}+\frac{3(-B+iA)\cot(c+dx)}{2ad}-\frac{(2A+iB)\log(\sin(c+dx))}{ad}+\frac{(A+iB)\cot^2(c+dx)}{2d(a+ia\tan(c+dx))}+\frac{3x(-B+i\ldots}{2a}$$

```
[Out] (3*(I*A - B)*x)/(2*a) + (3*(I*A - B)*Cot[c + d*x])/(2*a*d) - ((2*A + I*B)*C
ot[c + d*x]^2)/(2*a*d) - ((2*A + I*B)*Log[Sin[c + d*x]])/(a*d) + ((A + I*B)
*Cot[c + d*x]^2)/(2*d*(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.212175, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(2A+iB)\cot^2(c+dx)}{2ad}+\frac{3(-B+iA)\cot(c+dx)}{2ad}-\frac{(2A+iB)\log(\sin(c+dx))}{ad}+\frac{(A+iB)\cot^2(c+dx)}{2d(a+ia\tan(c+dx))}+\frac{3x(-B+i\ldots}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] (3*(I*A - B)*x)/(2*a) + (3*(I*A - B)*Cot[c + d*x])/(2*a*d) - ((2*A + I*B)*C
ot[c + d*x]^2)/(2*a*d) - ((2*A + I*B)*Log[Sin[c + d*x]])/(a*d) + ((A + I*B)
*Cot[c + d*x]^2)/(2*d*(a + I*a*Tan[c + d*x]))
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
```

```
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \frac{(A+iB)\cot^2(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{\int \cot^3(c+dx)(2a(2A+iB)-3a(iA-B)\tan(c+dx)}{2a^2}$$

$$= -\frac{(2A+iB)\cot^2(c+dx)}{2ad} + \frac{(A+iB)\cot^2(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{\int \cot^2(c+dx)(-3a(iA-}{}$$

$$= \frac{3(iA-B)\cot(c+dx)}{2ad} - \frac{(2A+iB)\cot^2(c+dx)}{2ad} + \frac{(A+iB)\cot^2(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{\int}{}$$

$$= \frac{3(iA-B)x}{2a} + \frac{3(iA-B)\cot(c+dx)}{2ad} - \frac{(2A+iB)\cot^2(c+dx)}{2ad} + \frac{(A+iB)\cot^2}{2d(a+ia\tan(}$$

$$= \frac{3(iA-B)x}{2a} + \frac{3(iA-B)\cot(c+dx)}{2ad} - \frac{(2A+iB)\cot^2(c+dx)}{2ad} - \frac{(2A+iB)\log(}{ad}$$

Mathematica [B] time = 7.14485, size = 902, normalized size = 6.89

$$\frac{\left(-\frac{1}{2}A\cos(c)-\frac{1}{2}iA\sin(c)\right)(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\csc^2(c+dx)}{d(A\cos(c+dx)+B\sin(c+dx))(i\tan(c+dx)a+a)} + \frac{\csc\left(\frac{c}{2}\right)\sec\left(\frac{c}{2}\right)(\cos(dx)+i\sin(dx))\Big(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((2*A*Cos[c/2] + I*B*Cos[c/2] + (2*I)*A*Sin[c/2] - B*Sin[c/2])*(I*ArcTan[Ta
n[d*x]]*Cos[c/2] - ArcTan[Tan[d*x]]*Sin[c/2])*(Cos[d*x] + I*Sin[d*x])*(A +
B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]
)) + ((2*A*Cos[c/2] + I*B*Cos[c/2] + (2*I)*A*Sin[c/2] - B*Sin[c/2])*(-(Cos[
c/2]*Log[Sin[c + d*x]^2])/2 - (I/2)*Log[Sin[c + d*x]^2]*Sin[c/2])*(Cos[d*x]
 + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(
a + I*a*Tan[c + d*x])) + (x*(2*A*Csc[c] + I*B*Csc[c] + (2*A + I*B)*Cot[c]*(
-Cos[c] - I*Sin[c]))*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/((A*Cos[
c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + ((A + I*B)*Cos[2*d*x]*
(-Cos[c]/4 + (I/4)*Sin[c])*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d
*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + (Csc[c + d*x]^
2*(-(A*Cos[c])/2 - (I/2)*A*Sin[c])*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d
*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + ((A +
I*B)*(((3*I)/2)*d*x*Cos[c] - (3*d*x*Sin[c])/2)*(Cos[d*x] + I*Sin[d*x])*(A +
 B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x
])) + ((A + I*B)*((I/4)*Cos[c] + Sin[c]/4)*(Cos[d*x] + I*Sin[d*x])*Sin[2*d*
x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[
c + d*x])) + (Csc[c/2]*Csc[c + d*x]*Sec[c/2]*(Cos[d*x] + I*Sin[d*x])*((A*Co
s[c - d*x])/2 + (I/2)*B*Cos[c - d*x] - (A*Cos[c + d*x])/2 - (I/2)*B*Cos[c +
 d*x] + (I/2)*A*Sin[c - d*x] - (B*Sin[c - d*x])/2 - (I/2)*A*Sin[c + d*x] +
(B*Sin[c + d*x])/2)*(A + B*Tan[c + d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin[c +
d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.111, size = 206, normalized size = 1.6

$$\frac{\frac{i}{2}A}{ad\left(\tan\left(dx+c\right)-i\right)}-\frac{B}{2ad\left(\tan\left(dx+c\right)-i\right)}+\frac{7\ln\left(\tan\left(dx+c\right)-i\right)A}{4ad}+\frac{\frac{5i}{4}\ln\left(\tan\left(dx+c\right)-i\right)B}{ad}+\frac{A\ln\left(\tan\left(dx+\right.\right.}{4ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/2*I/d/a/(tan(d*x+c)-I)*A-1/2/d/a/(tan(d*x+c)-I)*B+7/4/d/a*ln(tan(d*x+c)-I
)*A+5/4*I/d/a*ln(tan(d*x+c)-I)*B+1/4/d/a*A*ln(tan(d*x+c)+I)-1/4*I/d/a*B*ln(
tan(d*x+c)+I)-1/2/d/a*A/tan(d*x+c)^2+I/d/a/tan(d*x+c)*A-1/d/a/tan(d*x+c)*B-
I/d/a*B*ln(tan(d*x+c))-2/a/d*A*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.53613, size = 528, normalized size = 4.03

$$\frac{(14i\,A-10\,B)dxe^{(6i\,dx+6i\,c)}+((-28i\,A+20\,B)dx-A-9i\,B)e^{(4i\,dx+4i\,c)}+((14i\,A-10\,B)dx+10\,A+10i\,B)e^{(2i\,dx+2i\,c)}-4\left(\left(\right.\right.}{4\left(ade^{(6i\,dx+6i\,c)}-2\,ade^{(4i\,dx+4i\,c)}+a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/4*((14*I*A - 10*B)*d*x*e^(6*I*d*x + 6*I*c) + ((-28*I*A + 20*B)*d*x - A -
9*I*B)*e^(4*I*d*x + 4*I*c) + ((14*I*A - 10*B)*d*x + 10*A + 10*I*B)*e^(2*I*d
*x + 2*I*c) - 4*((2*A + I*B)*e^(6*I*d*x + 6*I*c) - 2*(2*A + I*B)*e^(4*I*d*x
 + 4*I*c) + (2*A + I*B)*e^(2*I*d*x + 2*I*c))*log(e^(2*I*d*x + 2*I*c) - 1) -
 A - I*B)/(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I
*d*x + 2*I*c))
```

Sympy [A] time = 7.9065, size = 197, normalized size = 1.5

$$\frac{-\frac{2iBe^{-2ic}e^{2idx}}{ad}+\frac{(2A+2iB)e^{-4ic}}{ad}}{e^{4idx}-2e^{-2ic}e^{2idx}+e^{-4ic}}+\frac{\left(\begin{cases}7iAxe^{2ic}-\frac{Ae^{-2idx}}{2d}-5Bxe^{2ic}-\frac{iBe^{-2idx}}{2d} & \text{for } d\neq 0\\ x\left(7iAe^{2ic}+iA-5Be^{2ic}-B\right) & \text{otherwise}\end{cases}\right)e^{-2ic}}{2a}-\frac{(2A+iB)\log\left(e^{2idx}-e^{-2ic}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] (-2*I*B*exp(-2*I*c)*exp(2*I*d*x)/(a*d) + (2*A + 2*I*B)*exp(-4*I*c)/(a*d))/(
exp(4*I*d*x) - 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c)) + Piecewise((7*I*A
*x*exp(2*I*c) - A*exp(-2*I*d*x)/(2*d) - 5*B*x*exp(2*I*c) - I*B*exp(-2*I*d*x
)/(2*d), Ne(d, 0)), (x*(7*I*A*exp(2*I*c) + I*A - 5*B*exp(2*I*c) - B), True)
```

```
)*exp(-2*I*c)/(2*a) - (2*A + I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/(a*d)
```

Giac [A] time = 1.41393, size = 223, normalized size = 1.7

$$-\frac{\frac{4\,(2\,A+i\,B)\log(-i\,\tan(dx+c))}{a}-\frac{(7\,A+5i\,B)\log(\tan(dx+c)-i)}{a}-\frac{(A-i\,B)\log(-i\,\tan(dx+c)+1)}{a}+\frac{7\,A\tan(dx+c)+5i\,B\tan(dx+c)-9i\,A+7\,B}{a(\tan(dx+c)-i)}-\frac{2\left(6\,A\tan(\right.}{}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/4*(4*(2*A + I*B)*log(-I*tan(d*x + c))/a - (7*A + 5*I*B)*log(tan(d*x + c)
 - I)/a - (A - I*B)*log(-I*tan(d*x + c) + 1)/a + (7*A*tan(d*x + c) + 5*I*B*
tan(d*x + c) - 9*I*A + 7*B)/(a*(tan(d*x + c) - I)) - 2*(6*A*tan(d*x + c)^2
+ 3*I*B*tan(d*x + c)^2 + 2*I*A*tan(d*x + c) - 2*B*tan(d*x + c) - A)/(a*tan(
d*x + c)^2))/d
```

3.43 $\int \frac{\cot^4(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=155

$$-\frac{(5A+3iB)\cot^3(c+dx)}{6ad}+\frac{(-B+iA)\cot^2(c+dx)}{ad}+\frac{(5A+3iB)\cot(c+dx)}{2ad}+\frac{2(-B+iA)\log(\sin(c+dx))}{ad}+\frac{(A+iB}{2d(a+i}$$

```
[Out] ((5*A + (3*I)*B)*x)/(2*a) + ((5*A + (3*I)*B)*Cot[c + d*x])/(2*a*d) + ((I*A
 - B)*Cot[c + d*x]^2)/(a*d) - ((5*A + (3*I)*B)*Cot[c + d*x]^3)/(6*a*d) + (2*
(I*A - B)*Log[Sin[c + d*x]])/(a*d) + ((A + I*B)*Cot[c + d*x]^3)/(2*d*(a + I
*a*Tan[c + d*x]))
```

Rubi [A] time = 0.246209, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(5A+3iB)\cot^3(c+dx)}{6ad}+\frac{(-B+iA)\cot^2(c+dx)}{ad}+\frac{(5A+3iB)\cot(c+dx)}{2ad}+\frac{2(-B+iA)\log(\sin(c+dx))}{ad}+\frac{(A+iB}{2d(a+i}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((5*A + (3*I)*B)*x)/(2*a) + ((5*A + (3*I)*B)*Cot[c + d*x])/(2*a*d) + ((I*A
 - B)*Cot[c + d*x]^2)/(a*d) - ((5*A + (3*I)*B)*Cot[c + d*x]^3)/(6*a*d) + (2*
(I*A - B)*Log[Sin[c + d*x]])/(a*d) + ((A + I*B)*Cot[c + d*x]^3)/(2*d*(a + I
*a*Tan[c + d*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^4(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \frac{(A+iB)\cot^3(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{\int \cot^4(c+dx)(a(5A+3iB)-4a(iA-B)\tan(c+dx}{2a^2}$$

$$= -\frac{(5A+3iB)\cot^3(c+dx)}{6ad} + \frac{(A+iB)\cot^3(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{\int \cot^3(c+dx)(-4a(iA}{}$$

$$= \frac{(iA-B)\cot^2(c+dx)}{ad} - \frac{(5A+3iB)\cot^3(c+dx)}{6ad} + \frac{(A+iB)\cot^3(c+dx)}{2d(a+ia\tan(c+dx))} +$$

$$= \frac{(5A+3iB)\cot(c+dx)}{2ad} + \frac{(iA-B)\cot^2(c+dx)}{ad} - \frac{(5A+3iB)\cot^3(c+dx)}{6ad} +$$

$$= \frac{(5A+3iB)x}{2a} + \frac{(5A+3iB)\cot(c+dx)}{2ad} + \frac{(iA-B)\cot^2(c+dx)}{ad} - \frac{(5A+3iB)}{6}$$

$$= \frac{(5A+3iB)x}{2a} + \frac{(5A+3iB)\cot(c+dx)}{2ad} + \frac{(iA-B)\cot^2(c+dx)}{ad} - \frac{(5A+3iB)}{6}$$

Mathematica [B] time = 7.36207, size = 1062, normalized size = 6.85

$$\frac{\csc\left(\frac{c}{2}\right)\sec\left(\frac{c}{2}\right)(\cos(dx)+i\sin(dx))\left(\frac{1}{2}iA\cos(c-dx)-\frac{1}{2}iA\cos(c+dx)-\frac{1}{2}A\sin(c-dx)+\frac{1}{2}A\sin(c+dx)\right)(A+B\tan}{6d(A\cos(c+dx)+B\sin(c+dx))(i\tan(c+dx)a+a)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] ((A*Cos[c/2] + I*B*Cos[c/2] + I*A*Sin[c/2] - B*Sin[c/2])*(2*ArcTan[Tan[d*x]
]*Cos[c/2] + (2*I)*ArcTan[Tan[d*x]]*Sin[c/2])*(Cos[d*x] + I*Sin[d*x])*(A +
B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]
)) + ((A*Cos[c/2] + I*B*Cos[c/2] + I*A*Sin[c/2] - B*Sin[c/2])*(I*Cos[c/2]*L
og[Sin[c + d*x]^2] - Log[Sin[c + d*x]^2]*Sin[c/2])*(Cos[d*x] + I*Sin[d*x])*
(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c +
 d*x])) + (x*((-2*I)*A*Csc[c] + 2*B*Csc[c] + I*(A + I*B)*Cot[c]*(2*Cos[c] +
 (2*I)*Sin[c]))*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/((A*Cos[c + d
*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + ((A + I*B)*Cos[2*d*x]*((I/4
)*Cos[c] + Sin[c]/4)*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Co
s[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + (Csc[c/2]*Csc[c + d*
x]^2*Sec[c/2]*(-Cos[c]/12 - (I/12)*Sin[c])*(2*A*Cos[c] - (3*I)*A*Sin[c] + 3
*B*Sin[c])*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x]
 + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + ((5*A + (3*I)*B)*((d*x*Cos[c])
/2 + (I/2)*d*x*Sin[c])*(Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x]))/(d*(A*
Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + ((A + I*B)*(Cos[c]
/4 - (I/4)*Sin[c])*(Cos[d*x] + I*Sin[d*x])*Sin[2*d*x]*(A + B*Tan[c + d*x]))
/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + (Csc[c/2]*C
sc[c + d*x]^3*Sec[c/2]*(Cos[d*x] + I*Sin[d*x])*((I/2)*A*Cos[c - d*x] - (I/2
)*A*Cos[c + d*x] - (A*Sin[c - d*x])/2 + (A*Sin[c + d*x])/2)*(A + B*Tan[c +
d*x]))/(6*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])) + (Cs
c[c/2]*Csc[c + d*x]*Sec[c/2]*(Cos[d*x] + I*Sin[d*x])*(((-7*I)/2)*A*Cos[c -
d*x] + (3*B*Cos[c - d*x])/2 + ((7*I)/2)*A*Cos[c + d*x] - (3*B*Cos[c + d*x])
/2 + (7*A*Sin[c - d*x])/2 + ((3*I)/2)*B*Sin[c - d*x] - (7*A*Sin[c + d*x])/2
 - ((3*I)/2)*B*Sin[c + d*x])*(A + B*Tan[c + d*x]))/(6*d*(A*Cos[c + d*x] + B
*Sin[c + d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.106, size = 241, normalized size = 1.6

$$\frac{A}{2\,ad\left(\tan\left(dx+c\right)-i\right)}+\frac{\frac{i}{2}B}{ad\left(\tan\left(dx+c\right)-i\right)}-\frac{\frac{9\,i}{4}\ln\left(\tan\left(dx+c\right)-i\right)A}{ad}+\frac{7\,\ln\left(\tan\left(dx+c\right)-i\right)B}{4\,ad}+\frac{B\ln\left(\tan\left(dx+c\right)\right.}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/2/d/a/(tan(d*x+c)-I)*A+1/2*I/d/a/(tan(d*x+c)-I)*B-9/4*I/d/a*ln(tan(d*x+c)
-I)*A+7/4/d/a*ln(tan(d*x+c)-I)*B+1/4/d/a*B*ln(tan(d*x+c)+I)+1/4*I/d/a*A*ln(
tan(d*x+c)+I)+1/2*I/d/a/tan(d*x+c)^2*A-1/2/d/a/tan(d*x+c)^2*B+I/d/a/tan(d*x
```

```
+c)*B+2/d/a*A/tan(d*x+c)-1/3/d/a*A/tan(d*x+c)^3+2*I/d/a*A*ln(tan(d*x+c))-2/
d/a*B*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.53407, size = 724, normalized size = 4.67

$$\frac{6\,(9\,A+7i\,B)dxe^{(8i\,dx+8i\,c)}-(18\,(9\,A+7i\,B)dx-51i\,A+3\,B)e^{(6i\,dx+6i\,c)}+(18\,(9\,A+7i\,B)dx-81i\,A+33\,B)e^{(4i\,dx+4i\,c)}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/12*(6*(9*A + 7*I*B)*d*x*e^(8*I*d*x + 8*I*c) - (18*(9*A + 7*I*B)*d*x - 51*
I*A + 3*B)*e^(6*I*d*x + 6*I*c) + (18*(9*A + 7*I*B)*d*x - 81*I*A + 33*B)*e^(
4*I*d*x + 4*I*c) - (6*(9*A + 7*I*B)*d*x - 65*I*A + 33*B)*e^(2*I*d*x + 2*I*c
) + ((24*I*A - 24*B)*e^(8*I*d*x + 8*I*c) + (-72*I*A + 72*B)*e^(6*I*d*x + 6*
I*c) + (72*I*A - 72*B)*e^(4*I*d*x + 4*I*c) + (-24*I*A + 24*B)*e^(2*I*d*x +
2*I*c))*log(e^(2*I*d*x + 2*I*c) - 1) - 3*I*A + 3*B)/(a*d*e^(8*I*d*x + 8*I*c
) - 3*a*d*e^(6*I*d*x + 6*I*c) + 3*a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x
+ 2*I*c))
```

Sympy [A] time = 25.1523, size = 243, normalized size = 1.57

$$\frac{\frac{4iAe^{-2ic}e^{4idx}}{ad}-\frac{(6iA-2B)e^{-4ic}e^{2idx}}{ad}+\frac{(14iA-6B)e^{-6ic}}{3ad}}{e^{6idx}-3e^{-2ic}e^{4idx}+3e^{-4ic}e^{2idx}-e^{-6ic}}+\frac{\left(\begin{cases}9Axe^{2ic}+\frac{iAe^{-2idx}}{2d}+7iBxe^{2ic}-\frac{Be^{-2idx}}{2d} & \text{for}\ d\neq 0\\ x\left(9Ae^{2ic}+A+7iBe^{2ic}+iB\right) & \text{otherwise}\end{cases}\right)e^{-2ic}}{2a}+\frac{2\,(iA-B)\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] (4*I*A*exp(-2*I*c)*exp(4*I*d*x)/(a*d) - (6*I*A - 2*B)*exp(-4*I*c)*exp(2*I*d
*x)/(a*d) + (14*I*A - 6*B)*exp(-6*I*c)/(3*a*d))/(exp(6*I*d*x) - 3*exp(-2*I*
c)*exp(4*I*d*x) + 3*exp(-4*I*c)*exp(2*I*d*x) - exp(-6*I*c)) + Piecewise((9*
A*x*exp(2*I*c) + I*A*exp(-2*I*d*x)/(2*d) + 7*I*B*x*exp(2*I*c) - B*exp(-2*I*
d*x)/(2*d), Ne(d, 0)), (x*(9*A*exp(2*I*c) + A + 7*I*B*exp(2*I*c) + I*B), Tr
ue))*exp(-2*I*c)/(2*a) + 2*(I*A - B)*log(exp(2*I*d*x) - exp(-2*I*c))/(a*d)
```

Giac [A] time = 1.44846, size = 252, normalized size = 1.63

$$-\frac{\frac{3(9iA-7B)\log(\tan(dx+c)-i)}{a}+\frac{3(-iA-B)\log(-i\tan(dx+c)+1)}{a}+\frac{24(-iA+B)\log(|\tan(dx+c)|)}{a}+\frac{3(-9iA\tan(dx+c)+7B\tan(dx+c)-11A-9iB)}{a(\tan(dx+c)-i)}+\frac{2i(}{}}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/12*(3*(9*I*A - 7*B)*log(tan(d*x + c) - I)/a + 3*(-I*A - B)*log(-I*tan(d*
x + c) + 1)/a + 24*(-I*A + B)*log(abs(tan(d*x + c)))/a + 3*(-9*I*A*tan(d*x
+ c) + 7*B*tan(d*x + c) - 11*A - 9*I*B)/(a*(tan(d*x + c) - I)) + 2*I*(22*A*
tan(d*x + c)^3 + 22*I*B*tan(d*x + c)^3 + 12*I*A*tan(d*x + c)^2 - 6*B*tan(d*
x + c)^2 - 3*A*tan(d*x + c) - 3*I*B*tan(d*x + c) - 2*I*A)/(a*tan(d*x + c)^3
))/d
```

3.44 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=142

$$\frac{(A+2iB)\tan^2(c+dx)}{2a^2d(1+i\tan(c+dx))}+\frac{3(-3B+iA)\tan(c+dx)}{4a^2d}+\frac{(A+2iB)\log(\cos(c+dx))}{a^2d}-\frac{3x(-3B+iA)}{4a^2}+\frac{(-B+iA)\tan^3(c}{4d(a+ia\tan(c+}$$

```
[Out] (-3*(I*A - 3*B)*x)/(4*a^2) + ((A + (2*I)*B)*Log[Cos[c + d*x]])/(a^2*d) + (3
*(I*A - 3*B)*Tan[c + d*x])/(4*a^2*d) + ((A + (2*I)*B)*Tan[c + d*x]^2)/(2*a^
2*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]^3)/(4*d*(a + I*a*Tan[c
+ d*x])^2)
```

Rubi [A] time = 0.280072, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {3595, 3525, 3475}

$$\frac{(A+2iB)\tan^2(c+dx)}{2a^2d(1+i\tan(c+dx))}+\frac{3(-3B+iA)\tan(c+dx)}{4a^2d}+\frac{(A+2iB)\log(\cos(c+dx))}{a^2d}-\frac{3x(-3B+iA)}{4a^2}+\frac{(-B+iA)\tan^3(c}{4d(a+ia\tan(c+}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```



```
[Out] (-3*(I*A - 3*B)*x)/(4*a^2) + ((A + (2*I)*B)*Log[Cos[c + d*x]])/(a^2*d) + (3
*(I*A - 3*B)*Tan[c + d*x])/(4*a^2*d) + ((A + (2*I)*B)*Tan[c + d*x]^2)/(2*a^
2*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]^3)/(4*d*(a + I*a*Tan[c
+ d*x])^2)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
```

```
f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(iA-B)\tan^3(c+dx)}{4d(a+ia\tan(c+dx))^2} - \frac{\int \frac{\tan^2(c+dx)(3a(iA-B)+a(A+5iB)\tan(c+dx))}{a+ia\tan(c+dx)}\,dx}{4a^2}$$

$$= \frac{(A+2iB)\tan^2(c+dx)}{2a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^3(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \tan(c+dx)\left(-8a^2(A+\right.}{}$$

$$= -\frac{3(iA-3B)x}{4a^2} + \frac{3(iA-3B)\tan(c+dx)}{4a^2d} + \frac{(A+2iB)\tan^2(c+dx)}{2a^2d(1+i\tan(c+dx))} + \frac{(iA-B)}{4d(a+ia}$$

$$= -\frac{3(iA-3B)x}{4a^2} + \frac{(A+2iB)\log(\cos(c+dx))}{a^2d} + \frac{3(iA-3B)\tan(c+dx)}{4a^2d} + \frac{(A+}{2a^2d(}$$

Mathematica [B] time = 6.91042, size = 956, normalized size = 6.73

$$\frac{i\sec(c)\sec^2(c+dx)(-B\cos(2c-dx)+B\cos(2c+dx)-iB\sin(2c-dx)+iB\sin(2c+dx))(A+B\tan(c+dx))(\cos(dx)+}{2d(A\cos(c+dx)+B\sin(c+dx))(i\tan(c+dx)a+a)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] -((2*A + (3*I)*B)*Cos[2*d*x]*Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(A + B*
Tan[c + d*x]))/(4*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]
)^2) + (Sec[c + d*x]*(A*Cos[c] + (2*I)*B*Cos[c] + I*A*Sin[c] - 2*B*Sin[c])*
((-I)*ArcTan[Tan[d*x]]*Cos[c] + ArcTan[Tan[d*x]]*Sin[c])*(Cos[d*x] + I*Sin[
d*x])^2*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a
*Tan[c + d*x])^2) + (Sec[c + d*x]*(A*Cos[c] + (2*I)*B*Cos[c] + I*A*Sin[c] -
 2*B*Sin[c])*((Cos[c]*Log[Cos[c + d*x]^2])/2 + (I/2)*Log[Cos[c + d*x]^2]*Si
n[c])*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] +
B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + ((A + I*B)*Cos[4*d*x]*Sec[c + d
*x]*(Cos[2*c]/16 - (I/16)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c
+ d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + (
```

```
((-I)*A + 3*B)*Sec[c + d*x]*((3*d*x*Cos[2*c])/4 + ((3*I)/4)*d*x*Sin[2*c])*(
Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c
 + d*x])*(a + I*a*Tan[c + d*x])^2) + ((I/4)*(2*A + (3*I)*B)*Sec[c + d*x]*(C
os[d*x] + I*Sin[d*x])^2*Sin[2*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x]
 + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + (((-I)*A + B)*Sec[c + d*x]*(
Cos[2*c]/16 - (I/16)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^2*Sin[4*d*x]*(A + B*
Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^
2) + ((I/2)*Sec[c]*Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^2*(-(B*Cos[2*c -
d*x]) + B*Cos[2*c + d*x] - I*B*Sin[2*c - d*x] + I*B*Sin[2*c + d*x])*(A + B*
Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^
2) + (x*Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(I*A - 2*B - A*Tan[c] - (2*I
)*B*Tan[c] + (A + (2*I)*B)*(-Cos[2*c] - I*Sin[2*c])*Tan[c])*(A + B*Tan[c +
d*x]))/((A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.033, size = 177, normalized size = 1.3

$$-\frac{B\tan(dx+c)}{a^2d}+\frac{\frac{5i}{4}A}{a^2d(\tan(dx+c)-i)}-\frac{7B}{4a^2d(\tan(dx+c)-i)}-\frac{A}{4a^2d(\tan(dx+c)-i)^2}-\frac{\frac{i}{4}B}{a^2d(\tan(dx+c)-i)^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] -1/d/a^2*B*tan(d*x+c)+5/4*I/d/a^2/(tan(d*x+c)-I)*A-7/4/d/a^2/(tan(d*x+c)-I)
*B-1/4/d/a^2/(tan(d*x+c)-I)^2*A-1/4*I/d/a^2/(tan(d*x+c)-I)^2*B-7/8/d/a^2*ln
(tan(d*x+c)-I)*A-17/8*I/d/a^2*ln(tan(d*x+c)-I)*B-1/8/d/a^2*A*ln(tan(d*x+c)+
I)+1/8*I/d/a^2*B*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.46559, size = 424, normalized size = 2.99

$$\frac{(-28i\,A+68\,B)dxe^{(6i\,dx+6i\,c)}+((-28i\,A+68\,B)dx-8\,A-44i\,B)e^{(4i\,dx+4i\,c)}-(7\,A+11i\,B)e^{(2i\,dx+2i\,c)}+16\left((A+2i\,B)e^{(6i\,dx}\right.}{16\left(a^2de^{(6i\,dx+6i\,c)}+a^2de^{(4i\,dx+4i\,c)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] 1/16*((-28*I*A + 68*B)*d*x*e^(6*I*d*x + 6*I*c) + ((-28*I*A + 68*B)*d*x - 8*
A - 44*I*B)*e^(4*I*d*x + 4*I*c) - (7*A + 11*I*B)*e^(2*I*d*x + 2*I*c) + 16*(
(A + 2*I*B)*e^(6*I*d*x + 6*I*c) + (A + 2*I*B)*e^(4*I*d*x + 4*I*c))*log(e^(2
*I*d*x + 2*I*c) + 1) + A + I*B)/(a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d
*x + 4*I*c))
```

Sympy [A] time = 14.4321, size = 223, normalized size = 1.57

$$-\frac{2iBe^{-2ic}}{a^2d\left(e^{2idx}+e^{-2ic}\right)}-\frac{\left(\begin{cases}7iAxe^{4ic}+\frac{2Ae^{2ic}e^{-2idx}}{d}-\frac{Ae^{-4idx}}{4d}-17Bxe^{4ic}+\frac{3iBe^{2ic}e^{-2idx}}{d}-\frac{iBe^{-4idx}}{4d} & \text{for } d\neq 0\\ x\left(7iAe^{4ic}-4iAe^{2ic}+iA-17Be^{4ic}+6Be^{2ic}-B\right) & \text{otherwise}\end{cases}\right)e^{-4ic}}{4a^2}+\frac{(A+2iB)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] -2*I*B*exp(-2*I*c)/(a**2*d*(exp(2*I*d*x) + exp(-2*I*c))) - Piecewise((7*I*A
*x*exp(4*I*c) + 2*A*exp(2*I*c)*exp(-2*I*d*x)/d - A*exp(-4*I*d*x)/(4*d) - 17
*B*x*exp(4*I*c) + 3*I*B*exp(2*I*c)*exp(-2*I*d*x)/d - I*B*exp(-4*I*d*x)/(4*d
), Ne(d, 0)), (x*(7*I*A*exp(4*I*c) - 4*I*A*exp(2*I*c) + I*A - 17*B*exp(4*I*
c) + 6*B*exp(2*I*c) - B), True))*exp(-4*I*c)/(4*a**2) + (A + 2*I*B)*log(exp
(2*I*d*x) + exp(-2*I*c))/(a**2*d)
```

Giac [A] time = 1.85702, size = 162, normalized size = 1.14

$$-\frac{\frac{2\,(A-i\,B)\log(\tan(dx+c)+i)}{a^2}+\frac{2\,(7\,A+17i\,B)\log(\tan(dx+c)-i)}{a^2}+\frac{16\,B\tan(dx+c)}{a^2}-\frac{21\,A\tan(dx+c)^2+51i\,B\tan(dx+c)^2-22i\,A\tan(dx+c)+74\,B\tan(dx+c)-}{a^2(\tan(dx+c)-i)^2}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] -1/16*(2*(A - I*B)*log(tan(d*x + c) + I)/a^2 + 2*(7*A + 17*I*B)*log(tan(d*x
 + c) - I)/a^2 + 16*B*tan(d*x + c)/a^2 - (21*A*tan(d*x + c)^2 + 51*I*B*tan(
d*x + c)^2 - 22*I*A*tan(d*x + c) + 74*B*tan(d*x + c) - 5*A - 27*I*B)/(a^2*(
tan(d*x + c) - I)^2))/d
```

3.45 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=103

$$\frac{-3B+iA}{4a^2d(1+i\tan(c+dx))}-\frac{x(A+3iB)}{4a^2}+\frac{B\log(\cos(c+dx))}{a^2d}+\frac{(-B+iA)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

```
[Out] -((A + (3*I)*B)*x)/(4*a^2) + (B*Log[Cos[c + d*x]])/(a^2*d) + (I*A - 3*B)/(4
*a^2*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]^2)/(4*d*(a + I*a*Tan
[c + d*x])^2)
```

Rubi [A] time = 0.210948, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {3595, 3589, 3475, 12, 3526, 8}

$$\frac{-3B+iA}{4a^2d(1+i\tan(c+dx))}-\frac{x(A+3iB)}{4a^2}+\frac{B\log(\cos(c+dx))}{a^2d}+\frac{(-B+iA)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] -((A + (3*I)*B)*x)/(4*a^2) + (B*Log[Cos[c + d*x]])/(a^2*d) + (I*A - 3*B)/(4
*a^2*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]^2)/(4*d*(a + I*a*Tan
[c + d*x])^2)
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
```

```
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 12

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

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx &= \frac{(iA-B)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}-\frac{\int \frac{\tan(c+dx)(2a(iA-B)+4iaB\tan(c+dx))}{a+ia\tan(c+dx)}\,dx}{4a^2}\\
&= \frac{(iA-B)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}+\frac{i\int -\frac{2a^2(A+3iB)\tan(c+dx)}{a+ia\tan(c+dx)}\,dx}{4a^3}-\frac{B\int \tan(c+dx)\,dx}{a^2}\\
&= \frac{B\log(\cos(c+dx))}{a^2d}+\frac{(iA-B)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}-\frac{(iA-3B)\int \frac{\tan(c+dx)}{a+ia\tan(c+dx)}\,dx}{2a}\\
&= \frac{B\log(\cos(c+dx))}{a^2d}+\frac{(iA-B)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}+\frac{iA-3B}{4d\left(a^2+ia^2\tan(c+dx)\right)}-\ldots\\
&= -\frac{(A+3iB)x}{4a^2}+\frac{B\log(\cos(c+dx))}{a^2d}+\frac{(iA-B)\tan^2(c+dx)}{4d(a+ia\tan(c+dx))^2}+\frac{iA-\ldots}{4d\left(a^2+ia^2\tan\ldots\right.}
\end{aligned}
$$

Mathematica [A] time = 0.872514, size = 185, normalized size = 1.8

$$\frac{\sec^2(c+dx)\left(\cos(2(c+dx))\left(4Adx+iA-8B\log\left(\cos^2(c+dx)\right)-4iBdx-B\right)+4iAdx\sin(2(c+dx))+A\sin(2(c+dx))\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] (Sec[c + d*x]^2*((-4*I)*A + 8*B + Cos[2*(c + d*x)]*(I*A - B + 4*A*d*x - (4*
I)*B*d*x - 8*B*Log[Cos[c + d*x]^2]) + (16*I)*B*ArcTan[Tan[d*x]]*(Cos[2*(c +
 d*x)] + I*Sin[2*(c + d*x)]) + A*Sin[2*(c + d*x)] + I*B*Sin[2*(c + d*x)] +
(4*I)*A*d*x*Sin[2*(c + d*x)] + 4*B*d*x*Sin[2*(c + d*x)] - (8*I)*B*Log[Cos[c
 + d*x]^2]*Sin[2*(c + d*x)]))/(16*a^2*d*(-I + Tan[c + d*x])^2)
```

Maple [A] time = 0.032, size = 162, normalized size = 1.6

$$\frac{\frac{i}{4}A}{a^2d\left(\tan(dx+c)-i\right)^2}-\frac{B}{4\,a^2d\left(\tan(dx+c)-i\right)^2}+\frac{\frac{5\,i}{4}B}{a^2d\left(\tan(dx+c)-i\right)}+\frac{3\,A}{4\,a^2d\left(\tan(dx+c)-i\right)}+\frac{\frac{i}{8}\ln\left(\tan(dx+c)\right.}{a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/4*I/d/a^2/(tan(d*x+c)-I)^2*A-1/4/d/a^2/(tan(d*x+c)-I)^2*B+5/4*I/d/a^2/(ta
n(d*x+c)-I)*B+3/4/d/a^2/(tan(d*x+c)-I)*A+1/8*I/d/a^2*ln(tan(d*x+c)-I)*A-7/8
/d/a^2*ln(tan(d*x+c)-I)*B-1/8/d/a^2*B*ln(tan(d*x+c)+I)-1/8*I/d/a^2*A*ln(tan
(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.44303, size = 240, normalized size = 2.33

$$-\frac{\left(4\,(A+7i\,B)dxe^{(4i\,dx+4i\,c)}-16\,Be^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)-(4i\,A-8\,B)e^{(2i\,dx+2i\,c)}+i\,A-B\right)e^{(-4i\,dx-4i\,c)}}{16\,a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] -1/16*(4*(A + 7*I*B)*d*x*e^(4*I*d*x + 4*I*c) - 16*B*e^(4*I*d*x + 4*I*c)*log
(e^(2*I*d*x + 2*I*c) + 1) - (4*I*A - 8*B)*e^(2*I*d*x + 2*I*c) + I*A - B)*e^
(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [A] time = 4.92274, size = 223, normalized size = 2.17

$$\frac{B\log\left(e^{2idx}+e^{-2ic}\right)}{a^2d}+\begin{cases}\frac{\left(\left(-4iAa^2de^{2ic}+4Ba^2de^{2ic}\right)e^{-4idx}+\left(16iAa^2de^{4ic}-32Ba^2de^{4ic}\right)e^{-2idx}\right)e^{-6ic}}{64a^4d^2} & \text{for } 64a^4d^2e^{6ic}\neq 0\\ x\left(\frac{A+7iB}{4a^2}-\frac{\left(Ae^{4ic}-2Ae^{2ic}+A+7iBe^{4ic}-4iBe^{2ic}+iB\right)e^{-4ic}}{4a^2}\right) & \text{otherwise}\end{cases}+\frac{x(-A-7iB)}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] B*log(exp(2*I*d*x) + exp(-2*I*c))/(a**2*d) + Piecewise(((((-4*I*A*a**2*d*exp
(2*I*c) + 4*B*a**2*d*exp(2*I*c))*exp(-4*I*d*x) + (16*I*A*a**2*d*exp(4*I*c)
- 32*B*a**2*d*exp(4*I*c))*exp(-2*I*d*x))*exp(-6*I*c)/(64*a**4*d**2), Ne(64*
a**4*d**2*exp(6*I*c), 0)), (x*((A + 7*I*B)/(4*a**2) - (A*exp(4*I*c) - 2*A*e
xp(2*I*c) + A + 7*I*B*exp(4*I*c) - 4*I*B*exp(2*I*c) + I*B)*exp(-4*I*c)/(4*a
**2)), True)) + x*(-A - 7*I*B)/(4*a**2)
```

Giac [A] time = 1.54296, size = 144, normalized size = 1.4

$$-\frac{\frac{2\,(i\,A+B)\log(\tan(dx+c)+i)}{a^2}+\frac{2\,(-i\,A+7\,B)\log(\tan(dx+c)-i)}{a^2}+\frac{3i\,A\tan(dx+c)^2-21\,B\tan(dx+c)^2-6\,A\tan(dx+c)+22i\,B\tan(dx+c)+5i\,A+5\,B}{a^2(\tan(dx+c)-i)^2}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] -1/16*(2*(I*A + B)*log(tan(d*x + c) + I)/a^2 + 2*(-I*A + 7*B)*log(tan(d*x +
 c) - I)/a^2 + (3*I*A*tan(d*x + c)^2 - 21*B*tan(d*x + c)^2 - 6*A*tan(d*x +
c) + 22*I*B*tan(d*x + c) + 5*I*A + 5*B)/(a^2*(tan(d*x + c) - I)^2))/d
```

3.46 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=76

$$\frac{A+3iB}{4a^2d(1+i\tan(c+dx))}-\frac{x(B+iA)}{4a^2}-\frac{A+iB}{4d(a+ia\tan(c+dx))^2}$$

```
[Out] -((I*A + B)*x)/(4*a^2) + (A + (3*I)*B)/(4*a^2*d*(1 + I*Tan[c + d*x])) - (A
+ I*B)/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.130703, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3590, 3526, 8}

$$\frac{A+3iB}{4a^2d(1+i\tan(c+dx))}-\frac{x(B+iA)}{4a^2}-\frac{A+iB}{4d(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] -((I*A + B)*x)/(4*a^2) + (A + (3*I)*B)/(4*a^2*d*(1 + I*Tan[c + d*x])) - (A
+ I*B)/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = -\frac{A+iB}{4d(a+ia\tan(c+dx))^2} - \frac{i\int \frac{a(A+iB)+2aB\tan(c+dx)}{a+ia\tan(c+dx)}\,dx}{2a^2}$$
$$= \frac{A+3iB}{4a^2d(1+i\tan(c+dx))} - \frac{A+iB}{4d(a+ia\tan(c+dx))^2} - \frac{(iA+B)\int 1\,dx}{4a^2}$$
$$= -\frac{(iA+B)x}{4a^2} + \frac{A+3iB}{4a^2d(1+i\tan(c+dx))} - \frac{A+iB}{4d(a+ia\tan(c+dx))^2}$$

Mathematica [A] time = 0.53058, size = 92, normalized size = 1.21

$$\frac{\sec^2(c+dx)((-4Adx-iA+4iBdx+B)\sin(2(c+dx))+(4iAdx+A+B(4dx+i))\cos(2(c+dx))-4iB)}{16a^2d(\tan(c+dx)-i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] (Sec[c + d*x]^2*((-4*I)*B + (A + (4*I)*A*d*x + B*(I + 4*d*x))*Cos[2*(c + d*
x)] + ((-I)*A + B - 4*A*d*x + (4*I)*B*d*x)*Sin[2*(c + d*x)]))/(16*a^2*d*(-I
 + Tan[c + d*x])^2)
```

Maple [B] time = 0.03, size = 162, normalized size = 2.1

$$\frac{A}{4a^2d(\tan(dx+c)-i)^2} + \frac{\frac{i}{4}B}{a^2d(\tan(dx+c)-i)^2} - \frac{\frac{i}{4}A}{a^2d(\tan(dx+c)-i)} + \frac{3B}{4a^2d(\tan(dx+c)-i)} - \frac{\ln(\tan(dx+c)-}{8a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/4/d/a^2/(tan(d*x+c)-I)^2*A+1/4*I/d/a^2/(tan(d*x+c)-I)^2*B-1/4*I/d/a^2/(ta
n(d*x+c)-I)*A+3/4/d/a^2/(tan(d*x+c)-I)*B-1/8/d/a^2*ln(tan(d*x+c)-I)*A+1/8*I
/d/a^2*ln(tan(d*x+c)-I)*B+1/8/d/a^2*A*ln(tan(d*x+c)+I)-1/8*I/d/a^2*B*ln(tan
```

```
(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.42338, size = 154, normalized size = 2.03

$$\frac{\left((-4i\,A-4\,B)dxe^{(4i\,dx+4i\,c)}+4i\,Be^{(2i\,dx+2i\,c)}-A-i\,B\right)e^{(-4i\,dx-4i\,c)}}{16\,a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] 1/16*((-4*I*A - 4*B)*d*x*e^(4*I*d*x + 4*I*c) + 4*I*B*e^(2*I*d*x + 2*I*c) -
A - I*B)*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [A] time = 2.05259, size = 167, normalized size = 2.2

$$\begin{cases}\frac{\left(16iBa^2de^{4ic}e^{-2idx}+\left(-4Aa^2de^{2ic}-4iBa^2de^{2ic}\right)e^{-4idx}\right)e^{-6ic}}{64a^4d^2} & \text{for } 64a^4d^2e^{6ic}\neq 0\\ x\left(\frac{iA+B}{4a^2}-\frac{\left(iAe^{4ic}-iA+Be^{4ic}-2Be^{2ic}+B\right)e^{-4ic}}{4a^2}\right) & \text{otherwise}\end{cases}+\frac{x\,(-iA-B)}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Piecewise(((16*I*B*a**2*d*exp(4*I*c)*exp(-2*I*d*x) + (-4*A*a**2*d*exp(2*I*c
) - 4*I*B*a**2*d*exp(2*I*c))*exp(-4*I*d*x))*exp(-6*I*c)/(64*a**4*d**2), Ne(
64*a**4*d**2*exp(6*I*c), 0)), (x*((I*A + B)/(4*a**2) - (I*A*exp(4*I*c) - I*
A + B*exp(4*I*c) - 2*B*exp(2*I*c) + B)*exp(-4*I*c)/(4*a**2)), True)) + x*(-
I*A - B)/(4*a**2)
```

Giac [A] time = 1.34941, size = 147, normalized size = 1.93

$$\frac{\frac{2\,(A-i\,B)\log(-i\,\tan(dx+c)+1)}{a^2}-\frac{2\,(A-i\,B)\log(-i\,\tan(dx+c)-1)}{a^2}+\frac{3\,A\tan(dx+c)^2-3i\,B\tan(dx+c)^2-10i\,A\tan(dx+c)+6\,B\tan(dx+c)-3\,A-5i\,B}{a^2(\tan(dx+c)-i)^2}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] 1/16*(2*(A - I*B)*log(-I*tan(d*x + c) + 1)/a^2 - 2*(A - I*B)*log(-I*tan(d*x
 + c) - 1)/a^2 + (3*A*tan(d*x + c)^2 - 3*I*B*tan(d*x + c)^2 - 10*I*A*tan(d*
x + c) + 6*B*tan(d*x + c) - 3*A - 5*I*B)/(a^2*(tan(d*x + c) - I)^2))/d
```

3.47 $\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=80

$$\frac{B+iA}{4d\left(a^2+ia^2\tan(c+dx)\right)}+\frac{x(A-iB)}{4a^2}+\frac{-B+iA}{4d(a+ia\tan(c+dx))^2}$$

```
[Out] ((A - I*B)*x)/(4*a^2) + (I*A - B)/(4*d*(a + I*a*Tan[c + d*x])^2) + (I*A + B
)/(4*d*(a^2 + I*a^2*Tan[c + d*x]))
```

Rubi [A] time = 0.0615542, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3526, 3479, 8}

$$\frac{B+iA}{4d\left(a^2+ia^2\tan(c+dx)\right)}+\frac{x(A-iB)}{4a^2}+\frac{-B+iA}{4d(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] ((A - I*B)*x)/(4*a^2) + (I*A - B)/(4*d*(a + I*a*Tan[c + d*x])^2) + (I*A + B
)/(4*d*(a^2 + I*a^2*Tan[c + d*x]))
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\begin{aligned}\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^2}\,dx &= \frac{iA-B}{4d(a+ia\tan(c+dx))^2}+\frac{(A-iB)\int\frac{1}{a+ia\tan(c+dx)}\,dx}{2a}\\ &= \frac{iA-B}{4d(a+ia\tan(c+dx))^2}+\frac{iA+B}{4d\left(a^2+ia^2\tan(c+dx)\right)}+\frac{(A-iB)\int 1\,dx}{4a^2}\\ &= \frac{(A-iB)x}{4a^2}+\frac{iA-B}{4d(a+ia\tan(c+dx))^2}+\frac{iA+B}{4d\left(a^2+ia^2\tan(c+dx)\right)}\end{aligned}$$

Mathematica [A] time = 0.520707, size = 94, normalized size = 1.18

$$-\frac{\sec^2(c+dx)((4iAdx+A+4Bdx+iB)\sin(2(c+dx))+(A(4dx+i)+B(-1-4idx))\cos(2(c+dx))+4iA)}{16a^2d(\tan(c+dx)-i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] -(Sec[c + d*x]^2*((4*I)*A + (B*(-1 - (4*I)*d*x) + A*(I + 4*d*x))*Cos[2*(c +
 d*x)] + (A + I*B + (4*I)*A*d*x + 4*B*d*x)*Sin[2*(c + d*x)]))/(16*a^2*d*(-I
 + Tan[c + d*x])^2)
```

Maple [B] time = 0.028, size = 162, normalized size = 2.

$$\frac{A}{4\,a^2d\left(\tan(dx+c)-i\right)}-\frac{\frac{i}{4}B}{a^2d\left(\tan(dx+c)-i\right)}-\frac{\frac{i}{4}A}{a^2d\left(\tan(dx+c)-i\right)^2}+\frac{B}{4\,a^2d\left(\tan(dx+c)-i\right)^2}-\frac{\frac{i}{8}\ln\left(\tan(dx+c)-\right.}{a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/4/d/a^2/(tan(d*x+c)-I)*A-1/4*I/d/a^2/(tan(d*x+c)-I)*B-1/4*I/d/a^2/(tan(d*
x+c)-I)^2*A+1/4/d/a^2/(tan(d*x+c)-I)^2*B-1/8*I/d/a^2*ln(tan(d*x+c)-I)*A-1/8
/d/a^2*ln(tan(d*x+c)-I)*B+1/8/d/a^2*B*ln(tan(d*x+c)+I)+1/8*I/d/a^2*A*ln(tan
(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.36364, size = 150, normalized size = 1.88

$$\frac{\left(4\,(A-i\,B)dxe^{(4i\,dx+4i\,c)}+4i\,Ae^{(2i\,dx+2i\,c)}+i\,A-B\right)e^{(-4i\,dx-4i\,c)}}{16\,a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/16*(4*(A - I*B)*d*x*e^(4*I*d*x + 4*I*c) + 4*I*A*e^(2*I*d*x + 2*I*c) + I*A
 - B)*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [A] time = 1.80745, size = 163, normalized size = 2.04

$$\begin{cases} \frac{\left(16iAa^2de^{4ic}e^{-2idx}+\left(4iAa^2de^{2ic}-4Ba^2de^{2ic}\right)e^{-4idx}\right)e^{-6ic}}{64a^4d^2} & \text{for } 64a^4d^2e^{6ic}\neq 0 \\ x\left(-\frac{A-iB}{4a^2}+\frac{\left(Ae^{4ic}+2Ae^{2ic}+A-iBe^{4ic}+iB\right)e^{-4ic}}{4a^2}\right) & \text{otherwise} \end{cases}+\frac{x\,(A-iB)}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Piecewise((((16*I*A*a**2*d*exp(4*I*c)*exp(-2*I*d*x) + (4*I*A*a**2*d*exp(2*I*
c) - 4*B*a**2*d*exp(2*I*c))*exp(-4*I*d*x))*exp(-6*I*c)/(64*a**4*d**2), Ne(6
4*a**4*d**2*exp(6*I*c), 0)), (x*(-(A - I*B)/(4*a**2) + (A*exp(4*I*c) + 2*A*
exp(2*I*c) + A - I*B*exp(4*I*c) + I*B)*exp(-4*I*c)/(4*a**2)), True)) + x*(A
 - I*B)/(4*a**2)
```

Giac [A] time = 1.34553, size = 149, normalized size = 1.86

$$-\frac{\frac{2\,(-i\,A-B)\log(\tan(dx+c)+i)}{a^2}-\frac{2\,(-i\,A-B)\log(\tan(dx+c)-i)}{a^2}-\frac{3i\,A\tan(dx+c)^2+3\,B\tan(dx+c)^2+10\,A\tan(dx+c)-10i\,B\tan(dx+c)-11i\,A-3\,B}{a^2(\tan(dx+c)-i)^2}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="giac")
```

```
[Out] -1/16*(2*(-I*A - B)*log(tan(d*x + c) + I)/a^2 - 2*(-I*A - B)*log(tan(d*x +
c) - I)/a^2 - (3*I*A*tan(d*x + c)^2 + 3*B*tan(d*x + c)^2 + 10*A*tan(d*x + c
) - 10*I*B*tan(d*x + c) - 11*I*A - 3*B)/(a^2*(tan(d*x + c) - I)^2))/d
```

3.48 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=95

$$\frac{3A+iB}{4a^2d(1+i\tan(c+dx))}-\frac{x(-B+3iA)}{4a^2}+\frac{A\log(\sin(c+dx))}{a^2d}+\frac{A+iB}{4d(a+ia\tan(c+dx))^2}$$

```
[Out] -(((3*I)*A - B)*x)/(4*a^2) + (A*Log[Sin[c + d*x]])/(a^2*d) + (3*A + I*B)/(4
*a^2*d*(1 + I*Tan[c + d*x])) + (A + I*B)/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.228687, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3596, 3531, 3475}

$$\frac{3A+iB}{4a^2d(1+i\tan(c+dx))}-\frac{x(-B+3iA)}{4a^2}+\frac{A\log(\sin(c+dx))}{a^2d}+\frac{A+iB}{4d(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] -(((3*I)*A - B)*x)/(4*a^2) + (A*Log[Sin[c + d*x]])/(a^2*d) + (3*A + I*B)/(4
*a^2*d*(1 + I*Tan[c + d*x])) + (A + I*B)/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
```

```
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{A+iB}{4d(a+ia\tan(c+dx))^2} + \frac{\int \frac{\cot(c+dx)(4aA-2a(iA-B)\tan(c+dx))}{a+ia\tan(c+dx)}\,dx}{4a^2}$$
$$= \frac{3A+iB}{4a^2d(1+i\tan(c+dx))} + \frac{A+iB}{4d(a+ia\tan(c+dx))^2} + \frac{\int \cot(c+dx)\left(8a^2A-2a^2(\right.}{8a}$$
$$= -\frac{(3iA-B)x}{4a^2} + \frac{3A+iB}{4a^2d(1+i\tan(c+dx))} + \frac{A+iB}{4d(a+ia\tan(c+dx))^2} + \frac{A\int\cot(c+}{a^2}$$
$$= -\frac{(3iA-B)x}{4a^2} + \frac{A\log(\sin(c+dx))}{a^2d} + \frac{3A+iB}{4a^2d(1+i\tan(c+dx))} + \frac{A+iB}{4d(a+ia\tan(c}$$

Mathematica [A] time = 0.965453, size = 184, normalized size = 1.94

$$-\frac{i\sec^2(c+dx)\left(\cos(2(c+dx))\left(-8iA\log\left(\sin^2(c+dx)\right)+4Adx-iA-4iBdx+B\right)+4iAdx\sin(2(c+dx))-A\sin(2(c+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] ((-I/16)*Sec[c + d*x]^2*((-8*I)*A + 4*B + Cos[2*(c + d*x)]*((-I)*A + B + 4*
A*d*x - (4*I)*B*d*x - (8*I)*A*Log[Sin[c + d*x]^2]) - 16*A*ArcTan[Tan[d*x]]*
(Cos[2*(c + d*x)] + I*Sin[2*(c + d*x)]) - A*Sin[2*(c + d*x)] - I*B*Sin[2*(c
 + d*x)] + (4*I)*A*d*x*Sin[2*(c + d*x)] + 4*B*d*x*Sin[2*(c + d*x)] + 8*A*Lo
g[Sin[c + d*x]^2]*Sin[2*(c + d*x)]))/(a^2*d*(-I + Tan[c + d*x])^2)
```

Maple [B] time = 0.112, size = 177, normalized size = 1.9

$$\frac{B}{4a^2d(\tan(dx+c)-i)} - \frac{\frac{3i}{4}A}{a^2d(\tan(dx+c)-i)} - \frac{7\ln(\tan(dx+c)-i)A}{8a^2d} - \frac{\frac{i}{8}\ln(\tan(dx+c)-i)B}{a^2d} - \frac{A}{4a^2d(\tan(dx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/4/d/a^2/(tan(d*x+c)-I)*B-3/4*I/d/a^2/(tan(d*x+c)-I)*A-7/8/d/a^2*ln(tan(d*
x+c)-I)*A-1/8*I/d/a^2*ln(tan(d*x+c)-I)*B-1/4/d/a^2/(tan(d*x+c)-I)^2*A-1/4*I
/d/a^2/(tan(d*x+c)-I)^2*B-1/8/d/a^2*A*ln(tan(d*x+c)+I)+1/8*I/d/a^2*B*ln(tan
(d*x+c)+I)+1/d/a^2*A*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.5515, size = 242, normalized size = 2.55

$$\frac{\left((-28i\,A+4\,B)dxe^{(4i\,dx+4i\,c)}+16\,Ae^{(4i\,dx+4i\,c)}\log\left(e^{(2i\,dx+2i\,c)}-1\right)+4\,(2\,A+i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)e^{(-4i\,dx-4i\,c)}}{16\,a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] 1/16*((-28*I*A + 4*B)*d*x*e^(4*I*d*x + 4*I*c) + 16*A*e^(4*I*d*x + 4*I*c)*lo
g(e^(2*I*d*x + 2*I*c) - 1) + 4*(2*A + I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*e
^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [A] time = 3.75569, size = 221, normalized size = 2.33

$$\frac{A\log\left(e^{2idx}-e^{-2ic}\right)}{a^2d}+\begin{cases}\frac{\left(\left(4Aa^2de^{2ic}+4iBa^2de^{2ic}\right)e^{-4idx}+\left(32Aa^2de^{4ic}+16iBa^2de^{4ic}\right)e^{-2idx}\right)e^{-6ic}}{64a^4d^2} & \text{for } 64a^4d^2e^{6ic}\neq 0\\ x\left(\frac{7iA-B}{4a^2}-\frac{\left(7iAe^{4ic}+4iAe^{2ic}+iA-Be^{4ic}-2Be^{2ic}-B\right)e^{-4ic}}{4a^2}\right) & \text{otherwise}\end{cases}+\frac{x\left(-7iA+B\right)}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] A*log(exp(2*I*d*x) - exp(-2*I*c))/(a**2*d) + Piecewise((((4*A*a**2*d*exp(2*
I*c) + 4*I*B*a**2*d*exp(2*I*c))*exp(-4*I*d*x) + (32*A*a**2*d*exp(4*I*c) + 1
6*I*B*a**2*d*exp(4*I*c))*exp(-2*I*d*x))*exp(-6*I*c)/(64*a**4*d**2), Ne(64*a
**4*d**2*exp(6*I*c), 0)), (x*((7*I*A - B)/(4*a**2) - (7*I*A*exp(4*I*c) + 4*
I*A*exp(2*I*c) + I*A - B*exp(4*I*c) - 2*B*exp(2*I*c) - B)*exp(-4*I*c)/(4*a*
*2)), True)) + x*(-7*I*A + B)/(4*a**2)
```

Giac [A] time = 1.29025, size = 165, normalized size = 1.74

$$-\frac{\frac{2\,(A-i\,B)\log(\tan(dx+c)+i)}{a^2}+\frac{2\,(7\,A+i\,B)\log(\tan(dx+c)-i)}{a^2}-\frac{16\,A\log(|\tan(dx+c)|)}{a^2}-\frac{21\,A\tan(dx+c)^2+3i\,B\tan(dx+c)^2-54i\,A\tan(dx+c)+10\,B\tan(dx+c}{a^2(\tan(dx+c)-i)^2}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] -1/16*(2*(A - I*B)*log(tan(d*x + c) + I)/a^2 + 2*(7*A + I*B)*log(tan(d*x +
c) - I)/a^2 - 16*A*log(abs(tan(d*x + c)))/a^2 - (21*A*tan(d*x + c)^2 + 3*I*
B*tan(d*x + c)^2 - 54*I*A*tan(d*x + c) + 10*B*tan(d*x + c) - 37*A - 11*I*B)
/(a^2*(tan(d*x + c) - I)^2))/d
```

3.49 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=141

$$-\frac{3(3A+iB)\cot(c+dx)}{4a^2d}-\frac{(-B+2iA)\log(\sin(c+dx))}{a^2d}+\frac{(2A+iB)\cot(c+dx)}{2a^2d(1+i\tan(c+dx))}-\frac{3x(3A+iB)}{4a^2}+\frac{(A+iB)\cot(c+ dx)}{4d(a+ia\tan(c+dx))^2}$$

```
[Out] (-3*(3*A + I*B)*x)/(4*a^2) - (3*(3*A + I*B)*Cot[c + d*x])/(4*a^2*d) - (((2*
I)*A - B)*Log[Sin[c + d*x]])/(a^2*d) + ((2*A + I*B)*Cot[c + d*x])/(2*a^2*d*
(1 + I*Tan[c + d*x])) + ((A + I*B)*Cot[c + d*x])/(4*d*(a + I*a*Tan[c + d*x]
)^2)
```

Rubi [A] time = 0.345708, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{3(3A+iB)\cot(c+dx)}{4a^2d}-\frac{(-B+2iA)\log(\sin(c+dx))}{a^2d}+\frac{(2A+iB)\cot(c+dx)}{2a^2d(1+i\tan(c+dx))}-\frac{3x(3A+iB)}{4a^2}+\frac{(A+iB)\cot(c+ dx)}{4d(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] (-3*(3*A + I*B)*x)/(4*a^2) - (3*(3*A + I*B)*Cot[c + d*x])/(4*a^2*d) - (((2*
I)*A - B)*Log[Sin[c + d*x]])/(a^2*d) + ((2*A + I*B)*Cot[c + d*x])/(2*a^2*d*
(1 + I*Tan[c + d*x])) + ((A + I*B)*Cot[c + d*x])/(4*d*(a + I*a*Tan[c + d*x]
)^2)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(A+iB)\cot(c+dx)}{4d(a+ia\tan(c+dx))^2}+\frac{\int \frac{\cot^2(c+dx)(a(5A+iB)-3a(iA-B)\tan(c+dx))}{a+ia\tan(c+dx)}\,dx}{4a^2}$$

$$= \frac{(2A+iB)\cot(c+dx)}{2a^2d(1+i\tan(c+dx))}+\frac{(A+iB)\cot(c+dx)}{4d(a+ia\tan(c+dx))^2}+\frac{\int \cot^2(c+dx)\left(6a^2(3A+\right.}{}$$

$$= -\frac{3(3A+iB)\cot(c+dx)}{4a^2d}+\frac{(2A+iB)\cot(c+dx)}{2a^2d(1+i\tan(c+dx))}+\frac{(A+iB)\cot(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

$$= -\frac{3(3A+iB)x}{4a^2}-\frac{3(3A+iB)\cot(c+dx)}{4a^2d}+\frac{(2A+iB)\cot(c+dx)}{2a^2d(1+i\tan(c+dx))}+\frac{(A+iB}{4d(a+ia}$$

$$= -\frac{3(3A+iB)x}{4a^2}-\frac{3(3A+iB)\cot(c+dx)}{4a^2d}-\frac{(2iA-B)\log(\sin(c+dx))}{a^2d}+\frac{(2A+}{2a^2d(1}$$

Mathematica [B] time = 6.03195, size = 302, normalized size = 2.14

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(\frac{1}{4}(B-iA)(\cos(2c)-i\sin(2c))\cos(4dx)+4dx(2A+iB)(\cos(2c)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(((-3*I)*A + 2*B)*Cos[2*d*x] + (((-
I)*A + B)*Cos[4*d*x]*(Cos[2*c] - I*Sin[2*c]))/4 + 4*(2*A + I*B)*d*x*(Cos[2*
c] + I*Sin[2*c]) - 3*(3*A + I*B)*d*x*(Cos[2*c] + I*Sin[2*c]) - 4*(2*A + I*B
)*ArcTan[Tan[d*x]]*(Cos[2*c] + I*Sin[2*c]) + 2*((-2*I)*A + B)*Log[Sin[c + d
*x]^2]*(Cos[2*c] + I*Sin[2*c]) + 4*A*Csc[c]*Csc[c + d*x]*(Cos[2*c] + I*Sin[
2*c])*Sin[d*x] - (3*A + (2*I)*B)*Sin[2*d*x] - ((A + I*B)*(Cos[2*c] - I*Sin[
2*c])*Sin[4*d*x])/4)*(A + B*Tan[c + d*x]))/(4*d*(A*Cos[c + d*x] + B*Sin[c +
 d*x])*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.102, size = 211, normalized size = 1.5

$$-\frac{5\,A}{4\,a^{2}d\,(\tan(dx+c)-i)}-\frac{\frac{3\,i}{4}B}{a^{2}d\,(\tan(dx+c)-i)}-\frac{7\,\ln(\tan(dx+c)-i)\,B}{8\,a^{2}d}+\frac{\frac{17\,i}{8}\ln(\tan(dx+c)-i)\,A}{a^{2}d}+\frac{\frac{i}{4}A}{a^{2}d\,(\tan(dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] -5/4/d/a^2/(tan(d*x+c)-I)*A-3/4*I/d/a^2/(tan(d*x+c)-I)*B-7/8/d/a^2*ln(tan(d
*x+c)-I)*B+17/8*I/d/a^2*ln(tan(d*x+c)-I)*A+1/4*I/d/a^2/(tan(d*x+c)-I)^2*A-1
/4/d/a^2/(tan(d*x+c)-I)^2*B-1/8/d/a^2*B*ln(tan(d*x+c)+I)-1/8*I/d/a^2*A*ln(t
an(d*x+c)+I)-1/d/a^2*A/tan(d*x+c)-2*I/d/a^2*A*ln(tan(d*x+c))+1/d/a^2*B*ln(t
an(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.43534, size = 433, normalized size = 3.07

$$-\frac{4\,(17\,A+7i\,B)dxe^{(6i\,dx+6i\,c)}-(4\,(17\,A+7i\,B)dx-44i\,A+8\,B)e^{(4i\,dx+4i\,c)}-(11i\,A-7\,B)e^{(2i\,dx+2i\,c)}-\left((-32i\,A+16\,B)e^{(6i\,\cdots}\right.}{16\left(a^2de^{(6i\,dx+6i\,c)}-a^2de^{(4i\,dx+4i\,c)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] -1/16*(4*(17*A + 7*I*B)*d*x*e^(6*I*d*x + 6*I*c) - (4*(17*A + 7*I*B)*d*x - 4
4*I*A + 8*B)*e^(4*I*d*x + 4*I*c) - (11*I*A - 7*B)*e^(2*I*d*x + 2*I*c) - ((-
32*I*A + 16*B)*e^(6*I*d*x + 6*I*c) + (32*I*A - 16*B)*e^(4*I*d*x + 4*I*c))*l
og(e^(2*I*d*x + 2*I*c) - 1) - I*A + B)/(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e
^(4*I*d*x + 4*I*c))
```

Sympy [A] time = 14.7981, size = 223, normalized size = 1.58

$$-\frac{2iAe^{-2ic}}{a^2d\left(e^{2idx}-e^{-2ic}\right)}-\frac{\left(\begin{cases}17Axe^{4ic}+\frac{3iAe^{2ic}e^{-2idx}}{d}+\frac{iAe^{-4idx}}{4d}+7iBxe^{4ic}-\frac{2Be^{2ic}e^{-2idx}}{d}-\frac{Be^{-4idx}}{4d} & \text{for}\ d\neq 0\\ x\left(17Ae^{4ic}+6Ae^{2ic}+A+7iBe^{4ic}+4iBe^{2ic}+iB\right) & \text{otherwise}\end{cases}\right)e^{-4ic}}{4a^2}+\frac{(-2iA+B\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] -2*I*A*exp(-2*I*c)/(a**2*d*(exp(2*I*d*x) - exp(-2*I*c))) - Piecewise((17*A*
x*exp(4*I*c) + 3*I*A*exp(2*I*c)*exp(-2*I*d*x)/d + I*A*exp(-4*I*d*x)/(4*d) +
 7*I*B*x*exp(4*I*c) - 2*B*exp(2*I*c)*exp(-2*I*d*x)/d - B*exp(-4*I*d*x)/(4*d
), Ne(d, 0)), (x*(17*A*exp(4*I*c) + 6*A*exp(2*I*c) + A + 7*I*B*exp(4*I*c) +
 4*I*B*exp(2*I*c) + I*B), True))*exp(-4*I*c)/(4*a**2) + (-2*I*A + B)*log(ex
p(2*I*d*x) - exp(-2*I*c))/(a**2*d)
```

Giac [A] time = 1.31596, size = 219, normalized size = 1.55

$$\frac{\frac{2\,(-i\,A-B)\log(\tan(dx+c)+i)}{a^2}-\frac{2\,(-17i\,A+7\,B)\log(\tan(dx+c)-i)}{a^2}-\frac{16\,(2i\,A-B)\log(|\tan(dx+c)|)}{a^2}-\frac{16\,(-2i\,A\tan(dx+c)+B\tan(dx+c)+A)}{a^2\tan(dx+c)}-\frac{51i\,A\tan(dx+c\cdots}{}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] 1/16*(2*(-I*A - B)*log(tan(d*x + c) + I)/a^2 - 2*(-17*I*A + 7*B)*log(tan(d*
x + c) - I)/a^2 - 16*(2*I*A - B)*log(abs(tan(d*x + c)))/a^2 - 16*(-2*I*A*ta
n(d*x + c) + B*tan(d*x + c) + A)/(a^2*tan(d*x + c)) - (51*I*A*tan(d*x + c)^
2 - 21*B*tan(d*x + c)^2 + 122*A*tan(d*x + c) + 54*I*B*tan(d*x + c) - 75*I*A
 + 37*B)/(a^2*(tan(d*x + c) - I)^2))/d
```

3.50 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=170

$$-\frac{(2A+iB)\cot^2(c+dx)}{a^2d}+\frac{3(-3B+5iA)\cot(c+dx)}{4a^2d}-\frac{2(2A+iB)\log(\sin(c+dx))}{a^2d}+\frac{(5A+3iB)\cot^2(c+dx)}{4a^2d(1+i\tan(c+dx))}+\frac{3x(-3\ldots}{4\ldots}$$

```
[Out] (3*((5*I)*A - 3*B)*x)/(4*a^2) + (3*((5*I)*A - 3*B)*Cot[c + d*x])/(4*a^2*d)
- ((2*A + I*B)*Cot[c + d*x]^2)/(a^2*d) - (2*(2*A + I*B)*Log[Sin[c + d*x]])/
(a^2*d) + ((5*A + (3*I)*B)*Cot[c + d*x]^2)/(4*a^2*d*(1 + I*Tan[c + d*x])) +
 ((A + I*B)*Cot[c + d*x]^2)/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.404879, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(2A+iB)\cot^2(c+dx)}{a^2d}+\frac{3(-3B+5iA)\cot(c+dx)}{4a^2d}-\frac{2(2A+iB)\log(\sin(c+dx))}{a^2d}+\frac{(5A+3iB)\cot^2(c+dx)}{4a^2d(1+i\tan(c+dx))}+\frac{3x(-3\ldots}{4\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] (3*((5*I)*A - 3*B)*x)/(4*a^2) + (3*((5*I)*A - 3*B)*Cot[c + d*x])/(4*a^2*d)
- ((2*A + I*B)*Cot[c + d*x]^2)/(a^2*d) - (2*(2*A + I*B)*Log[Sin[c + d*x]])/
(a^2*d) + ((5*A + (3*I)*B)*Cot[c + d*x]^2)/(4*a^2*d*(1 + I*Tan[c + d*x])) +
 ((A + I*B)*Cot[c + d*x]^2)/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(A+iB)\cot^2(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \frac{\cot^3(c+dx)(2a(3A+iB)-4a(iA-B)\tan(c+dx))}{a+ia\tan(c+dx)}\,dx}{4a^2}$$

$$= \frac{(5A+3iB)\cot^2(c+dx)}{4a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\cot^2(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \cot^3(c+dx)\left(16a^2(2A\right.}{}$$

$$= -\frac{(2A+iB)\cot^2(c+dx)}{a^2d} + \frac{(5A+3iB)\cot^2(c+dx)}{4a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\cot^2(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

$$= \frac{3(5iA-3B)\cot(c+dx)}{4a^2d} - \frac{(2A+iB)\cot^2(c+dx)}{a^2d} + \frac{(5A+3iB)\cot^2(c+dx)}{4a^2d(1+i\tan(c+dx))}$$

$$= \frac{3(5iA-3B)x}{4a^2} + \frac{3(5iA-3B)\cot(c+dx)}{4a^2d} - \frac{(2A+iB)\cot^2(c+dx)}{a^2d} + \frac{(5A+3}{4a^2d(1}$$

$$= \frac{3(5iA-3B)x}{4a^2} + \frac{3(5iA-3B)\cot(c+dx)}{4a^2d} - \frac{(2A+iB)\cot^2(c+dx)}{a^2d} - \frac{2(2A+}{}$$

Mathematica [B] time = 7.08443, size = 1112, normalized size = 6.54

$$\frac{\csc(c)\csc(c+dx)\sec(c+dx)\left(A\cos(2c-dx)+\frac{1}{2}iB\cos(2c-dx)-A\cos(2c+dx)-\frac{1}{2}iB\cos(2c+dx)+iA\sin(2c-dx\right.}{d(A\cos(c+dx)+B\sin(c+dx))(i\,\text{ta}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] -((4*A + (3*I)*B)*Cos[2*d*x]*Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(A + B*
Tan[c + d*x]))/(4*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]
)^2) + (Sec[c + d*x]*(2*A*Cos[c] + I*B*Cos[c] + (2*I)*A*Sin[c] - B*Sin[c])*
((2*I)*ArcTan[Tan[d*x]]*Cos[c] - 2*ArcTan[Tan[d*x]]*Sin[c])*(Cos[d*x] + I*S
in[d*x])^2*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a +
I*a*Tan[c + d*x])^2) + (Sec[c + d*x]*(2*A*Cos[c] + I*B*Cos[c] + (2*I)*A*Sin
[c] - B*Sin[c])*(-(Cos[c]*Log[Sin[c + d*x]^2]) - I*Log[Sin[c + d*x]^2]*Sin[
c])*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + (x*Sec[c + d*x]*((4*I)*A - 2*B +
4*A*Cot[c] + (2*I)*B*Cot[c] + (2*A + I*B)*Cot[c]*(-2*Cos[2*c] - (2*I)*Sin[2
*c]))*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x]))/((A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + ((A + I*B)*Cos[4*d*x]*Sec[c + d*x
]*(-Cos[2*c]/16 + (I/16)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c +
 d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + (C
sc[c + d*x]^2*Sec[c + d*x]*(-(A*Cos[2*c])/2 - (I/2)*A*Sin[2*c])*(Cos[d*x] +
 I*Sin[d*x])^2*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(
a + I*a*Tan[c + d*x])^2) + ((5*A + (3*I)*B)*Sec[c + d*x]*(((3*I)/4)*d*x*Cos
[2*c] - (3*d*x*Sin[2*c])/4)*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x]))
/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) + ((I/4)*(4
*A + (3*I)*B)*Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*Sin[2*d*x]*(A + B*Tan[
c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2) +
 ((A + I*B)*Sec[c + d*x]*((I/16)*Cos[2*c] + Sin[2*c]/16)*(Cos[d*x] + I*Sin[
d*x])^2*Sin[4*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x
])*(a + I*a*Tan[c + d*x])^2) + (Csc[c]*Csc[c + d*x]*Sec[c + d*x]*(Cos[d*x]
+ I*Sin[d*x])^2*(A*Cos[2*c - d*x] + (I/2)*B*Cos[2*c - d*x] - A*Cos[2*c + d*
x] - (I/2)*B*Cos[2*c + d*x] + I*A*Sin[2*c - d*x] - (B*Sin[2*c - d*x])/2 - I
*A*Sin[2*c + d*x] + (B*Sin[2*c + d*x])/2)*(A + B*Tan[c + d*x]))/(d*(A*Cos[c
 + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.118, size = 247, normalized size = 1.5

$$\frac{A}{4\,a^2d\,(\tan(dx+c)-i)^2}+\frac{\frac{i}{4}B}{a^2d\,(\tan(dx+c)-i)^2}-\frac{5\,B}{4\,a^2d\,(\tan(dx+c)-i)}+\frac{\frac{7\,i}{4}A}{a^2d\,(\tan(dx+c)-i)}+\frac{31\,\ln(\tan(dx+c}{8\,a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/4/d/a^2/(tan(d*x+c)-I)^2*A+1/4*I/d/a^2/(tan(d*x+c)-I)^2*B-5/4/d/a^2/(tan(
d*x+c)-I)*B+7/4*I/d/a^2/(tan(d*x+c)-I)*A+31/8/d/a^2*ln(tan(d*x+c)-I)*A+17/8
*I/d/a^2*ln(tan(d*x+c)-I)*B+1/8/d/a^2*A*ln(tan(d*x+c)+I)-1/8*I/d/a^2*B*ln(t
an(d*x+c)+I)-1/2/d/a^2*A/tan(d*x+c)^2-2*I/d/a^2*B*ln(tan(d*x+c))-4/d/a^2*A*
ln(tan(d*x+c))+2*I/d/a^2/tan(d*x+c)*A-1/d/a^2/tan(d*x+c)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.56098, size = 601, normalized size = 3.54

$$\frac{(124i\,A-68\,B)dxe^{(8i\,dx+8i\,c)}+((-248i\,A+136\,B)dx-48\,A-44i\,B)e^{(6i\,dx+6i\,c)}+((124i\,A-68\,B)dx+95\,A+55i\,B)e^{(4i\,d}}{16\left(a^2de^{(8i\,dx+8i\,c)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] 1/16*((124*I*A - 68*B)*d*x*e^(8*I*d*x + 8*I*c) + ((-248*I*A + 136*B)*d*x -
48*A - 44*I*B)*e^(6*I*d*x + 6*I*c) + ((124*I*A - 68*B)*d*x + 95*A + 55*I*B)
*e^(4*I*d*x + 4*I*c) - 2*(7*A + 5*I*B)*e^(2*I*d*x + 2*I*c) - 32*((2*A + I*B
)*e^(8*I*d*x + 8*I*c) - 2*(2*A + I*B)*e^(6*I*d*x + 6*I*c) + (2*A + I*B)*e^(
4*I*d*x + 4*I*c))*log(e^(2*I*d*x + 2*I*c) - 1) - A - I*B)/(a^2*d*e^(8*I*d*x
 + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [A] time = 35.1293, size = 274, normalized size = 1.61

$$\frac{-\frac{(2A+2iB)e^{-2ic}e^{2idx}}{a^2d}+\frac{(4A+2iB)e^{-4ic}}{a^2d}}{e^{4idx}-2e^{-2ic}e^{2idx}+e^{-4ic}}+\frac{\left(\begin{cases}31iAxe^{4ic}-\frac{4Ae^{2ic}e^{-2idx}}{d}-\frac{Ae^{-4idx}}{4d}-17Bxe^{4ic}-\frac{3iBe^{2ic}e^{-2idx}}{d}-\frac{iBe^{-4idx}}{4d} & \text{for}\ d\neq 0\\ x\left(31iAe^{4ic}+8iAe^{2ic}+iA-17Be^{4ic}-6Be^{2ic}-B\right) & \text{otherwise}\end{cases}\right)e^{-4ic}}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] (-(2*A + 2*I*B)*exp(-2*I*c)*exp(2*I*d*x)/(a**2*d) + (4*A + 2*I*B)*exp(-4*I*
c)/(a**2*d))/(exp(4*I*d*x) - 2*exp(-2*I*c)*exp(2*I*d*x) + exp(-4*I*c)) + Pi
ecewise((31*I*A*x*exp(4*I*c) - 4*A*exp(2*I*c)*exp(-2*I*d*x)/d - A*exp(-4*I*
d*x)/(4*d) - 17*B*x*exp(4*I*c) - 3*I*B*exp(2*I*c)*exp(-2*I*d*x)/d - I*B*exp
(-4*I*d*x)/(4*d), Ne(d, 0)), (x*(31*I*A*exp(4*I*c) + 8*I*A*exp(2*I*c) + I*A
 - 17*B*exp(4*I*c) - 6*B*exp(2*I*c) - B), True))*exp(-4*I*c)/(4*a**2) - (4*
A + 2*I*B)*log(exp(2*I*d*x) - exp(-2*I*c))/(a**2*d)
```

Giac [A] time = 1.42164, size = 239, normalized size = 1.41

$$\frac{\frac{4\,(A-i\,B)\log(\tan(dx+c)+i)}{a^2}+\frac{4\,(31\,A+17i\,B)\log(\tan(dx+c)-i)}{a^2}-\frac{64\,(2\,A+i\,B)\log(|\tan(dx+c)|)}{a^2}+\frac{3\,A\tan(dx+c)^4-3i\,B\tan(dx+c)^4+114i\,A\tan(dx+c)^3-78\,B}{}}{32\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] 1/32*(4*(A - I*B)*log(tan(d*x + c) + I)/a^2 + 4*(31*A + 17*I*B)*log(tan(d*x
 + c) - I)/a^2 - 64*(2*A + I*B)*log(abs(tan(d*x + c)))/a^2 + (3*A*tan(d*x +
 c)^4 - 3*I*B*tan(d*x + c)^4 + 114*I*A*tan(d*x + c)^3 - 78*B*tan(d*x + c)^3
 + 173*A*tan(d*x + c)^2 + 115*I*B*tan(d*x + c)^2 - 32*I*A*tan(d*x + c) + 32
*B*tan(d*x + c) + 16*A)/((tan(d*x + c)^2 - I*tan(d*x + c))^2*a^2))/d
```

3.51 $\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=191

$$-\frac{(-3B+iA)\tan^2(c+dx)}{2d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{(7A+25iB)\tan(c+dx)}{8a^3d}-\frac{(-3B+iA)\log(\cos(c+dx))}{a^3d}-\frac{x(7A+25iB)}{8a^3}+\frac{(-B+iA)\tan}{6d(a+ia\tan}$$

```
[Out] -((7*A + (25*I)*B)*x)/(8*a^3) - ((I*A - 3*B)*Log[Cos[c + d*x]])/(a^3*d) + (
(7*A + (25*I)*B)*Tan[c + d*x])/(8*a^3*d) + ((I*A - B)*Tan[c + d*x]^4)/(6*d*
(a + I*a*Tan[c + d*x])^3) + ((5*A + (11*I)*B)*Tan[c + d*x]^3)/(24*a*d*(a +
I*a*Tan[c + d*x])^2) - ((I*A - 3*B)*Tan[c + d*x]^2)/(2*d*(a^3 + I*a^3*Tan[c
 + d*x]))
```

Rubi [A] time = 0.473484, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {3595, 3525, 3475}

$$-\frac{(-3B+iA)\tan^2(c+dx)}{2d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{(7A+25iB)\tan(c+dx)}{8a^3d}-\frac{(-3B+iA)\log(\cos(c+dx))}{a^3d}-\frac{x(7A+25iB)}{8a^3}+\frac{(-B+iA)\tan}{6d(a+ia\tan}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] -((7*A + (25*I)*B)*x)/(8*a^3) - ((I*A - 3*B)*Log[Cos[c + d*x]])/(a^3*d) + (
(7*A + (25*I)*B)*Tan[c + d*x])/(8*a^3*d) + ((I*A - B)*Tan[c + d*x]^4)/(6*d*
(a + I*a*Tan[c + d*x])^3) + ((5*A + (11*I)*B)*Tan[c + d*x]^3)/(24*a*d*(a +
I*a*Tan[c + d*x])^2) - ((I*A - 3*B)*Tan[c + d*x]^2)/(2*d*(a^3 + I*a^3*Tan[c
 + d*x]))
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\tan^4(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\tan^3(c+dx)(4a(iA-B)+a(A+7iB)\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(5A+11iB)\tan^3(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\tan^2(c+dx)\left(-3a^2(5A+11iB\right.}{a+ia\,\mathrm{ta}}}{24}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(5A+11iB)\tan^3(c+dx)}{24ad(a+ia\tan(c+dx))^2} - \frac{(iA-3B)\tan^2(c+dx}{2d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= -\frac{(7A+25iB)x}{8a^3} + \frac{(7A+25iB)\tan(c+dx)}{8a^3d} + \frac{(iA-B)\tan^4(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(5A+}{24ad(}$$

$$= -\frac{(7A+25iB)x}{8a^3} - \frac{(iA-3B)\log(\cos(c+dx))}{a^3d} + \frac{(7A+25iB)\tan(c+dx)}{8a^3d} + \frac{(i}{6d(}$$

Mathematica [B] time = 7.01278, size = 1251, normalized size = 6.55

$$\frac{\sec^3(c+dx)(-B\cos(3c-dx)+B\cos(3c+dx)-iB\sin(3c-dx)+iB\sin(3c+dx))(A+B\tan(c+dx))(\cos(dx)+i\sin(d}{2d\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\left(\cos\left(\frac{c}{2}\right)+\sin\left(\frac{c}{2}\right)\right)(A\cos(c+dx)+B\sin(c+dx))(i\tan(c+dx)a+a)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] ((11*A + (23*I)*B)*Cos[2*d*x]*Sec[c + d*x]^2*((I/16)*Cos[c] - Sin[c]/16)*(C
os[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c
+ d*x])*(a + I*a*Tan[c + d*x])^3) + (((-5*I)*A + 7*B)*Cos[4*d*x]*Sec[c + d*
```

```
x]^2*(Cos[c]/32 - (I/32)*Sin[c])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d
*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Sec
[c + d*x]^2*((-I)*A*Cos[(3*c)/2] + 3*B*Cos[(3*c)/2] + A*Sin[(3*c)/2] + (3*I
)*B*Sin[(3*c)/2])*(Cos[(3*c)/2]*Log[Cos[c + d*x]] + I*Log[Cos[c + d*x]]*Sin
[(3*c)/2])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*
x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((A + I*B)*Cos[6*d*x]*Sec[
c + d*x]^2*((I/48)*Cos[3*c] + Sin[3*c]/48)*(Cos[d*x] + I*Sin[d*x])^3*(A + B
*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])
^3) + ((7*A + (25*I)*B)*Sec[c + d*x]^2*(-(d*x*Cos[3*c])/8 - (I/8)*d*x*Sin[3
*c])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B
*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((11*A + (23*I)*B)*Sec[c + d*x]^
2*(Cos[c]/16 + (I/16)*Sin[c])*(Cos[d*x] + I*Sin[d*x])^3*Sin[2*d*x]*(A + B*T
an[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3
) + ((5*A + (7*I)*B)*Sec[c + d*x]^2*(-Cos[c]/32 + (I/32)*Sin[c])*(Cos[d*x]
+ I*Sin[d*x])^3*Sin[4*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin
[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((A + I*B)*Sec[c + d*x]^2*(Cos[3*c]/
48 - (I/48)*Sin[3*c])*(Cos[d*x] + I*Sin[d*x])^3*Sin[6*d*x]*(A + B*Tan[c + d
*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Sec
[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])^3*(-(B*Cos[3*c - d*x]) + B*Cos[3*c + d*
x] - I*B*Sin[3*c - d*x] + I*B*Sin[3*c + d*x])*(A + B*Tan[c + d*x]))/(2*d*(C
os[c/2] - Sin[c/2])*(Cos[c/2] + Sin[c/2])*(A*Cos[c + d*x] + B*Sin[c + d*x])
*(a + I*a*Tan[c + d*x])^3) + (x*Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((
A*Cos[c])/2 + ((3*I)/2)*B*Cos[c] - (A*Cos[c]^3)/2 - ((3*I)/2)*B*Cos[c]^3 +
I*A*Sin[c] - 3*B*Sin[c] - (2*I)*A*Cos[c]^2*Sin[c] + 6*B*Cos[c]^2*Sin[c] + 3
*A*Cos[c]*Sin[c]^2 + (9*I)*B*Cos[c]*Sin[c]^2 + (2*I)*A*Sin[c]^3 - 6*B*Sin[c
]^3 - (A*Sin[c]*Tan[c])/2 - ((3*I)/2)*B*Sin[c]*Tan[c] - (A*Sin[c]^3*Tan[c])
/2 - ((3*I)/2)*B*Sin[c]^3*Tan[c] + I*(A + (3*I)*B)*(Cos[3*c] + I*Sin[3*c])*
Tan[c])*(A + B*Tan[c + d*x]))/((A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*T
an[c + d*x])^3)
```

Maple [A] time = 0.036, size = 219, normalized size = 1.2

$$\frac{iB\tan(dx+c)}{a^3d} - \frac{A}{6a^3d(\tan(dx+c)-i)^3} - \frac{\frac{i}{6}B}{a^3d(\tan(dx+c)-i)^3} - \frac{49\ln(\tan(dx+c)-i)B}{16a^3d} + \frac{\frac{15i}{16}\ln(\tan(dx+c)-}{a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] I/d/a^3*B*tan(d*x+c)-1/6/d/a^3/(tan(d*x+c)-I)^3*A-1/6*I/d/a^3/(tan(d*x+c)-I
)^3*B-49/16/d/a^3*ln(tan(d*x+c)-I)*B+15/16*I/d/a^3*ln(tan(d*x+c)-I)*A+17/8/
d/a^3/(tan(d*x+c)-I)*A+31/8*I/d/a^3/(tan(d*x+c)-I)*B+7/8*I/d/a^3/(tan(d*x+c
```

```
)-I)^2*A-9/8/d/a^3/(tan(d*x+c)-I)^2*B+1/16/d/a^3*B*ln(tan(d*x+c)+I)+1/16*I/
d/a^3*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.46397, size = 506, normalized size = 2.65

$$-\frac{12\,(15\,A+49i\,B)dxe^{(8i\,dx+8i\,c)}+(12\,(15\,A+49i\,B)dx-66i\,A+330\,B)e^{(6i\,dx+6i\,c)}-(51i\,A-117\,B)e^{(4i\,dx+4i\,c)}-(-13i\,A+}{96\left(a^3de^{(8i\,dx+8i\,c)}+a^3d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
fricas")
```

```
[Out] -1/96*(12*(15*A + 49*I*B)*d*x*e^(8*I*d*x + 8*I*c) + (12*(15*A + 49*I*B)*d*x
 - 66*I*A + 330*B)*e^(6*I*d*x + 6*I*c) - (51*I*A - 117*B)*e^(4*I*d*x + 4*I*
c) - (-13*I*A + 19*B)*e^(2*I*d*x + 2*I*c) - ((-96*I*A + 288*B)*e^(8*I*d*x +
 8*I*c) + (-96*I*A + 288*B)*e^(6*I*d*x + 6*I*c))*log(e^(2*I*d*x + 2*I*c) +
1) - 2*I*A + 2*B)/(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [A] time = 35.9561, size = 292, normalized size = 1.53

$$-\frac{2Be^{-2ic}}{a^3d\left(e^{2idx}+e^{-2ic}\right)}-\frac{\left(\begin{cases}15Axe^{6ic}-\frac{11iAe^{4ic}e^{-2idx}}{2d}+\frac{5iAe^{2ic}e^{-4idx}}{4d}-\frac{iAe^{-6idx}}{6d}+49iBxe^{6ic}+\frac{23Be^{4ic}e^{-2idx}}{2d}-\frac{7Be^{2ic}e^{-4idx}}{4d}+\frac{Be^{-6idx}}{6d} & \text{fo}\\ x\left(15Ae^{6ic}-11Ae^{4ic}+5Ae^{2ic}-A+49iBe^{6ic}-23iBe^{4ic}+7iBe^{2ic}-iB\right) & \text{ot}\end{cases}\right.}{8a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] -2*B*exp(-2*I*c)/(a**3*d*(exp(2*I*d*x) + exp(-2*I*c))) - Piecewise((15*A*x*
exp(6*I*c) - 11*I*A*exp(4*I*c)*exp(-2*I*d*x)/(2*d) + 5*I*A*exp(2*I*c)*exp(-
4*I*d*x)/(4*d) - I*A*exp(-6*I*d*x)/(6*d) + 49*I*B*x*exp(6*I*c) + 23*B*exp(4
*I*c)*exp(-2*I*d*x)/(2*d) - 7*B*exp(2*I*c)*exp(-4*I*d*x)/(4*d) + B*exp(-6*I
*d*x)/(6*d), Ne(d, 0)), (x*(15*A*exp(6*I*c) - 11*A*exp(4*I*c) + 5*A*exp(2*I
*c) - A + 49*I*B*exp(6*I*c) - 23*I*B*exp(4*I*c) + 7*I*B*exp(2*I*c) - I*B),
True))*exp(-6*I*c)/(8*a**3) + (-I*A + 3*B)*log(exp(2*I*d*x) + exp(-2*I*c))/
(a**3*d)
```

Giac [A] time = 2.37201, size = 194, normalized size = 1.02

$$\frac{\frac{6\,(iA+B)\log(\tan(dx+c)+i)}{a^3} - \frac{6\,(-15iA+49B)\log(i\tan(dx+c)+1)}{a^3} + \frac{96iB\tan(dx+c)}{a^3} - \frac{165iA\tan(dx+c)^3-539B\tan(dx+c)^3+291A\tan(dx+c)^2+1245iB}{a^3(\tan(dx}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
giac")
```

```
[Out] 1/96*(6*(I*A + B)*log(tan(d*x + c) + I)/a^3 - 6*(-15*I*A + 49*B)*log(I*tan(
d*x + c) + 1)/a^3 + 96*I*B*tan(d*x + c)/a^3 - (165*I*A*tan(d*x + c)^3 - 539
*B*tan(d*x + c)^3 + 291*A*tan(d*x + c)^2 + 1245*I*B*tan(d*x + c)^2 - 171*I*
A*tan(d*x + c) + 981*B*tan(d*x + c) - 29*A - 259*I*B)/(a^3*(tan(d*x + c) -
I)^3))/d
```

3.52 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=148

$$\frac{A+7iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{x(-7B+iA)}{8a^3}-\frac{iB\log(\cos(c+dx))}{a^3d}+\frac{(-B+iA)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3}+\frac{(A+3iB)\tan^2(c+dx)}{8ad(a+ia\tan(c+dx))^2}$$

```
[Out] ((I*A - 7*B)*x)/(8*a^3) - (I*B*Log[Cos[c + d*x]])/(a^3*d) + ((I*A - B)*Tan[
c + d*x]^3)/(6*d*(a + I*a*Tan[c + d*x])^3) + ((A + (3*I)*B)*Tan[c + d*x]^2)
/(8*a*d*(a + I*a*Tan[c + d*x])^2) + (A + (7*I)*B)/(8*d*(a^3 + I*a^3*Tan[c +
 d*x]))
```

Rubi [A] time = 0.368236, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {3595, 3589, 3475, 12, 3526, 8}

$$\frac{A+7iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{x(-7B+iA)}{8a^3}-\frac{iB\log(\cos(c+dx))}{a^3d}+\frac{(-B+iA)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3}+\frac{(A+3iB)\tan^2(c+dx)}{8ad(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] ((I*A - 7*B)*x)/(8*a^3) - (I*B*Log[Cos[c + d*x]])/(a^3*d) + ((I*A - B)*Tan[
c + d*x]^3)/(6*d*(a + I*a*Tan[c + d*x])^3) + ((A + (3*I)*B)*Tan[c + d*x]^2)
/(8*a*d*(a + I*a*Tan[c + d*x])^2) + (A + (7*I)*B)/(8*d*(a^3 + I*a^3*Tan[c +
 d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 12

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

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\tan^2(c+dx)(3a(iA-B)+6iaB\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+3iB)\tan^2(c+dx)}{8ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\tan(c+dx)\left(-6a^2(A+3iB)-24a\right.}{a+ia\tan(c+dx}}{24a^4}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+3iB)\tan^2(c+dx)}{8ad(a+ia\tan(c+dx))^2} - \frac{i\int -\frac{6a^3(iA-7B)\tan(c+dx)}{a+ia\tan(c+dx)}\,dx}{24a^5}$$

$$= -\frac{iB\log(\cos(c+dx))}{a^3d} + \frac{(iA-B)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+3iB)\tan^2(c+dx)}{8ad(a+ia\tan(c+dx))^2} -$$

$$= -\frac{iB\log(\cos(c+dx))}{a^3d} + \frac{(iA-B)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+3iB)\tan^2(c+dx)}{8ad(a+ia\tan(c+dx))^2} +$$

$$= \frac{(iA-7B)x}{8a^3} - \frac{iB\log(\cos(c+dx))}{a^3d} + \frac{(iA-B)\tan^3(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+3iB)\tan^2}{8ad(a+ia\tan(}$$

Mathematica [A] time = 1.20566, size = 178, normalized size = 1.2

$$\sec^3(c+dx)((-51B+9iA)\cos(c+dx) - 2\cos(3(c+dx))(6Adx - iA - 48B\log(\cos(c+dx)) + 42iBdx + B) - 27A\sin(c$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] (Sec[c + d*x]^3*(((9*I)*A - 51*B)*Cos[c + d*x] - 2*Cos[3*(c + d*x)]*((-I)*A
 + B + 6*A*d*x + (42*I)*B*d*x - 48*B*Log[Cos[c + d*x]]) - 27*A*Sin[c + d*x]
 - (81*I)*B*Sin[c + d*x] + 2*A*Sin[3*(c + d*x)] + (2*I)*B*Sin[3*(c + d*x)]
- (12*I)*A*d*x*Sin[3*(c + d*x)] + 84*B*d*x*Sin[3*(c + d*x)] + (96*I)*B*Log[
Cos[c + d*x]]*Sin[3*(c + d*x)]))/(96*a^3*d*(-I + Tan[c + d*x])^3)
```

Maple [A] time = 0.034, size = 203, normalized size = 1.4

$$\frac{\ln(\tan(dx+c)-i)A}{16a^3d} + \frac{\frac{15i}{16}\ln(\tan(dx+c)-i)B}{a^3d} + \frac{17B}{8a^3d(\tan(dx+c)-i)} - \frac{\frac{7i}{8}A}{a^3d(\tan(dx+c)-i)} + \frac{5A}{8a^3d(\tan(dx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 1/16/d/a^3*ln(tan(d*x+c)-I)*A+15/16*I/d/a^3*ln(tan(d*x+c)-I)*B+17/8/d/a^3/(
tan(d*x+c)-I)*B-7/8*I/d/a^3/(tan(d*x+c)-I)*A+5/8/d/a^3/(tan(d*x+c)-I)^2*A+7
/8*I/d/a^3/(tan(d*x+c)-I)^2*B+1/6*I/d/a^3/(tan(d*x+c)-I)^3*A-1/6/d/a^3/(tan
(d*x+c)-I)^3*B-1/16/d/a^3*A*ln(tan(d*x+c)+I)+1/16*I/d/a^3*B*ln(tan(d*x+c)+I
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.51358, size = 306, normalized size = 2.07

$$\frac{\left((12i\,A-180\,B)dxe^{(6i\,dx+6i\,c)}-96i\,Be^{(6i\,dx+6i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right)+6\,(3\,A+11i\,B)e^{(4i\,dx+4i\,c)}-3\,(3\,A+5i\,B)e^{(2i\,dx+2i\,c)}+\right.}{96\,a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
fricas")
```

```
[Out] 1/96*((12*I*A - 180*B)*d*x*e^(6*I*d*x + 6*I*c) - 96*I*B*e^(6*I*d*x + 6*I*c)
*log(e^(2*I*d*x + 2*I*c) + 1) + 6*(3*A + 11*I*B)*e^(4*I*d*x + 4*I*c) - 3*(3
*A + 5*I*B)*e^(2*I*d*x + 2*I*c) + 2*A + 2*I*B)*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [A] time = 13.8499, size = 253, normalized size = 1.71

$$-\frac{iB\log\left(e^{2idx}+e^{-2ic}\right)}{a^3d}+\frac{\left(\begin{cases}iAxe^{6ic}+\frac{3Ae^{4ic}e^{-2idx}}{2d}-\frac{3Ae^{2ic}e^{-4idx}}{4d}+\frac{Ae^{-6idx}}{6d}-15Bxe^{6ic}+\frac{11iBe^{4ic}e^{-2idx}}{2d}-\frac{5iBe^{2ic}e^{-4idx}}{4d}+\frac{iBe^{-6idx}}{6d} & \text{fo}\\ x\left(iAe^{6ic}-3iAe^{4ic}+3iAe^{2ic}-iA-15Be^{6ic}+11Be^{4ic}-5Be^{2ic}+B\right) & \text{ot}\end{cases}\right.}{8a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] -I*B*log(exp(2*I*d*x) + exp(-2*I*c))/(a**3*d) + Piecewise((I*A*x*exp(6*I*c)
 + 3*A*exp(4*I*c)*exp(-2*I*d*x)/(2*d) - 3*A*exp(2*I*c)*exp(-4*I*d*x)/(4*d)
+ A*exp(-6*I*d*x)/(6*d) - 15*B*x*exp(6*I*c) + 11*I*B*exp(4*I*c)*exp(-2*I*d*
x)/(2*d) - 5*I*B*exp(2*I*c)*exp(-4*I*d*x)/(4*d) + I*B*exp(-6*I*d*x)/(6*d),
Ne(d, 0)), (x*(I*A*exp(6*I*c) - 3*I*A*exp(4*I*c) + 3*I*A*exp(2*I*c) - I*A -
 15*B*exp(6*I*c) + 11*B*exp(4*I*c) - 5*B*exp(2*I*c) + B), True))*exp(-6*I*c
)/(8*a**3)
```

Giac [A] time = 1.95469, size = 176, normalized size = 1.19

$$\frac{\frac{6\,(A+15i\,B)\log(\tan(dx+c)-i)}{a^3}-\frac{6\,(A-i\,B)\log(-i\,\tan(dx+c)+1)}{a^3}-\frac{11\,A\tan(dx+c)^3+165i\,B\tan(dx+c)^3+51i\,A\tan(dx+c)^2+291\,B\tan(dx+c)^2+75\,A\tan(dx+c)}{a^3(\tan(dx+c)-i)^3}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
giac")
```

```
[Out] 1/96*(6*(A + 15*I*B)*log(tan(d*x + c) - I)/a^3 - 6*(A - I*B)*log(-I*tan(d*x
 + c) + 1)/a^3 - (11*A*tan(d*x + c)^3 + 165*I*B*tan(d*x + c)^3 + 51*I*A*tan
(d*x + c)^2 + 291*B*tan(d*x + c)^2 + 75*A*tan(d*x + c) - 171*I*B*tan(d*x +
c) - 29*I*A - 29*B)/(a^3*(tan(d*x + c) - I)^3))/d
```

3.53 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=124

$$\frac{17B+iA}{24d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(A-iB)}{8a^3}+\frac{(-B+iA)\tan^2(c+dx)}{6d(a+ia\tan(c+dx))^3}+\frac{-7B+iA}{24ad(a+ia\tan(c+dx))^2}$$

```
[Out] -((A - I*B)*x)/(8*a^3) + ((I*A - B)*Tan[c + d*x]^2)/(6*d*(a + I*a*Tan[c + d
*x])^3) + (I*A - 7*B)/(24*a*d*(a + I*a*Tan[c + d*x])^2) + (I*A + 17*B)/(24*
d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.288754, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3595, 3590, 3526, 8}

$$\frac{17B+iA}{24d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(A-iB)}{8a^3}+\frac{(-B+iA)\tan^2(c+dx)}{6d(a+ia\tan(c+dx))^3}+\frac{-7B+iA}{24ad(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] -((A - I*B)*x)/(8*a^3) + ((I*A - B)*Tan[c + d*x]^2)/(6*d*(a + I*a*Tan[c + d
*x])^3) + (I*A - 7*B)/(24*a*d*(a + I*a*Tan[c + d*x])^2) + (I*A + 17*B)/(24*
d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
```

```
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx &= \frac{(iA-B)\tan^2(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\tan(c+dx)(2a(iA-B)-a(A-5iB)\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}\\ &= \frac{(iA-B)\tan^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iA-7B}{24ad(a+ia\tan(c+dx))^2} + \frac{i\int \frac{a^2(iA-7B)-2a^2(A-5iB)\,\mathrm{ta}}{a+ia\tan(c+dx)}}{12a^4}\\ &= \frac{(iA-B)\tan^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iA-7B}{24ad(a+ia\tan(c+dx))^2} + \frac{iA+17B}{24d\left(a^3+ia^3\tan(c+d\right.}\\ &= -\frac{(A-iB)x}{8a^3} + \frac{(iA-B)\tan^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iA-7B}{24ad(a+ia\tan(c+dx))^2} + \frac{}{24d\left(a^3\right.}\end{aligned}$$

Mathematica [A] time = 1.07636, size = 147, normalized size = 1.19

$$\frac{\sec^3(c+dx)(-9(A-iB)\cos(c+dx)+2(-6iAdx+A-6Bdx+iB)\cos(3(c+dx))-3iA\sin(c+dx)-2iA\sin(3(c+dx))}{96a^3d(\tan(c+dx)-i)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] (Sec[c + d*x]^3*(-9*(A - I*B)*Cos[c + d*x] + 2*(A + I*B - (6*I)*A*d*x - 6*B
*d*x)*Cos[3*(c + d*x)] - (3*I)*A*Sin[c + d*x] - 27*B*Sin[c + d*x] - (2*I)*A
```

```
*Sin[3*(c + d*x)] + 2*B*Sin[3*(c + d*x)] + 12*A*d*x*Sin[3*(c + d*x)] - (12*
I)*B*d*x*Sin[3*(c + d*x)]))/(96*a^3*d*(-I + Tan[c + d*x])^3)
```

Maple [A] time = 0.034, size = 203, normalized size = 1.6

$$\frac{A}{6\,a^3d\,(\tan(dx+c)-i)^3}+\frac{\frac{i}{6}B}{a^3d\,(\tan(dx+c)-i)^3}-\frac{A}{8\,a^3d\,(\tan(dx+c)-i)}-\frac{\frac{7i}{8}B}{a^3d\,(\tan(dx+c)-i)}+\frac{\frac{i}{16}\ln(\tan(dx+c}{a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 1/6/d/a^3/(tan(d*x+c)-I)^3*A+1/6*I/d/a^3/(tan(d*x+c)-I)^3*B-1/8/d/a^3/(tan(
d*x+c)-I)*A-7/8*I/d/a^3/(tan(d*x+c)-I)*B+1/16*I/d/a^3*ln(tan(d*x+c)-I)*A+1/
16/d/a^3*ln(tan(d*x+c)-I)*B-3/8*I/d/a^3/(tan(d*x+c)-I)^2*A+5/8/d/a^3/(tan(d
*x+c)-I)^2*B-1/16/d/a^3*B*ln(tan(d*x+c)+I)-1/16*I/d/a^3*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.38038, size = 219, normalized size = 1.77

$$-\frac{\left(12\,(A-i\,B)dxe^{(6i\,dx+6i\,c)}-(6i\,A+18\,B)e^{(4i\,dx+4i\,c)}-(3i\,A-9\,B)e^{(2i\,dx+2i\,c)}+2i\,A-2\,B\right)e^{(-6i\,dx-6i\,c)}}{96\,a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
fricas")
```

```
[Out] -1/96*(12*(A - I*B)*d*x*e^(6*I*d*x + 6*I*c) - (6*I*A + 18*B)*e^(4*I*d*x + 4
*I*c) - (3*I*A - 9*B)*e^(2*I*d*x + 2*I*c) + 2*I*A - 2*B)*e^(-6*I*d*x - 6*I*
c)/(a^3*d)
```

Sympy [A] time = 5.45332, size = 260, normalized size = 2.1

$$\begin{cases} \frac{\left(\left(-512iAa^6d^2e^{6ic}+512Ba^6d^2e^{6ic}\right)e^{-6idx}+\left(768iAa^6d^2e^{8ic}-2304Ba^6d^2e^{8ic}\right)e^{-4idx}+\left(1536iAa^6d^2e^{10ic}+4608Ba^6d^2e^{10ic}\right)e^{-2idx}\right)e^{-12ic}}{24576a^9d^3} & \text{for } 24576a^9d^3e^{12ic} \neq \\ x\left(\frac{A-iB}{8a^3}-\frac{\left(Ae^{6ic}-Ae^{4ic}-Ae^{2ic}+A-iBe^{6ic}+3iBe^{4ic}-3iBe^{2ic}+iB\right)e^{-6ic}}{8a^3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Piecewise((((-512*I*A*a**6*d**2*exp(6*I*c) + 512*B*a**6*d**2*exp(6*I*c))*ex
p(-6*I*d*x) + (768*I*A*a**6*d**2*exp(8*I*c) - 2304*B*a**6*d**2*exp(8*I*c))*
exp(-4*I*d*x) + (1536*I*A*a**6*d**2*exp(10*I*c) + 4608*B*a**6*d**2*exp(10*I
*c))*exp(-2*I*d*x))*exp(-12*I*c)/(24576*a**9*d**3), Ne(24576*a**9*d**3*exp(
12*I*c), 0)), (x*((A - I*B)/(8*a**3) - (A*exp(6*I*c) - A*exp(4*I*c) - A*exp
(2*I*c) + A - I*B*exp(6*I*c) + 3*I*B*exp(4*I*c) - 3*I*B*exp(2*I*c) + I*B)*e
xp(-6*I*c)/(8*a**3)), True)) + x*(-A + I*B)/(8*a**3)
```

Giac [A] time = 1.58729, size = 177, normalized size = 1.43

$$-\frac{\frac{6\,(-i\,A-B)\log(\tan(dx+c)-i)}{a^3}+\frac{6\,(i\,A+B)\log(i\,\tan(dx+c)-1)}{a^3}+\frac{11i\,A\tan(dx+c)^3+11\,B\tan(dx+c)^3+45\,A\tan(dx+c)^2+51i\,B\tan(dx+c)^2-21i\,A\tan(dx+c)+}{a^3(\tan(dx+c)-i)^3}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
giac")
```

```
[Out] -1/96*(6*(-I*A - B)*log(tan(d*x + c) - I)/a^3 + 6*(I*A + B)*log(I*tan(d*x +
 c) - 1)/a^3 + (11*I*A*tan(d*x + c)^3 + 11*B*tan(d*x + c)^3 + 45*A*tan(d*x
+ c)^2 + 51*I*B*tan(d*x + c)^2 - 21*I*A*tan(d*x + c) + 75*B*tan(d*x + c) -
3*A - 29*I*B)/(a^3*(tan(d*x + c) - I)^3))/d
```

3.54 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=110

$$\frac{A-iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(B+iA)}{8a^3}+\frac{A+3iB}{8ad(a+ia\tan(c+dx))^2}-\frac{A+iB}{6d(a+ia\tan(c+dx))^3}$$

```
[Out] -((I*A + B)*x)/(8*a^3) - (A + I*B)/(6*d*(a + I*a*Tan[c + d*x])^3) + (A + (3
*I)*B)/(8*a*d*(a + I*a*Tan[c + d*x])^2) + (A - I*B)/(8*d*(a^3 + I*a^3*Tan[c
 + d*x]))
```

Rubi [A] time = 0.164954, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3590, 3526, 3479, 8}

$$\frac{A-iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(B+iA)}{8a^3}+\frac{A+3iB}{8ad(a+ia\tan(c+dx))^2}-\frac{A+iB}{6d(a+ia\tan(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] -((I*A + B)*x)/(8*a^3) - (A + I*B)/(6*d*(a + I*a*Tan[c + d*x])^3) + (A + (3
*I)*B)/(8*a*d*(a + I*a*Tan[c + d*x])^2) + (A - I*B)/(8*d*(a^3 + I*a^3*Tan[c
 + d*x]))
```


Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
```

```
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = -\frac{A+iB}{6d(a+ia\tan(c+dx))^3} - \frac{i\int \frac{a(A+iB)+2aB\tan(c+dx)}{(a+ia\tan(c+dx))^2}\,dx}{2a^2}$$

$$= -\frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{A+3iB}{8ad(a+ia\tan(c+dx))^2} - \frac{(iA+B)\int \frac{1}{a+ia\tan(c+dx)}}{4a^2}$$

$$= -\frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{A+3iB}{8ad(a+ia\tan(c+dx))^2} + \frac{A-iB}{8d\left(a^3+ia^3\tan(c+dx)\right.}$$

$$= -\frac{(iA+B)x}{8a^3} - \frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{A+3iB}{8ad(a+ia\tan(c+dx))^2} + \frac{A}{8d\left(a^3+ia\right.}$$

Mathematica [A] time = 1.30899, size = 148, normalized size = 1.35

$$\frac{(\cos(3(c+dx))-i\sin(3(c+dx)))(3(A+3iB)\cos(c+dx)-2(6iAdx+A+B(6dx+i))\cos(3(c+dx))+9iA\sin(c+dx)}{96a^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] ((Cos[3*(c + d*x)] - I*Sin[3*(c + d*x)])*(3*(A + (3*I)*B)*Cos[c + d*x] - 2*
(A + (6*I)*A*d*x + B*(I + 6*d*x))*Cos[3*(c + d*x)] + (9*I)*A*Sin[c + d*x] -
 3*B*Sin[c + d*x] + (2*I)*A*Sin[3*(c + d*x)] - 2*B*Sin[3*(c + d*x)] + 12*A*
d*x*Sin[3*(c + d*x)] - (12*I)*B*d*x*Sin[3*(c + d*x)]))/(96*a^3*d)
```

Maple [B] time = 0.031, size = 203, normalized size = 1.9

$$\frac{-\frac{i}{6}A}{a^{3}d\left(\tan\left(dx+c\right)-i\right)^{3}}+\frac{B}{6\,a^{3}d\left(\tan\left(dx+c\right)-i\right)^{3}}-\frac{\ln\left(\tan\left(dx+c\right)-i\right)A}{16\,a^{3}d}+\frac{\frac{i}{16}\ln\left(\tan\left(dx+c\right)-i\right)B}{a^{3}d}-\frac{A}{8\,a^{3}d\left(\tan\left(dx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -1/6*I/d/a^3/(tan(d*x+c)-I)^3*A+1/6/d/a^3/(tan(d*x+c)-I)^3*B-1/16/d/a^3*ln(
tan(d*x+c)-I)*A+1/16*I/d/a^3*ln(tan(d*x+c)-I)*B-1/8/d/a^3/(tan(d*x+c)-I)^2*
A-3/8*I/d/a^3/(tan(d*x+c)-I)^2*B-1/8*I/d/a^3/(tan(d*x+c)-I)*A-1/8/d/a^3/(ta
n(d*x+c)-I)*B+1/16/d/a^3*A*ln(tan(d*x+c)+I)-1/16*I/d/a^3*B*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.44393, size = 216, normalized size = 1.96

$$\frac{\left((-12i\,A-12\,B)dxe^{(6i\,dx+6i\,c)}+6\,(A+i\,B)e^{(4i\,dx+4i\,c)}-3\,(A-i\,B)e^{(2i\,dx+2i\,c)}-2\,A-2i\,B\right)e^{(-6i\,dx-6i\,c)}}{96\,a^{3}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] 1/96*((-12*I*A - 12*B)*d*x*e^(6*I*d*x + 6*I*c) + 6*(A + I*B)*e^(4*I*d*x + 4
*I*c) - 3*(A - I*B)*e^(2*I*d*x + 2*I*c) - 2*A - 2*I*B)*e^(-6*I*d*x - 6*I*c)
/(a^3*d)
```

Sympy [A] time = 4.55575, size = 260, normalized size = 2.36

$$\begin{cases} \frac{\left(\left(-512Aa^6d^2e^{6ic}-512iBa^6d^2e^{6ic}\right)e^{-6idx}+\left(-768Aa^6d^2e^{8ic}+768iBa^6d^2e^{8ic}\right)e^{-4idx}+\left(1536Aa^6d^2e^{10ic}+1536iBa^6d^2e^{10ic}\right)e^{-2idx}\right)e^{-12ic}}{24576a^9d^3} & \text{for } 24576a^9d^3e^{12ic} \neq \\ x\left(\frac{iA+B}{8a^3}-\frac{\left(iAe^{6ic}+iAe^{4ic}-iAe^{2ic}-iA+Be^{6ic}-Be^{4ic}-Be^{2ic}+B\right)e^{-6ic}}{8a^3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Piecewise((((-512*A*a**6*d**2*exp(6*I*c) - 512*I*B*a**6*d**2*exp(6*I*c))*ex
p(-6*I*d*x) + (-768*A*a**6*d**2*exp(8*I*c) + 768*I*B*a**6*d**2*exp(8*I*c))*
exp(-4*I*d*x) + (1536*A*a**6*d**2*exp(10*I*c) + 1536*I*B*a**6*d**2*exp(10*I
*c))*exp(-2*I*d*x))*exp(-12*I*c)/(24576*a**9*d**3), Ne(24576*a**9*d**3*exp(
12*I*c), 0)), (x*((I*A + B)/(8*a**3) - (I*A*exp(6*I*c) + I*A*exp(4*I*c) - I
*A*exp(2*I*c) - I*A + B*exp(6*I*c) - B*exp(4*I*c) - B*exp(2*I*c) + B)*exp(-
6*I*c)/(8*a**3)), True)) + x*(-I*A - B)/(8*a**3)
```

Giac [A] time = 1.38145, size = 176, normalized size = 1.6

$$-\frac{\frac{6\,(A-i\,B)\log(\tan(dx+c)-i)}{a^3}-\frac{6\,(A-i\,B)\log(i\,\tan(dx+c)-1)}{a^3}-\frac{11\,A\tan(dx+c)^3-11i\,B\tan(dx+c)^3-45i\,A\tan(dx+c)^2-45\,B\tan(dx+c)^2-69\,A\tan(dx+c)+21i}{a^3(\tan(dx+c)-i)^3}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] -1/96*(6*(A - I*B)*log(tan(d*x + c) - I)/a^3 - 6*(A - I*B)*log(I*tan(d*x +
c) - 1)/a^3 - (11*A*tan(d*x + c)^3 - 11*I*B*tan(d*x + c)^3 - 45*I*A*tan(d*x
 + c)^2 - 45*B*tan(d*x + c)^2 - 69*A*tan(d*x + c) + 21*I*B*tan(d*x + c) + 1
9*I*A + 3*B)/(a^3*(tan(d*x + c) - I)^3))/d
```

3.55 $\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=112

$$\frac{B+iA}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{x(A-iB)}{8a^3}+\frac{-B+iA}{6d(a+ia\tan(c+dx))^3}+\frac{B+iA}{8ad(a+ia\tan(c+dx))^2}$$

```
[Out] ((A - I*B)*x)/(8*a^3) + (I*A - B)/(6*d*(a + I*a*Tan[c + d*x])^3) + (I*A + B
)/(8*a*d*(a + I*a*Tan[c + d*x])^2) + (I*A + B)/(8*d*(a^3 + I*a^3*Tan[c + d*
x]))
```

Rubi [A] time = 0.0836763, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3526, 3479, 8}

$$\frac{B+iA}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{x(A-iB)}{8a^3}+\frac{-B+iA}{6d(a+ia\tan(c+dx))^3}+\frac{B+iA}{8ad(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] ((A - I*B)*x)/(8*a^3) + (I*A - B)/(6*d*(a + I*a*Tan[c + d*x])^3) + (I*A + B
)/(8*a*d*(a + I*a*Tan[c + d*x])^2) + (I*A + B)/(8*d*(a^3 + I*a^3*Tan[c + d*
x]))
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^3}\,dx = \frac{iA-B}{6d(a+ia\tan(c+dx))^3}+\frac{(A-iB)\int \frac{1}{(a+ia\tan(c+dx))^2}\,dx}{2a}$$
$$= \frac{iA-B}{6d(a+ia\tan(c+dx))^3}+\frac{iA+B}{8ad(a+ia\tan(c+dx))^2}+\frac{(A-iB)\int \frac{1}{a+ia\tan(c+dx)}\,dx}{4a^2}$$
$$= \frac{iA-B}{6d(a+ia\tan(c+dx))^3}+\frac{iA+B}{8ad(a+ia\tan(c+dx))^2}+\frac{iA+B}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{(A-iB)}{8a}$$
$$= \frac{(A-iB)x}{8a^3}+\frac{iA-B}{6d(a+ia\tan(c+dx))^3}+\frac{iA+B}{8ad(a+ia\tan(c+dx))^2}+\frac{iA+B}{8d\left(a^3+ia^3\tan(c+dx\right)}$$

Mathematica [A] time = 0.77543, size = 150, normalized size = 1.34

$$\frac{\sec^3(c+dx)((-27A+3iB)\cos(c+dx)+2(6iAdx-A+6Bdx-iB)\cos(3(c+dx))-9iA\sin(c+dx)+2iA\sin(3(c+dx)}{96a^3d(\tan(c+dx)-i)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] (Sec[c + d*x]^3*((-27*A + (3*I)*B)*Cos[c + d*x] + 2*(-A - I*B + (6*I)*A*d*x
 + 6*B*d*x)*Cos[3*(c + d*x)] - (9*I)*A*Sin[c + d*x] - 9*B*Sin[c + d*x] + (2
*I)*A*Sin[3*(c + d*x)] - 2*B*Sin[3*(c + d*x)] - 12*A*d*x*Sin[3*(c + d*x)] +
 (12*I)*B*d*x*Sin[3*(c + d*x)]))/(96*a^3*d*(-I + Tan[c + d*x])^3)
```

Maple [B] time = 0.03, size = 203, normalized size = 1.8

$$-\frac{A}{6\,a^3d\,(\tan(dx+c)-i)^3}-\frac{\frac{i}{6}B}{a^3d\,(\tan(dx+c)-i)^3}-\frac{\frac{i}{16}\ln(\tan(dx+c)-i)\,A}{a^3d}-\frac{\ln(\tan(dx+c)-i)\,B}{16\,a^3d}-\frac{\frac{i}{8}A}{a^3d\,(\tan(dx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -1/6/d/a^3/(tan(d*x+c)-I)^3*A-1/6*I/d/a^3/(tan(d*x+c)-I)^3*B-1/16*I/d/a^3*l
n(tan(d*x+c)-I)*A-1/16/d/a^3*ln(tan(d*x+c)-I)*B-1/8*I/d/a^3/(tan(d*x+c)-I)^
2*A-1/8/d/a^3/(tan(d*x+c)-I)^2*B+1/8/d/a^3/(tan(d*x+c)-I)*A-1/8*I/d/a^3/(ta
n(d*x+c)-I)*B+1/16/d/a^3*B*ln(tan(d*x+c)+I)+1/16*I/d/a^3*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.39536, size = 217, normalized size = 1.94

$$\frac{\left(12\,(A-i\,B)dxe^{(6i\,dx+6i\,c)}+(18i\,A+6\,B)e^{(4i\,dx+4i\,c)}+(9i\,A-3\,B)e^{(2i\,dx+2i\,c)}+2i\,A-2\,B\right)e^{(-6i\,dx-6i\,c)}}{96\,a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/96*(12*(A - I*B)*d*x*e^(6*I*d*x + 6*I*c) + (18*I*A + 6*B)*e^(4*I*d*x + 4*
I*c) + (9*I*A - 3*B)*e^(2*I*d*x + 2*I*c) + 2*I*A - 2*B)*e^(-6*I*d*x - 6*I*c
)/(a^3*d)
```

Sympy [A] time = 4.2097, size = 260, normalized size = 2.32

$$\begin{cases}\frac{\left(\left(512iAa^6d^2e^{6ic}-512Ba^6d^2e^{6ic}\right)e^{-6idx}+\left(2304iAa^6d^2e^{8ic}-768Ba^6d^2e^{8ic}\right)e^{-4idx}+\left(4608iAa^6d^2e^{10ic}+1536Ba^6d^2e^{10ic}\right)e^{-2idx}\right)e^{-12ic}}{24576a^9d^3} & \text{for } 24576a^9d^3e^{12ic} \neq \\ x\left(-\frac{A-iB}{8a^3}+\frac{\left(Ae^{6ic}+3Ae^{4ic}+3Ae^{2ic}+A-iBe^{6ic}-iBe^{4ic}+iBe^{2ic}+iB\right)e^{-6ic}}{8a^3}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Piecewise((((512*I*A*a**6*d**2*exp(6*I*c) - 512*B*a**6*d**2*exp(6*I*c))*exp
(-6*I*d*x) + (2304*I*A*a**6*d**2*exp(8*I*c) - 768*B*a**6*d**2*exp(8*I*c))*e
xp(-4*I*d*x) + (4608*I*A*a**6*d**2*exp(10*I*c) + 1536*B*a**6*d**2*exp(10*I*
c))*exp(-2*I*d*x))*exp(-12*I*c)/(24576*a**9*d**3), Ne(24576*a**9*d**3*exp(1
2*I*c), 0)), (x*(-(A - I*B)/(8*a**3) + (A*exp(6*I*c) + 3*A*exp(4*I*c) + 3*A
*exp(2*I*c) + A - I*B*exp(6*I*c) - I*B*exp(4*I*c) + I*B*exp(2*I*c) + I*B)*e
xp(-6*I*c)/(8*a**3)), True)) + x*(A - I*B)/(8*a**3)
```

Giac [A] time = 1.4069, size = 177, normalized size = 1.58

$$-\frac{\frac{6\,(i\,A+B)\log(\tan(dx+c)-i)}{a^3}+\frac{6\,(-i\,A-B)\log(i\,\tan(dx+c)-1)}{a^3}+\frac{-11i\,A\tan(dx+c)^3-11\,B\tan(dx+c)^3-45\,A\tan(dx+c)^2+45i\,B\tan(dx+c)^2+69i\,A\tan(dx+c)}{a^3(\tan(dx+c)-i)^3}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="giac")
```

```
[Out] -1/96*(6*(I*A + B)*log(tan(d*x + c) - I)/a^3 + 6*(-I*A - B)*log(I*tan(d*x +
 c) - 1)/a^3 + (-11*I*A*tan(d*x + c)^3 - 11*B*tan(d*x + c)^3 - 45*A*tan(d*x
 + c)^2 + 45*I*B*tan(d*x + c)^2 + 69*I*A*tan(d*x + c) + 69*B*tan(d*x + c) +
 51*A - 19*I*B)/(a^3*(tan(d*x + c) - I)^3))/d
```

3.56 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=131

$$\frac{7A+iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(-B+7iA)}{8a^3}+\frac{A\log(\sin(c+dx))}{a^3d}+\frac{A+iB}{6d(a+ia\tan(c+dx))^3}+\frac{3A+iB}{8ad(a+ia\tan(c+dx))^2}$$

```
[Out] -((((7*I)*A - B)*x)/(8*a^3) + (A*Log[Sin[c + d*x]])/(a^3*d) + (A + I*B)/(6*d
*(a + I*a*Tan[c + d*x])^3) + (3*A + I*B)/(8*a*d*(a + I*a*Tan[c + d*x])^2) +
 (7*A + I*B)/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.360603, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3596, 3531, 3475}

$$\frac{7A+iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(-B+7iA)}{8a^3}+\frac{A\log(\sin(c+dx))}{a^3d}+\frac{A+iB}{6d(a+ia\tan(c+dx))^3}+\frac{3A+iB}{8ad(a+ia\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] -((((7*I)*A - B)*x)/(8*a^3) + (A*Log[Sin[c + d*x]])/(a^3*d) + (A + I*B)/(6*d
*(a + I*a*Tan[c + d*x])^3) + (3*A + I*B)/(8*a*d*(a + I*a*Tan[c + d*x])^2) +
 (7*A + I*B)/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
```

```
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{\int \frac{\cot(c+dx)(6aA-3a(iA-B)\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{3A+iB}{8ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\cot(c+dx)\left(24a^2A-6a^2(3iA-B)\right.}{a+ia\tan(c+dx)}}{24a^4}$$

$$= \frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{3A+iB}{8ad(a+ia\tan(c+dx))^2} + \frac{7A+iB}{8d\left(a^3+ia^3\tan(c+dx)\right)}$$

$$= -\frac{(7iA-B)x}{8a^3} + \frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{3A+iB}{8ad(a+ia\tan(c+dx))^2} + \frac{7}{8d\left(a^3+i\right.}$$

$$= -\frac{(7iA-B)x}{8a^3} + \frac{A\log(\sin(c+dx))}{a^3d} + \frac{A+iB}{6d(a+ia\tan(c+dx))^3} + \frac{3A+iB}{8ad(a+ia\tan(}$$

Mathematica [A] time = 1.06443, size = 180, normalized size = 1.37

$$\frac{\sec^3(c+dx)((-27B+81iA)\cos(c+dx)+2\cos(3(c+dx))(48iA\log(\sin(c+dx))+42Adx+iA+6iBdx-B)-51A\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] (Sec[c + d*x]^3*(((81*I)*A - 27*B)*Cos[c + d*x] + 2*Cos[3*(c + d*x)]*(I*A -
 B + 42*A*d*x + (6*I)*B*d*x + (48*I)*A*Log[Sin[c + d*x]]) - 51*A*Sin[c + d*
x] - (9*I)*B*Sin[c + d*x] + 2*A*Sin[3*(c + d*x)] + (2*I)*B*Sin[3*(c + d*x)]
 + (84*I)*A*d*x*Sin[3*(c + d*x)] - 12*B*d*x*Sin[3*(c + d*x)] - 96*A*Log[Sin
[c + d*x]]*Sin[3*(c + d*x)]))/(96*a^3*d*(-I + Tan[c + d*x])^3)
```

Maple [A] time = 0.125, size = 218, normalized size = 1.7

$$-\frac{3A}{8a^3d(\tan(dx+c)-i)^2}-\frac{\frac{i}{8}B}{a^3d(\tan(dx+c)-i)^2}-\frac{\frac{7i}{8}A}{a^3d(\tan(dx+c)-i)}+\frac{B}{8a^3d(\tan(dx+c)-i)}-\frac{\frac{i}{16}\ln(\tan(dx+}{a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -3/8/d/a^3/(tan(d*x+c)-I)^2*A-1/8*I/d/a^3/(tan(d*x+c)-I)^2*B-7/8*I/d/a^3/(t
an(d*x+c)-I)*A+1/8/d/a^3/(tan(d*x+c)-I)*B-1/16*I/d/a^3*ln(tan(d*x+c)-I)*B-1
5/16/d/a^3*ln(tan(d*x+c)-I)*A+1/6*I/d/a^3/(tan(d*x+c)-I)^3*A-1/6/d/a^3/(tan
(d*x+c)-I)^3*B-1/16/d/a^3*A*ln(tan(d*x+c)+I)+1/16*I/d/a^3*B*ln(tan(d*x+c)+I
)+1/d/a^3*A*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.48293, size = 305, normalized size = 2.33

$$\frac{\left((-180iA+12B)dxe^{(6idx+6ic)}+96Ae^{(6idx+6ic)}\log\left(e^{(2idx+2ic)}-1\right)+6(11A+3iB)e^{(4idx+4ic)}+3(5A+3iB)e^{(2idx+2ic)}\right.}{96a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] 1/96*((-180*I*A + 12*B)*d*x*e^(6*I*d*x + 6*I*c) + 96*A*e^(6*I*d*x + 6*I*c)*
log(e^(2*I*d*x + 2*I*c) - 1) + 6*(11*A + 3*I*B)*e^(4*I*d*x + 4*I*c) + 3*(5*
```

```
A + 3*I*B)*e^(2*I*d*x + 2*I*c) + 2*A + 2*I*B)*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [A] time = 11.2294, size = 294, normalized size = 2.24

$$\frac{A\log\left(e^{2idx}-e^{-2ic}\right)}{a^3d}+\begin{cases}\frac{\left(\left(512Aa^6d^2e^{6ic}+512iBa^6d^2e^{6ic}\right)e^{-6idx}+\left(3840Aa^6d^2e^{8ic}+2304iBa^6d^2e^{8ic}\right)e^{-4idx}+\left(16896Aa^6d^2e^{10ic}+4608iBa^6d^2e^{10ic}\right)e^{-2idx}\right)e^{-12ic}}{24576a^9d^3} \\ x\left(\frac{15iA-B}{8a^3}-\frac{\left(15iAe^{6ic}+11iAe^{4ic}+5iAe^{2ic}+iA-Be^{6ic}-3Be^{4ic}-3Be^{2ic}-B\right)e^{-6ic}}{8a^3}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] A*log(exp(2*I*d*x) - exp(-2*I*c))/(a**3*d) + Piecewise((((512*A*a**6*d**2*e
xp(6*I*c) + 512*I*B*a**6*d**2*exp(6*I*c))*exp(-6*I*d*x) + (3840*A*a**6*d**2
*exp(8*I*c) + 2304*I*B*a**6*d**2*exp(8*I*c))*exp(-4*I*d*x) + (16896*A*a**6*
d**2*exp(10*I*c) + 4608*I*B*a**6*d**2*exp(10*I*c))*exp(-2*I*d*x))*exp(-12*I
*c)/(24576*a**9*d**3), Ne(24576*a**9*d**3*exp(12*I*c), 0)), (x*((15*I*A - B
)/(8*a**3) - (15*I*A*exp(6*I*c) + 11*I*A*exp(4*I*c) + 5*I*A*exp(2*I*c) + I*
A - B*exp(6*I*c) - 3*B*exp(4*I*c) - 3*B*exp(2*I*c) - B)*exp(-6*I*c)/(8*a**3
)), True)) + x*(-15*I*A + B)/(8*a**3)
```

Giac [A] time = 1.39853, size = 197, normalized size = 1.5

$$-\frac{\frac{6\,(15\,A+i\,B)\log(\tan(dx+c)-i)}{a^3}+\frac{6\,(A-i\,B)\log(i\,\tan(dx+c)-1)}{a^3}-\frac{96\,A\log(|\tan(dx+c)|)}{a^3}-\frac{165\,A\tan(dx+c)^3+11i\,B\tan(dx+c)^3-579i\,A\tan(dx+c)^2+45\,B\tan}{a^3(\tan(dx+}}{96\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] -1/96*(6*(15*A + I*B)*log(tan(d*x + c) - I)/a^3 + 6*(A - I*B)*log(I*tan(d*x
 + c) - 1)/a^3 - 96*A*log(abs(tan(d*x + c)))/a^3 - (165*A*tan(d*x + c)^3 +
11*I*B*tan(d*x + c)^3 - 579*I*A*tan(d*x + c)^2 + 45*B*tan(d*x + c)^2 - 699*
A*tan(d*x + c) - 69*I*B*tan(d*x + c) + 301*I*A - 51*B)/(a^3*(tan(d*x + c) -
 I)^3))/d
```

3.57 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=183

$$-\frac{(25A+7iB)\cot(c+dx)}{8a^3d}-\frac{(-B+3iA)\log(\sin(c+dx))}{a^3d}+\frac{(3A+iB)\cot(c+dx)}{2d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(25A+7iB)}{8a^3}+\frac{(11A+5iB)\,c}{24ad(a+ia\,\mathrm{ta}}$$

```
[Out] -((25*A + (7*I)*B)*x)/(8*a^3) - ((25*A + (7*I)*B)*Cot[c + d*x])/(8*a^3*d) -
 (((3*I)*A - B)*Log[Sin[c + d*x]])/(a^3*d) + ((A + I*B)*Cot[c + d*x])/(6*d*
(a + I*a*Tan[c + d*x])^3) + ((11*A + (5*I)*B)*Cot[c + d*x])/(24*a*d*(a + I*
a*Tan[c + d*x])^2) + ((3*A + I*B)*Cot[c + d*x])/(2*d*(a^3 + I*a^3*Tan[c + d
*x]))
```

Rubi [A] time = 0.529629, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(25A+7iB)\cot(c+dx)}{8a^3d}-\frac{(-B+3iA)\log(\sin(c+dx))}{a^3d}+\frac{(3A+iB)\cot(c+dx)}{2d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{x(25A+7iB)}{8a^3}+\frac{(11A+5iB)\,c}{24ad(a+ia\,\mathrm{ta}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] -((25*A + (7*I)*B)*x)/(8*a^3) - ((25*A + (7*I)*B)*Cot[c + d*x])/(8*a^3*d) -
 (((3*I)*A - B)*Log[Sin[c + d*x]])/(a^3*d) + ((A + I*B)*Cot[c + d*x])/(6*d*
(a + I*a*Tan[c + d*x])^3) + ((11*A + (5*I)*B)*Cot[c + d*x])/(24*a*d*(a + I*
a*Tan[c + d*x])^2) + ((3*A + I*B)*Cot[c + d*x])/(2*d*(a^3 + I*a^3*Tan[c + d
*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(A+iB)\cot(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{\int \frac{\cot^2(c+dx)(a(7A+iB)-4a(iA-B)\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(A+iB)\cot(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(11A+5iB)\cot(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\cot^2(c+dx)\left(3a^2(13A+3iB)- \right.}{a+ia\tan} }{24}$$

$$= \frac{(A+iB)\cot(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(11A+5iB)\cot(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{(3A+iB)\cot(c+dx)}{2d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= -\frac{(25A+7iB)\cot(c+dx)}{8a^3d} + \frac{(A+iB)\cot(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(11A+5iB)\cot(c+dx}{24ad(a+ia\tan(c+dx}$$

$$= -\frac{(25A+7iB)x}{8a^3} - \frac{(25A+7iB)\cot(c+dx)}{8a^3d} + \frac{(A+iB)\cot(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(11A}{24ad(a}$$

$$= -\frac{(25A+7iB)x}{8a^3} - \frac{(25A+7iB)\cot(c+dx)}{8a^3d} - \frac{(3iA-B)\log(\sin(c+dx))}{a^3d} + \frac{(A}{6d(a}$$

Mathematica [B] time = 6.98094, size = 1282, normalized size = 7.01

$$\frac{\csc\left(\frac{c}{2}\right)\csc(c+dx)\sec\left(\frac{c}{2}\right)\sec^2(c+dx)\left(\frac{1}{2}iA\cos(3c-dx)-\frac{1}{2}iA\cos(3c+dx)-\frac{1}{2}A\sin(3c-dx)+\frac{1}{2}A\sin(3c+dx)\right)(A}{2d(A\cos(c+dx)+B\sin(c+dx))(i\tan(c+dx)a+a)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] (((-7*I)*A + 5*B)*Cos[4*d*x]*Sec[c + d*x]^2*(Cos[c]/32 - (I/32)*Sin[c])*(Co
s[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c +
 d*x])*(a + I*a*Tan[c + d*x])^3) + (((-23*I)*A + 11*B)*Cos[2*d*x]*Sec[c + d
*x]^2*(Cos[c]/16 + (I/16)*Sin[c])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c +
d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Se
c[c + d*x]^2*((-3*I)*A*Cos[(3*c)/2] + B*Cos[(3*c)/2] + 3*A*Sin[(3*c)/2] + I
*B*Sin[(3*c)/2])*((-I)*ArcTan[Tan[d*x]]*Cos[(3*c)/2] + ArcTan[Tan[d*x]]*Sin
[(3*c)/2])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*
x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Sec[c + d*x]^2*((-3*I)*A*
Cos[(3*c)/2] + B*Cos[(3*c)/2] + 3*A*Sin[(3*c)/2] + I*B*Sin[(3*c)/2])*((Cos[
(3*c)/2]*Log[Sin[c + d*x]^2])/2 + (I/2)*Log[Sin[c + d*x]^2]*Sin[(3*c)/2])*(
Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c
 + d*x])*(a + I*a*Tan[c + d*x])^3) + (x*Sec[c + d*x]^2*(-6*A*Cos[c] - (2*I)
*B*Cos[c] + (3*I)*A*Cos[c]*Cot[c] - B*Cos[c]*Cot[c] - (3*I)*A*Sin[c] + B*Si
n[c] + ((-3*I)*A + B)*Cot[c]*(Cos[3*c] + I*Sin[3*c]))*(Cos[d*x] + I*Sin[d*x
])^3*(A + B*Tan[c + d*x]))/((A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[
c + d*x])^3) + (((-I)*A + B)*Cos[6*d*x]*Sec[c + d*x]^2*(Cos[3*c]/48 - (I/48
)*Sin[3*c])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d
*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((25*A + (7*I)*B)*Sec[c +
 d*x]^2*(-(d*x*Cos[3*c])/8 - (I/8)*d*x*Sin[3*c])*(Cos[d*x] + I*Sin[d*x])^3*
(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c +
 d*x])^3) + ((23*A + (11*I)*B)*Sec[c + d*x]^2*(-Cos[c]/16 - (I/16)*Sin[c])*
(Cos[d*x] + I*Sin[d*x])^3*Sin[2*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*
x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((7*A + (5*I)*B)*Sec[c + d
*x]^2*(-Cos[c]/32 + (I/32)*Sin[c])*(Cos[d*x] + I*Sin[d*x])^3*Sin[4*d*x]*(A
+ B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*
x])^3) + ((A + I*B)*Sec[c + d*x]^2*(-Cos[3*c]/48 + (I/48)*Sin[3*c])*(Cos[d*
x] + I*Sin[d*x])^3*Sin[6*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Csc[c/2]*Csc[c + d*x]*Sec[c/2]*S
ec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((I/2)*A*Cos[3*c - d*x] - (I/2)*A*C
os[3*c + d*x] - (A*Sin[3*c - d*x])/2 + (A*Sin[3*c + d*x])/2)*(A + B*Tan[c +
 d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3)
```

Maple [A] time = 0.12, size = 252, normalized size = 1.4

$$-\frac{17\,A}{8\,a^3d\,(\tan\,(dx+c)-i)}-\frac{\frac{7\,i}{8}B}{a^3d\,(\tan\,(dx+c)-i)}+\frac{\frac{49\,i}{16}\ln\,(\tan\,(dx+c)-i)\,A}{a^3d}-\frac{15\,\ln\,(\tan\,(dx+c)-i)\,B}{16\,a^3d}+\frac{A}{6\,a^3d\,(\tan\,(d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -17/8/d/a^3/(tan(d*x+c)-I)*A-7/8*I/d/a^3/(tan(d*x+c)-I)*B+49/16*I/d/a^3*ln(
tan(d*x+c)-I)*A-15/16/d/a^3*ln(tan(d*x+c)-I)*B+1/6/d/a^3/(tan(d*x+c)-I)^3*A
+1/6*I/d/a^3/(tan(d*x+c)-I)^3*B+5/8*I/d/a^3/(tan(d*x+c)-I)^2*A-3/8/d/a^3/(t
an(d*x+c)-I)^2*B-1/16/d/a^3*B*ln(tan(d*x+c)+I)-1/16*I/d/a^3*A*ln(tan(d*x+c)
+I)-1/d/a^3*A/tan(d*x+c)-3*I/d/a^3*A*ln(tan(d*x+c))+1/d/a^3*B*ln(tan(d*x+c)
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.53771, size = 504, normalized size = 2.75

$$-\frac{12\,(49\,A+15i\,B)dxe^{(8i\,dx+8i\,c)}-(12\,(49\,A+15i\,B)dx-330i\,A+66\,B)e^{(6i\,dx+6i\,c)}-(117i\,A-51\,B)e^{(4i\,dx+4i\,c)}-(19i\,A-13}{96\left(a^3de^{(8i\,dx+8i\,c)}-a^3de^{(}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
fricas")
```

```
[Out] -1/96*(12*(49*A + 15*I*B)*d*x*e^(8*I*d*x + 8*I*c) - (12*(49*A + 15*I*B)*d*x
 - 330*I*A + 66*B)*e^(6*I*d*x + 6*I*c) - (117*I*A - 51*B)*e^(4*I*d*x + 4*I*
```

```
c) - (19*I*A - 13*B)*e^(2*I*d*x + 2*I*c) - ((-288*I*A + 96*B)*e^(8*I*d*x +
8*I*c) + (288*I*A - 96*B)*e^(6*I*d*x + 6*I*c))*log(e^(2*I*d*x + 2*I*c) - 1)
 - 2*I*A + 2*B)/(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [A] time = 31.1081, size = 294, normalized size = 1.61

$$-\frac{2iAe^{-2ic}}{a^3d\left(e^{2idx}-e^{-2ic}\right)}-\frac{\begin{cases}49Axe^{6ic}+\frac{23iAe^{4ic}e^{-2idx}}{2d}+\frac{7iAe^{2ic}e^{-4idx}}{4d}+\frac{iAe^{-6idx}}{6d}+15iBxe^{6ic}-\frac{11Be^{4ic}e^{-2idx}}{2d}-\frac{5Be^{2ic}e^{-4idx}}{4d}-\frac{Be^{-6idx}}{6d} & \text{fo} \\ x\left(49Ae^{6ic}+23Ae^{4ic}+7Ae^{2ic}+A+15iBe^{6ic}+11iBe^{4ic}+5iBe^{2ic}+iB\right) & \text{o}\end{cases}}{8a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] -2*I*A*exp(-2*I*c)/(a**3*d*(exp(2*I*d*x) - exp(-2*I*c))) - Piecewise((49*A*
x*exp(6*I*c) + 23*I*A*exp(4*I*c)*exp(-2*I*d*x)/(2*d) + 7*I*A*exp(2*I*c)*exp
(-4*I*d*x)/(4*d) + I*A*exp(-6*I*d*x)/(6*d) + 15*I*B*x*exp(6*I*c) - 11*B*exp
(4*I*c)*exp(-2*I*d*x)/(2*d) - 5*B*exp(2*I*c)*exp(-4*I*d*x)/(4*d) - B*exp(-6
*I*d*x)/(6*d), Ne(d, 0)), (x*(49*A*exp(6*I*c) + 23*A*exp(4*I*c) + 7*A*exp(2
*I*c) + A + 15*I*B*exp(6*I*c) + 11*I*B*exp(4*I*c) + 5*I*B*exp(2*I*c) + I*B)
, True))*exp(-6*I*c)/(8*a**3) + (-3*I*A + B)*log(exp(2*I*d*x) - exp(-2*I*c)
)/(a**3*d)
```

Giac [A] time = 1.50734, size = 252, normalized size = 1.38

$$-\frac{\frac{6(-49iA+15B)\log(i\tan(dx+c)+1)}{a^3}+\frac{6(iA+B)\log(i\tan(dx+c)-1)}{a^3}+\frac{96(3iA-B)\log(|\tan(dx+c)|)}{a^3}+\frac{96(-3iA\tan(dx+c)+B\tan(dx+c)+A)}{a^3\tan(dx+c)}+\frac{539A}{}}{96d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
giac")
```

```
[Out] -1/96*(6*(-49*I*A + 15*B)*log(I*tan(d*x + c) + 1)/a^3 + 6*(I*A + B)*log(I*t
an(d*x + c) - 1)/a^3 + 96*(3*I*A - B)*log(abs(tan(d*x + c)))/a^3 + 96*(-3*I
*A*tan(d*x + c) + B*tan(d*x + c) + A)/(a^3*tan(d*x + c)) + (539*A*tan(d*x +
 c)^3 + 165*I*B*tan(d*x + c)^3 - 1821*I*A*tan(d*x + c)^2 + 579*B*tan(d*x +
c)^2 - 2085*A*tan(d*x + c) - 699*I*B*tan(d*x + c) + 819*I*A - 301*B)/(a^3*(
```

```
I*tan(d*x + c) + 1)^3))/d
```

3.58 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=216

$$-\frac{(7A+3iB)\cot^2(c+dx)}{2a^3d}+\frac{5(-5B+11iA)\cot(c+dx)}{8a^3d}-\frac{(7A+3iB)\log(\sin(c+dx))}{a^3d}+\frac{5(11A+5iB)\cot^2(c+dx)}{24d\left(a^3+ia^3\tan(c+dx)\right)}+\cdots$$

```
[Out] (5*((11*I)*A - 5*B)*x)/(8*a^3) + (5*((11*I)*A - 5*B)*Cot[c + d*x])/(8*a^3*d
) - ((7*A + (3*I)*B)*Cot[c + d*x]^2)/(2*a^3*d) - ((7*A + (3*I)*B)*Log[Sin[c
 + d*x]])/(a^3*d) + ((A + I*B)*Cot[c + d*x]^2)/(6*d*(a + I*a*Tan[c + d*x])^
3) + ((13*A + (7*I)*B)*Cot[c + d*x]^2)/(24*a*d*(a + I*a*Tan[c + d*x])^2) +
(5*(11*A + (5*I)*B)*Cot[c + d*x]^2)/(24*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.598347, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(7A+3iB)\cot^2(c+dx)}{2a^3d}+\frac{5(-5B+11iA)\cot(c+dx)}{8a^3d}-\frac{(7A+3iB)\log(\sin(c+dx))}{a^3d}+\frac{5(11A+5iB)\cot^2(c+dx)}{24d\left(a^3+ia^3\tan(c+dx)\right)}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] (5*((11*I)*A - 5*B)*x)/(8*a^3) + (5*((11*I)*A - 5*B)*Cot[c + d*x])/(8*a^3*d
) - ((7*A + (3*I)*B)*Cot[c + d*x]^2)/(2*a^3*d) - ((7*A + (3*I)*B)*Log[Sin[c
 + d*x]])/(a^3*d) + ((A + I*B)*Cot[c + d*x]^2)/(6*d*(a + I*a*Tan[c + d*x])^
3) + ((13*A + (7*I)*B)*Cot[c + d*x]^2)/(24*a*d*(a + I*a*Tan[c + d*x])^2) +
(5*(11*A + (5*I)*B)*Cot[c + d*x]^2)/(24*d*(a^3 + I*a^3*Tan[c + d*x]))
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(A+iB)\cot^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{\int \frac{\cot^3(c+dx)(2a(4A+iB)-5a(iA-B)\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(13A+7iB)\cot^2(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\cot^3(c+dx)\left(2a^2(29A+11iB)\right.}{a+ia\tan}}{24}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(13A+7iB)\cot^2(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{5(11A+5iB)\cot^2(c+}{24d\left(a^3+ia^3\tan(c+d\right.}$$

$$= -\frac{(7A+3iB)\cot^2(c+dx)}{2a^3d} + \frac{(A+iB)\cot^2(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(13A+7iB)\cot^2(c+d}{24ad(a+ia\tan(c+dx)}$$

$$= \frac{5(11iA-5B)\cot(c+dx)}{8a^3d} - \frac{(7A+3iB)\cot^2(c+dx)}{2a^3d} + \frac{(A+iB)\cot^2(c+dx)}{6d(a+ia\tan(c+dx))^3}$$

$$= \frac{5(11iA-5B)x}{8a^3} + \frac{5(11iA-5B)\cot(c+dx)}{8a^3d} - \frac{(7A+3iB)\cot^2(c+dx)}{2a^3d} + \frac{(A+}{6d(a+}$$

$$= \frac{5(11iA-5B)x}{8a^3} + \frac{5(11iA-5B)\cot(c+dx)}{8a^3d} - \frac{(7A+3iB)\cot^2(c+dx)}{2a^3d} - \frac{(7A+}{}$$

Mathematica [B] time = 7.25086, size = 1448, normalized size = 6.7

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] ((9*A + (7*I)*B)*Cos[4*d*x]*Sec[c + d*x]^2*(-Cos[c]/32 + (I/32)*Sin[c])*(Co
s[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c +
 d*x])*(a + I*a*Tan[c + d*x])^3) + ((39*A + (23*I)*B)*Cos[2*d*x]*Sec[c + d*
x]^2*(-Cos[c]/16 - (I/16)*Sin[c])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c +
d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Se
c[c + d*x]^2*(7*A*Cos[(3*c)/2] + (3*I)*B*Cos[(3*c)/2] + (7*I)*A*Sin[(3*c)/2
] - 3*B*Sin[(3*c)/2])*(I*ArcTan[Tan[d*x]]*Cos[(3*c)/2] - ArcTan[Tan[d*x]]*S
in[(3*c)/2])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c +
d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Sec[c + d*x]^2*(7*A*Cos
[(3*c)/2] + (3*I)*B*Cos[(3*c)/2] + (7*I)*A*Sin[(3*c)/2] - 3*B*Sin[(3*c)/2])
*(-(Cos[(3*c)/2]*Log[Sin[c + d*x]^2])/2 - (I/2)*Log[Sin[c + d*x]^2]*Sin[(3*
c)/2])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] +
 B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (x*Sec[c + d*x]^2*((14*I)*A*Co
s[c] - 6*B*Cos[c] + 7*A*Cos[c]*Cot[c] + (3*I)*B*Cos[c]*Cot[c] - 7*A*Sin[c]
- (3*I)*B*Sin[c] + (7*A + (3*I)*B)*Cot[c]*(-Cos[3*c] - I*Sin[3*c]))*(Cos[d*
x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/((A*Cos[c + d*x] + B*Sin[c + d*x])
*(a + I*a*Tan[c + d*x])^3) + ((A + I*B)*Cos[6*d*x]*Sec[c + d*x]^2*(-Cos[3*c
]/48 + (I/48)*Sin[3*c])*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*
(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + (Csc[c + d*x]
^2*Sec[c + d*x]^2*(-(A*Cos[3*c])/2 - (I/2)*A*Sin[3*c])*(Cos[d*x] + I*Sin[d*
x])^3*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*T
an[c + d*x])^3) + ((11*A + (5*I)*B)*Sec[c + d*x]^2*(((5*I)/8)*d*x*Cos[3*c]
- (5*d*x*Sin[3*c])/8)*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*(A
*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((39*A + (23*I)
*B)*Sec[c + d*x]^2*((I/16)*Cos[c] - Sin[c]/16)*(Cos[d*x] + I*Sin[d*x])^3*Si
n[2*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*
a*Tan[c + d*x])^3) + ((9*A + (7*I)*B)*Sec[c + d*x]^2*((I/32)*Cos[c] + Sin[c
]/32)*(Cos[d*x] + I*Sin[d*x])^3*Sin[4*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[
c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3) + ((A + I*B)*Sec[c + d
*x]^2*((I/48)*Cos[3*c] + Sin[3*c]/48)*(Cos[d*x] + I*Sin[d*x])^3*Sin[6*d*x]*
(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c +
 d*x])^3) + (Csc[c/2]*Csc[c + d*x]*Sec[c/2]*Sec[c + d*x]^2*(Cos[d*x] + I*Si
n[d*x])^3*((3*A*Cos[3*c - d*x])/2 + (I/2)*B*Cos[3*c - d*x] - (3*A*Cos[3*c +
 d*x])/2 - (I/2)*B*Cos[3*c + d*x] + ((3*I)/2)*A*Sin[3*c - d*x] - (B*Sin[3*c
 - d*x])/2 - ((3*I)/2)*A*Sin[3*c + d*x] + (B*Sin[3*c + d*x])/2)*(A + B*Tan[
c + d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3)
```

Maple [A] time = 0.13, size = 288, normalized size = 1.3

$$\frac{\frac{31 i}{8} A}{a^3 d (\tan (dx + c) - i)} - \frac{17 B}{8 a^3 d (\tan (dx + c) - i)} + \frac{\frac{49 i}{16} \ln (\tan (dx + c) - i) B}{a^3 d} + \frac{111 \ln (\tan (dx + c) - i) A}{16 a^3 d} - \frac{\frac{i}{6} A}{a^3 d (\tan (dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 31/8*I/d/a^3/(tan(d*x+c)-I)*A-17/8/d/a^3/(tan(d*x+c)-I)*B+49/16*I/d/a^3*ln(
tan(d*x+c)-I)*B+111/16/d/a^3*ln(tan(d*x+c)-I)*A-1/6*I/d/a^3/(tan(d*x+c)-I)^
3*A+1/6/d/a^3/(tan(d*x+c)-I)^3*B+7/8/d/a^3/(tan(d*x+c)-I)^2*A+5/8*I/d/a^3/(
tan(d*x+c)-I)^2*B+1/16/d/a^3*A*ln(tan(d*x+c)+I)-1/16*I/d/a^3*B*ln(tan(d*x+c
)+I)-1/2/d/a^3*A/tan(d*x+c)^2+3*I/d/a^3/tan(d*x+c)*A-1/d/a^3/tan(d*x+c)*B-3
*I/d/a^3*B*ln(tan(d*x+c))-7/d/a^3*A*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.52476, size = 691, normalized size = 3.2

$$\frac{(1332 i A - 588 B) dx e^{(10 i dx + 10 i c)} + ((-2664 i A + 1176 B) dx - 618 A - 330 i B) e^{(8 i dx + 8 i c)} + ((1332 i A - 588 B) dx + 1017 A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
fricas")
```

```
[Out] 1/96*((1332*I*A - 588*B)*d*x*e^(10*I*d*x + 10*I*c) + ((-2664*I*A + 1176*B)*
d*x - 618*A - 330*I*B)*e^(8*I*d*x + 8*I*c) + ((1332*I*A - 588*B)*d*x + 1017
*A + 447*I*B)*e^(6*I*d*x + 6*I*c) - 14*(13*A + 7*I*B)*e^(4*I*d*x + 4*I*c) -
 (23*A + 17*I*B)*e^(2*I*d*x + 2*I*c) - 96*((7*A + 3*I*B)*e^(10*I*d*x + 10*I
*c) - 2*(7*A + 3*I*B)*e^(8*I*d*x + 8*I*c) + (7*A + 3*I*B)*e^(6*I*d*x + 6*I*
c))*log(e^(2*I*d*x + 2*I*c) - 1) - 2*A - 2*I*B)/(a^3*d*e^(10*I*d*x + 10*I*c
) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.52209, size = 286, normalized size = 1.32

$$\frac{6\,(111\,A+49i\,B)\log(i\,\tan(dx+c)+1)}{a^3}+\frac{6\,(A-i\,B)\log(i\,\tan(dx+c)-1)}{a^3}-\frac{96\,(7\,A+3i\,B)\log(|\tan(dx+c)|)}{a^3}+\frac{48\left(21\,A\tan(dx+c)^2+9i\,B\tan(dx+c)^2+6i\,A\tan(d\right.}{a^3\tan(dx+c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
giac")
```

```
[Out] 1/96*(6*(111*A + 49*I*B)*log(I*tan(d*x + c) + 1)/a^3 + 6*(A - I*B)*log(I*ta
n(d*x + c) - 1)/a^3 - 96*(7*A + 3*I*B)*log(abs(tan(d*x + c)))/a^3 + 48*(21*
A*tan(d*x + c)^2 + 9*I*B*tan(d*x + c)^2 + 6*I*A*tan(d*x + c) - 2*B*tan(d*x
+ c) - A)/(a^3*tan(d*x + c)^2) + (1221*I*A*tan(d*x + c)^3 - 539*B*tan(d*x +
 c)^3 + 4035*A*tan(d*x + c)^2 + 1821*I*B*tan(d*x + c)^2 - 4491*I*A*tan(d*x
+ c) + 2085*B*tan(d*x + c) - 1693*A - 819*I*B)/(a^3*(I*tan(d*x + c) + 1)^3)
)/d
```

3.59 $\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=185

$$-\frac{(-7B+iA)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2}-\frac{-15B+iA}{16a^4d(1+i\tan(c+dx))}+\frac{x(A+15iB)}{16a^4}-\frac{B\log(\cos(c+dx))}{a^4d}+\frac{(-B+iA)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4}+$$

```
[Out] ((A + (15*I)*B)*x)/(16*a^4) - (B*Log[Cos[c + d*x]])/(a^4*d) - (I*A - 15*B)/
(16*a^4*d*(1 + I*Tan[c + d*x])) - ((I*A - 7*B)*Tan[c + d*x]^2)/(16*a^4*d*(1
 + I*Tan[c + d*x])^2) + ((I*A - B)*Tan[c + d*x]^4)/(8*d*(a + I*a*Tan[c + d*
x])^4) + ((A + (3*I)*B)*Tan[c + d*x]^3)/(12*a*d*(a + I*a*Tan[c + d*x])^3)
```

Rubi [A] time = 0.508708, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {3595, 3589, 3475, 12, 3526, 8}

$$-\frac{(-7B+iA)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2}-\frac{-15B+iA}{16a^4d(1+i\tan(c+dx))}+\frac{x(A+15iB)}{16a^4}-\frac{B\log(\cos(c+dx))}{a^4d}+\frac{(-B+iA)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] ((A + (15*I)*B)*x)/(16*a^4) - (B*Log[Cos[c + d*x]])/(a^4*d) - (I*A - 15*B)/
(16*a^4*d*(1 + I*Tan[c + d*x])) - ((I*A - 7*B)*Tan[c + d*x]^2)/(16*a^4*d*(1
 + I*Tan[c + d*x])^2) + ((I*A - B)*Tan[c + d*x]^4)/(8*d*(a + I*a*Tan[c + d*
x])^4) + ((A + (3*I)*B)*Tan[c + d*x]^3)/(12*a*d*(a + I*a*Tan[c + d*x])^3)
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
```

```
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 12

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

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = \frac{(iA-B)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{\int \frac{\tan^3(c+dx)(4a(iA-B)+8iaB\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx}{8a^2}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+3iB)\tan^3(c+dx)}{12ad(a+ia\tan(c+dx))^3} + \frac{\int \frac{\tan^2(c+dx)\left(-12a^2(A+3iB)\right.}{(a+ia\tan(c+}}{48a^4}$$

$$= -\frac{(iA-7B)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+3iB)\tan^3(c+d}{12ad(a+ia\tan(c+d}$$

$$= -\frac{(iA-7B)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+3iB)\tan^3(c+d}{12ad(a+ia\tan(c+d}$$

$$= -\frac{B\log(\cos(c+dx))}{a^4d} - \frac{(iA-7B)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4} + $$

$$= -\frac{B\log(\cos(c+dx))}{a^4d} - \frac{(iA-7B)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^4(c+dx)}{8d(a+ia\tan(c+dx))^4} + $$

$$= \frac{(A+15iB)x}{16a^4} - \frac{B\log(\cos(c+dx))}{a^4d} - \frac{(iA-7B)\tan^2(c+dx)}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan}{8d(a+ia\tan}$$

Mathematica [A] time = 1.19954, size = 195, normalized size = 1.05

$$\frac{\sec^4(c+dx)(16(21B-4iA)\cos(2(c+dx)) + 3\cos(4(c+dx))(8Adx+iA-128B\log(\cos(c+dx))+120iBdx-B)+32A}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (Sec[c + d*x]^4*((36*I)*A - 96*B + 16*((-4*I)*A + 21*B)*Cos[2*(c + d*x)] +
3*Cos[4*(c + d*x)]*(I*A - B + 8*A*d*x + (120*I)*B*d*x - 128*B*Log[Cos[c + d
*x]]) + 32*A*Sin[2*(c + d*x)] + (288*I)*B*Sin[2*(c + d*x)] + 3*A*Sin[4*(c +
 d*x)] + (3*I)*B*Sin[4*(c + d*x)] + (24*I)*A*d*x*Sin[4*(c + d*x)] - 360*B*d
*x*Sin[4*(c + d*x)] - (384*I)*B*Log[Cos[c + d*x]]*Sin[4*(c + d*x)]))/(384*a
^4*d*(-I + Tan[c + d*x])^4)
```

Maple [A] time = 0.04, size = 244, normalized size = 1.3

$$\frac{31\,B}{16\,a^4d\left(\tan(dx+c)-i\right)^2} - \frac{\frac{17\,i}{16}A}{a^4d\left(\tan(dx+c)-i\right)^2} - \frac{\frac{i}{32}\ln\left(\tan(dx+c)-i\right)A}{a^4d} + \frac{31\,\ln\left(\tan(dx+c)-i\right)B}{32\,a^4d} + \frac{\frac{i}{8}}{a^4d\left(\tan(d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] 31/16/d/a^4/(tan(d*x+c)-I)^2*B-17/16*I/d/a^4/(tan(d*x+c)-I)^2*A-1/32*I/d/a^
4*ln(tan(d*x+c)-I)*A+31/32/d/a^4*ln(tan(d*x+c)-I)*B+1/8*I/d/a^4/(tan(d*x+c)
-I)^4*A-1/8/d/a^4/(tan(d*x+c)-I)^4*B+3/4*I/d/a^4/(tan(d*x+c)-I)^3*B+7/12/d/
a^4/(tan(d*x+c)-I)^3*A-49/16*I/d/a^4/(tan(d*x+c)-I)*B-15/16/d/a^4/(tan(d*x+
c)-I)*A+1/32/d/a^4*B*ln(tan(d*x+c)+I)+1/32*I/d/a^4*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.48558, size = 359, normalized size = 1.94

$$\frac{\left(24\,(A+31i\,B)dxe^{(8i\,dx+8i\,c)} - 384\,Be^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}+1\right) + (-48i\,A+312\,B)e^{(6i\,dx+6i\,c)} + (36i\,A-96\,B)e^{(4i\,dx+4i\,c)}\right.}{384\,a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
fricas")
```

```
[Out] 1/384*(24*(A + 31*I*B)*d*x*e^(8*I*d*x + 8*I*c) - 384*B*e^(8*I*d*x + 8*I*c)*
log(e^(2*I*d*x + 2*I*c) + 1) + (-48*I*A + 312*B)*e^(6*I*d*x + 6*I*c) + (36*
I*A - 96*B)*e^(4*I*d*x + 4*I*c) + (-16*I*A + 24*B)*e^(2*I*d*x + 2*I*c) + 3*
I*A - 3*B)*e^(-8*I*d*x - 8*I*c)/(a^4*d)
```

Sympy [A] time = 35.7878, size = 360, normalized size = 1.95

$$-\frac{B\log\left(e^{2idx}+e^{-2ic}\right)}{a^4 d}+\begin{cases}\frac{\left(\left(24576iAa^{12}d^3e^{12ic}-24576Ba^{12}d^3e^{12ic}\right)e^{-8idx}+\left(-131072iAa^{12}d^3e^{14ic}+196608Ba^{12}d^3e^{14ic}\right)e^{-6idx}+\left(294912iAa^{12}d^3e^{16ic}-78643\cdots\right.\right.}{3145728a^{16}d^4} \\ x\left(-\frac{A+31iB}{16a^4}+\frac{\left(Ae^{8ic}-4Ae^{6ic}+6Ae^{4ic}-4Ae^{2ic}+A+31iBe^{8ic}-26iBe^{6ic}+16iBe^{4ic}-6iBe^{2ic}+iB\right)e^{-8ic}}{16a^4}\right)\end{cases}\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] -B*log(exp(2*I*d*x) + exp(-2*I*c))/(a**4*d) + Piecewise((((24576*I*A*a**12*
d**3*exp(12*I*c) - 24576*B*a**12*d**3*exp(12*I*c))*exp(-8*I*d*x) + (-131072
*I*A*a**12*d**3*exp(14*I*c) + 196608*B*a**12*d**3*exp(14*I*c))*exp(-6*I*d*x
) + (294912*I*A*a**12*d**3*exp(16*I*c) - 786432*B*a**12*d**3*exp(16*I*c))*e
xp(-4*I*d*x) + (-393216*I*A*a**12*d**3*exp(18*I*c) + 2555904*B*a**12*d**3*e
xp(18*I*c))*exp(-2*I*d*x))*exp(-20*I*c)/(3145728*a**16*d**4), Ne(3145728*a*
*16*d**4*exp(20*I*c), 0)), (x*(-(A + 31*I*B)/(16*a**4) + (A*exp(8*I*c) - 4*
A*exp(6*I*c) + 6*A*exp(4*I*c) - 4*A*exp(2*I*c) + A + 31*I*B*exp(8*I*c) - 26
*I*B*exp(6*I*c) + 16*I*B*exp(4*I*c) - 6*I*B*exp(2*I*c) + I*B)*exp(-8*I*c)/(
16*a**4)), True)) + x*(A + 31*I*B)/(16*a**4)
```

Giac [A] time = 3.43351, size = 208, normalized size = 1.12

$$-\frac{\frac{12(-iA-B)\log(\tan(dx+c)+i)}{a^4}-\frac{12(-iA+31B)\log(\tan(dx+c)-i)}{a^4}-\frac{25iA\tan(dx+c)^4-775B\tan(dx+c)^4-260A\tan(dx+c)^3+1924iB\tan(dx+c)^3+522iA\tan\cdots}{a^4(\tan(dx+\cdots}}{384d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
giac")
```

```
[Out] -1/384*(12*(-I*A - B)*log(tan(d*x + c) + I)/a^4 - 12*(-I*A + 31*B)*log(tan(
d*x + c) - I)/a^4 - (25*I*A*tan(d*x + c)^4 - 775*B*tan(d*x + c)^4 - 260*A*t
an(d*x + c)^3 + 1924*I*B*tan(d*x + c)^3 + 522*I*A*tan(d*x + c)^2 + 1866*B*t
an(d*x + c)^2 + 388*A*tan(d*x + c) - 772*I*B*tan(d*x + c) - 103*I*A - 103*B
)/(a^4*(tan(d*x + c) - I)^4))/d
```

3.60 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=159

$$\frac{5A-29iB}{48a^4d(1+i\tan(c+dx))}-\frac{A-13iB}{48a^4d(1+i\tan(c+dx))^2}+\frac{x(B+iA)}{16a^4}+\frac{(-B+iA)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4}+\frac{(A+5iB)\tan^2(c+dx)}{24ad(a+ia\tan(c+dx))^3}$$

```
[Out] ((I*A + B)*x)/(16*a^4) - (A - (13*I)*B)/(48*a^4*d*(1 + I*Tan[c + d*x])^2) +
 (5*A - (29*I)*B)/(48*a^4*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]
^3)/(8*d*(a + I*a*Tan[c + d*x])^4) + ((A + (5*I)*B)*Tan[c + d*x]^2)/(24*a*d
*(a + I*a*Tan[c + d*x])^3)
```

Rubi [A] time = 0.465667, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3595, 3590, 3526, 8}

$$\frac{5A-29iB}{48a^4d(1+i\tan(c+dx))}-\frac{A-13iB}{48a^4d(1+i\tan(c+dx))^2}+\frac{x(B+iA)}{16a^4}+\frac{(-B+iA)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4}+\frac{(A+5iB)\tan^2(c+dx)}{24ad(a+ia\tan(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```


```
[Out] ((I*A + B)*x)/(16*a^4) - (A - (13*I)*B)/(48*a^4*d*(1 + I*Tan[c + d*x])^2) +
 (5*A - (29*I)*B)/(48*a^4*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]
^3)/(8*d*(a + I*a*Tan[c + d*x])^4) + ((A + (5*I)*B)*Tan[c + d*x]^2)/(24*a*d
*(a + I*a*Tan[c + d*x])^3)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
```

```
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = \frac{(iA-B)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{\int \frac{\tan^2(c+dx)(3a(iA-B)-a(A-7iB)\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx}{8a^2}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+5iB)\tan^2(c+dx)}{24ad(a+ia\tan(c+dx))^3} + \frac{\int \frac{\tan(c+dx)\left(-4a^2(A+5iB)-8\right.}{(a+ia\tan(c}}{48a}$$

$$= -\frac{A-13iB}{48a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+5iB)\tan^2(c+d}{24ad(a+ia\tan(c+d}$$

$$= -\frac{A-13iB}{48a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+5iB)\tan^2(c+d}{24ad(a+ia\tan(c+d}$$

$$= \frac{(iA+B)x}{16a^4} - \frac{A-13iB}{48a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^3(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(A+5iB}{24ad(a+i}$$

Mathematica [A] time = 1.35887, size = 158, normalized size = 0.99

$$\frac{\sec^4(c+dx)(16(A-4iB)\cos(2(c+dx))+3(8iAdx+A+8Bdx+iB)\cos(4(c+dx))+32iA\sin(2(c+dx))-3iA\sin(4(c}{384a^4d(\tan(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (Sec[c + d*x]^4*((36*I)*B + 16*(A - (4*I)*B)*Cos[2*(c + d*x)] + 3*(A + I*B
+ (8*I)*A*d*x + 8*B*d*x)*Cos[4*(c + d*x)] + (32*I)*A*Sin[2*(c + d*x)] + 32*
B*Sin[2*(c + d*x)] - (3*I)*A*Sin[4*(c + d*x)] + 3*B*Sin[4*(c + d*x)] - 24*A
*d*x*Sin[4*(c + d*x)] + (24*I)*B*d*x*Sin[4*(c + d*x)]))/(384*a^4*d*(-I + Ta
n[c + d*x])^4)
```

Maple [A] time = 0.035, size = 244, normalized size = 1.5

$$\frac{\ln\left(\tan\left(dx+c\right)-i\right)A}{32\,a^4d}-\frac{\frac{i}{32}\ln\left(\tan\left(dx+c\right)-i\right)B}{a^4d}-\frac{\frac{5\,i}{12}A}{a^4d\left(\tan\left(dx+c\right)-i\right)^3}+\frac{7\,B}{12\,a^4d\left(\tan\left(dx+c\right)-i\right)^3}+\frac{\frac{i}{16}A}{a^4d\left(\tan\left(dx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] 1/32/d/a^4*ln(tan(d*x+c)-I)*A-1/32*I/d/a^4*ln(tan(d*x+c)-I)*B-5/12*I/d/a^4/
(tan(d*x+c)-I)^3*A+7/12/d/a^4/(tan(d*x+c)-I)^3*B+1/16*I/d/a^4/(tan(d*x+c)-I
)*A-15/16/d/a^4/(tan(d*x+c)-I)*B+1/8/d/a^4/(tan(d*x+c)-I)^4*A+1/8*I/d/a^4/(
tan(d*x+c)-I)^4*B-7/16/d/a^4/(tan(d*x+c)-I)^2*A-17/16*I/d/a^4/(tan(d*x+c)-I
)^2*B-1/32/d/a^4*A*ln(tan(d*x+c)+I)+1/32*I/d/a^4*B*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.43188, size = 262, normalized size = 1.65

$$\frac{\left((24i\,A+24\,B)dxe^{(8i\,dx+8i\,c)}+24\,(A-2i\,B)e^{(6i\,dx+6i\,c)}+36i\,Be^{(4i\,dx+4i\,c)}-8\,(A+2i\,B)e^{(2i\,dx+2i\,c)}+3\,A+3i\,B\right)e^{(-8i\,dx-8i\,c)}}{384\,a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
fricas")
```

```
[Out] 1/384*((24*I*A + 24*B)*d*x*e^(8*I*d*x + 8*I*c) + 24*(A - 2*I*B)*e^(6*I*d*x
+ 6*I*c) + 36*I*B*e^(4*I*d*x + 4*I*c) - 8*(A + 2*I*B)*e^(2*I*d*x + 2*I*c) +
 3*A + 3*I*B)*e^(-8*I*d*x - 8*I*c)/(a^4*d)
```

Sympy [A] time = 8.53229, size = 303, normalized size = 1.91

$$\begin{cases} \frac{\left(294912iBa^{12}d^3e^{16ic}e^{-4idx}+\left(24576Aa^{12}d^3e^{12ic}+24576iBa^{12}d^3e^{12ic}\right)e^{-8idx}+\left(-65536Aa^{12}d^3e^{14ic}-131072iBa^{12}d^3e^{14ic}\right)e^{-6idx}+\left(196608Aa^{12}d^3e^{18ic}-393216iBa^{12}\cdots\right.\right.}{3145728a^{16}d^4} \\ x\left(-\frac{iA+B}{16a^4}+\frac{\left(iAe^{8ic}-2iAe^{6ic}+2iAe^{2ic}-iA+Be^{8ic}-4Be^{6ic}+6Be^{4ic}-4Be^{2ic}+B\right)e^{-8ic}}{16a^4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Piecewise((((294912*I*B*a**12*d**3*exp(16*I*c)*exp(-4*I*d*x) + (24576*A*a**1
2*d**3*exp(12*I*c) + 24576*I*B*a**12*d**3*exp(12*I*c))*exp(-8*I*d*x) + (-65
536*A*a**12*d**3*exp(14*I*c) - 131072*I*B*a**12*d**3*exp(14*I*c))*exp(-6*I*
d*x) + (196608*A*a**12*d**3*exp(18*I*c) - 393216*I*B*a**12*d**3*exp(18*I*c)
)*exp(-2*I*d*x))*exp(-20*I*c)/(3145728*a**16*d**4), Ne(3145728*a**16*d**4*e
xp(20*I*c), 0)), (x*(-(I*A + B)/(16*a**4) + (I*A*exp(8*I*c) - 2*I*A*exp(6*I
*c) + 2*I*A*exp(2*I*c) - I*A + B*exp(8*I*c) - 4*B*exp(6*I*c) + 6*B*exp(4*I*
c) - 4*B*exp(2*I*c) + B)*exp(-8*I*c)/(16*a**4)), True)) + x*(I*A + B)/(16*a
**4)
```

Giac [A] time = 2.2655, size = 207, normalized size = 1.3

$$-\frac{\frac{12\,(A-i\,B)\log(-i\,\tan(dx+c)+1)}{a^4}-\frac{12\,(A-i\,B)\log(-i\,\tan(dx+c)-1)}{a^4}+\frac{25\,A\tan(dx+c)^4-25i\,B\tan(dx+c)^4-124i\,A\tan(dx+c)^3+260\,B\tan(dx+c)^3-54\,A\tan(\cdots}{a^4(\tan(dx+c)-\cdots}}{384\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
giac")
```

```
[Out] -1/384*(12*(A - I*B)*log(-I*tan(d*x + c) + 1)/a^4 - 12*(A - I*B)*log(-I*tan
(d*x + c) - 1)/a^4 + (25*A*tan(d*x + c)^4 - 25*I*B*tan(d*x + c)^4 - 124*I*A
```

```
*tan(d*x + c)^3 + 260*B*tan(d*x + c)^3 - 54*A*tan(d*x + c)^2 - 522*I*B*tan(
d*x + c)^2 - 4*I*A*tan(d*x + c) - 388*B*tan(d*x + c) - 7*A + 103*I*B)/(a^4*
(tan(d*x + c) - I)^4))/d
```

3.61 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=145

$$-\frac{B+iA}{16a^4d(1+i\tan(c+dx))}+\frac{5B+iA}{16a^4d(1+i\tan(c+dx))^2}-\frac{x(A-iB)}{16a^4}+\frac{(-B+iA)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4}-\frac{B}{6ad(a+ia\tan(c+dx))^3}$$

```
[Out] -((A - I*B)*x)/(16*a^4) + (I*A + 5*B)/(16*a^4*d*(1 + I*Tan[c + d*x])^2) - (
I*A + B)/(16*a^4*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]^2)/(8*d*
(a + I*a*Tan[c + d*x])^4) - B/(6*a*d*(a + I*a*Tan[c + d*x])^3)
```

Rubi [A] time = 0.290671, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3595, 3590, 3526, 3479, 8}

$$-\frac{B+iA}{16a^4d(1+i\tan(c+dx))}+\frac{5B+iA}{16a^4d(1+i\tan(c+dx))^2}-\frac{x(A-iB)}{16a^4}+\frac{(-B+iA)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4}-\frac{B}{6ad(a+ia\tan(c+dx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] -((A - I*B)*x)/(16*a^4) + (I*A + 5*B)/(16*a^4*d*(1 + I*Tan[c + d*x])^2) - (
I*A + B)/(16*a^4*d*(1 + I*Tan[c + d*x])) + ((I*A - B)*Tan[c + d*x]^2)/(8*d*
(a + I*a*Tan[c + d*x])^4) - B/(6*a*d*(a + I*a*Tan[c + d*x])^3)
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
```

```
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = \frac{(iA-B)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{\int \frac{\tan(c+dx)(2a(iA-B)-2a(A-3iB)\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx}{8a^2}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{B}{6ad(a+ia\tan(c+dx))^3} + \frac{i\int \frac{-8a^2B-4a^2(A-3iB)\tan(c}{(a+ia\tan(c+dx))^2}}{16a^4}$$

$$= \frac{iA+5B}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{B}{6ad(a+ia\tan(c+dx)}$$

$$= \frac{iA+5B}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{B}{6ad(a+ia\tan(c+dx)}$$

$$= -\frac{(A-iB)x}{16a^4} + \frac{iA+5B}{16a^4d(1+i\tan(c+dx))^2} + \frac{(iA-B)\tan^2(c+dx)}{8d(a+ia\tan(c+dx))^4} - \frac{}{6ad(a+}$$

Mathematica [A] time = 1.49652, size = 144, normalized size = 0.99

$$-\frac{(\cos(4(c+dx))-i\sin(4(c+dx)))(3(8Adx+iA-8iBdx-B)\cos(4(c+dx))+24iAdx\sin(4(c+dx))+3A\sin(4(c+}{384a^4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] -((Cos[4*(c + d*x)] - I*Sin[4*(c + d*x)])*((-12*I)*A - 16*B*Cos[2*(c + d*x)
] + 3*(I*A - B + 8*A*d*x - (8*I)*B*d*x)*Cos[4*(c + d*x)] - (32*I)*B*Sin[2*(
c + d*x)] + 3*A*Sin[4*(c + d*x)] + (3*I)*B*Sin[4*(c + d*x)] + (24*I)*A*d*x*
Sin[4*(c + d*x)] + 24*B*d*x*Sin[4*(c + d*x)]))/(384*a^4*d)
```

Maple [A] time = 0.035, size = 244, normalized size = 1.7

$$\frac{-\frac{i}{8}A}{a^4d\left(\tan\left(dx+c\right)-i\right)^4}+\frac{B}{8\,a^4d\left(\tan\left(dx+c\right)-i\right)^4}-\frac{A}{4\,a^4d\left(\tan\left(dx+c\right)-i\right)^3}-\frac{\frac{5i}{12}B}{a^4d\left(\tan\left(dx+c\right)-i\right)^3}+\frac{\frac{i}{32}\ln\left(\tan\left(dx+\right.\right.}{a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] -1/8*I/d/a^4/(tan(d*x+c)-I)^4*A+1/8/d/a^4/(tan(d*x+c)-I)^4*B-1/4/d/a^4/(tan
(d*x+c)-I)^3*A-5/12*I/d/a^4/(tan(d*x+c)-I)^3*B+1/32*I/d/a^4*ln(tan(d*x+c)-I
)*A+1/32/d/a^4*ln(tan(d*x+c)-I)*B-1/16/d/a^4/(tan(d*x+c)-I)*A+1/16*I/d/a^4/
(tan(d*x+c)-I)*B+1/16*I/d/a^4/(tan(d*x+c)-I)^2*A-7/16/d/a^4/(tan(d*x+c)-I)^
2*B-1/32/d/a^4*B*ln(tan(d*x+c)+I)-1/32*I/d/a^4*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.38764, size = 232, normalized size = 1.6

$$-\frac{\left(24\,(A-i\,B)dxe^{(8i\,dx+8i\,c)}-24\,Be^{(6i\,dx+6i\,c)}-12i\,Ae^{(4i\,dx+4i\,c)}+8\,Be^{(2i\,dx+2i\,c)}+3i\,A-3\,B\right)e^{(-8i\,dx-8i\,c)}}{384\,a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
fricas")
```

```
[Out] -1/384*(24*(A - I*B)*d*x*e^(8*I*d*x + 8*I*c) - 24*B*e^(6*I*d*x + 6*I*c) - 1
2*I*A*e^(4*I*d*x + 4*I*c) + 8*B*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*e^(-8*I*
d*x - 8*I*c)/(a^4*d)
```

Sympy [A] time = 6.47366, size = 243, normalized size = 1.68

$$\begin{cases} \frac{\left(98304iAa^{12}d^3e^{16ic}e^{-4idx}+196608Ba^{12}d^3e^{18ic}e^{-2idx}-65536Ba^{12}d^3e^{14ic}e^{-6idx}+\left(-24576iAa^{12}d^3e^{12ic}+24576Ba^{12}d^3e^{12ic}\right)e^{-8idx}\right)e^{-20ic}}{3145728a^{16}d^4} & \text{for } 3145728a^{16}d \\ x\left(\frac{A-iB}{16a^4}-\frac{\left(Ae^{8ic}-2Ae^{4ic}+A-iBe^{8ic}+2iBe^{6ic}-2iBe^{2ic}+iB\right)e^{-8ic}}{16a^4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Piecewise(((98304*I*A*a**12*d**3*exp(16*I*c)*exp(-4*I*d*x) + 196608*B*a**12
*d**3*exp(18*I*c)*exp(-2*I*d*x) - 65536*B*a**12*d**3*exp(14*I*c)*exp(-6*I*d
*x) + (-24576*I*A*a**12*d**3*exp(12*I*c) + 24576*B*a**12*d**3*exp(12*I*c))*
exp(-8*I*d*x))*exp(-20*I*c)/(3145728*a**16*d**4), Ne(3145728*a**16*d**4*exp
(20*I*c), 0)), (x*((A - I*B)/(16*a**4) - (A*exp(8*I*c) - 2*A*exp(4*I*c) + A
 - I*B*exp(8*I*c) + 2*I*B*exp(6*I*c) - 2*I*B*exp(2*I*c) + I*B)*exp(-8*I*c)/
(16*a**4)), True)) + x*(-A + I*B)/(16*a**4)
```

Giac [A] time = 1.57564, size = 204, normalized size = 1.41

$$-\frac{\frac{12\,(i\,A+B)\log(\tan(dx+c)+i)}{a^4}+\frac{12\,(-i\,A-B)\log(\tan(dx+c)-i)}{a^4}+\frac{25i\,A\tan(dx+c)^4+25\,B\tan(dx+c)^4+124\,A\tan(dx+c)^3-124i\,B\tan(dx+c)^3-246i\,A\tan(d}{a^4(\tan(dx+c)-i)^4}}{384\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
giac")
```

```
[Out] -1/384*(12*(I*A + B)*log(tan(d*x + c) + I)/a^4 + 12*(-I*A - B)*log(tan(d*x
+ c) - I)/a^4 + (25*I*A*tan(d*x + c)^4 + 25*B*tan(d*x + c)^4 + 124*A*tan(d*
x + c)^3 - 124*I*B*tan(d*x + c)^3 - 246*I*A*tan(d*x + c)^2 - 54*B*tan(d*x +
 c)^2 - 124*A*tan(d*x + c) - 4*I*B*tan(d*x + c) + 25*I*A - 7*B)/(a^4*(tan(d
*x + c) - I)^4))/d
```

3.62 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=143

$$\frac{A-iB}{16d\left(a^4+ia^4\tan(c+dx)\right)}+\frac{A-iB}{16d\left(a^2+ia^2\tan(c+dx)\right)^2}-\frac{x(B+iA)}{16a^4}+\frac{A+3iB}{12ad(a+ia\tan(c+dx))^3}-\frac{A+iB}{8d(a+ia\tan(c+$$

```
[Out] -((I*A + B)*x)/(16*a^4) - (A + I*B)/(8*d*(a + I*a*Tan[c + d*x])^4) + (A + (
3*I)*B)/(12*a*d*(a + I*a*Tan[c + d*x])^3) + (A - I*B)/(16*d*(a^2 + I*a^2*Ta
n[c + d*x])^2) + (A - I*B)/(16*d*(a^4 + I*a^4*Tan[c + d*x]))
```

Rubi [A] time = 0.192248, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3590, 3526, 3479, 8}

$$\frac{A-iB}{16d\left(a^4+ia^4\tan(c+dx)\right)}+\frac{A-iB}{16d\left(a^2+ia^2\tan(c+dx)\right)^2}-\frac{x(B+iA)}{16a^4}+\frac{A+3iB}{12ad(a+ia\tan(c+dx))^3}-\frac{A+iB}{8d(a+ia\tan(c+$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```


```
[Out] -((I*A + B)*x)/(16*a^4) - (A + I*B)/(8*d*(a + I*a*Tan[c + d*x])^4) + (A + (
3*I)*B)/(12*a*d*(a + I*a*Tan[c + d*x])^3) + (A - I*B)/(16*d*(a^2 + I*a^2*Ta
n[c + d*x])^2) + (A - I*B)/(16*d*(a^4 + I*a^4*Tan[c + d*x]))
```


Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = -\frac{A+iB}{8d(a+ia\tan(c+dx))^4} - \frac{i\int \frac{a(A+iB)+2aB\tan(c+dx)}{(a+ia\tan(c+dx))^3}\,dx}{2a^2}$$

$$= -\frac{A+iB}{8d(a+ia\tan(c+dx))^4} + \frac{A+3iB}{12ad(a+ia\tan(c+dx))^3} - \frac{(iA+B)\int \frac{1}{(a+ia\tan(c+dx}$$

$$= -\frac{A+iB}{8d(a+ia\tan(c+dx))^4} + \frac{A+3iB}{12ad(a+ia\tan(c+dx))^3} + \frac{A-iB}{16d\left(a^2+ia^2\tan(c+d\right.}$$

$$= -\frac{A+iB}{8d(a+ia\tan(c+dx))^4} + \frac{A+3iB}{12ad(a+ia\tan(c+dx))^3} + \frac{A-iB}{16d\left(a^2+ia^2\tan(c+d\right.}$$

$$= -\frac{(iA+B)x}{16a^4} - \frac{A+iB}{8d(a+ia\tan(c+dx))^4} + \frac{A+3iB}{12ad(a+ia\tan(c+dx))^3} + \frac{}{16d\left(a^2+\right.}$$

Mathematica [A] time = 1.22754, size = 141, normalized size = 0.99

$$\frac{\sec^4(c+dx)(-3(8iAdx+A+B(8dx+i))\cos(4(c+dx))+32iA\sin(2(c+dx))+3iA\sin(4(c+dx))+24Adx\sin(4(c+d}{384a^4d(\tan(c+dx)-i)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (Sec[c + d*x]^4*((12*I)*B + 16*A*Cos[2*(c + d*x)] - 3*(A + (8*I)*A*d*x + B*
(I + 8*d*x))*Cos[4*(c + d*x)] + (32*I)*A*Sin[2*(c + d*x)] + (3*I)*A*Sin[4*(
```

```
c + d*x)] - 3*B*Sin[4*(c + d*x)] + 24*A*d*x*Sin[4*(c + d*x)] - (24*I)*B*d*x
*Sin[4*(c + d*x)]))/(384*a^4*d*(-I + Tan[c + d*x])^4)
```

Maple [A] time = 0.033, size = 244, normalized size = 1.7

$$\frac{-\frac{i}{16}A}{a^4d\left(\tan\left(dx+c\right)-i\right)}-\frac{B}{16\,a^4d\left(\tan\left(dx+c\right)-i\right)}-\frac{A}{8\,a^4d\left(\tan\left(dx+c\right)-i\right)^4}-\frac{\frac{i}{8}B}{a^4d\left(\tan\left(dx+c\right)-i\right)^4}-\frac{A}{16\,a^4d\left(\tan\left(dx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] -1/16*I/d/a^4/(tan(d*x+c)-I)*A-1/16/d/a^4/(tan(d*x+c)-I)*B-1/8/d/a^4/(tan(d
*x+c)-I)^4*A-1/8*I/d/a^4/(tan(d*x+c)-I)^4*B-1/16/d/a^4/(tan(d*x+c)-I)^2*A+1
/16*I/d/a^4/(tan(d*x+c)-I)^2*B-1/4/d/a^4/(tan(d*x+c)-I)^3*B+1/12*I/d/a^4/(t
an(d*x+c)-I)^3*A-1/32/d/a^4*ln(tan(d*x+c)-I)*A+1/32*I/d/a^4*ln(tan(d*x+c)-I
)*B+1/32/d/a^4*A*ln(tan(d*x+c)+I)-1/32*I/d/a^4*B*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.36316, size = 236, normalized size = 1.65

$$\frac{\left(\left(-24i\,A-24\,B\right)dxe^{\left(8i\,dx+8i\,c\right)}+24\,Ae^{\left(6i\,dx+6i\,c\right)}+12i\,Be^{\left(4i\,dx+4i\,c\right)}-8\,Ae^{\left(2i\,dx+2i\,c\right)}-3\,A-3i\,B\right)e^{\left(-8i\,dx-8i\,c\right)}}{384\,a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] 1/384*((-24*I*A - 24*B)*d*x*e^(8*I*d*x + 8*I*c) + 24*A*e^(6*I*d*x + 6*I*c)
+ 12*I*B*e^(4*I*d*x + 4*I*c) - 8*A*e^(2*I*d*x + 2*I*c) - 3*A - 3*I*B)*e^(-8
*I*d*x - 8*I*c)/(a^4*d)
```

Sympy [A] time = 8.76024, size = 246, normalized size = 1.72

$$\begin{cases} \frac{\left(196608Aa^{12}d^3e^{18ic}e^{-2idx}-65536Aa^{12}d^3e^{14ic}e^{-6idx}+98304iBa^{12}d^3e^{16ic}e^{-4idx}+\left(-24576Aa^{12}d^3e^{12ic}-24576iBa^{12}d^3e^{12ic}\right)e^{-8idx}\right)e^{-20ic}}{3145728a^{16}d^4} & \text{for } 3145728a^{16}d^4 \\ x\left(\frac{iA+B}{16a^4}-\frac{\left(iAe^{8ic}+2iAe^{6ic}-2iAe^{2ic}-iA+Be^{8ic}-2Be^{4ic}+B\right)e^{-8ic}}{16a^4}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Piecewise(((196608*A*a**12*d**3*exp(18*I*c)*exp(-2*I*d*x) - 65536*A*a**12*d
**3*exp(14*I*c)*exp(-6*I*d*x) + 98304*I*B*a**12*d**3*exp(16*I*c)*exp(-4*I*d
*x) + (-24576*A*a**12*d**3*exp(12*I*c) - 24576*I*B*a**12*d**3*exp(12*I*c))*
exp(-8*I*d*x))*exp(-20*I*c)/(3145728*a**16*d**4), Ne(3145728*a**16*d**4*exp
(20*I*c), 0)), (x*((I*A + B)/(16*a**4) - (I*A*exp(8*I*c) + 2*I*A*exp(6*I*c)
 - 2*I*A*exp(2*I*c) - I*A + B*exp(8*I*c) - 2*B*exp(4*I*c) + B)*exp(-8*I*c)/
(16*a**4)), True)) + x*(-I*A - B)/(16*a**4)
```

Giac [A] time = 1.42321, size = 208, normalized size = 1.45

$$-\frac{\frac{12\,(A-i\,B)\log(i\,\tan(dx+c)+1)}{a^4}-\frac{12\,(A-i\,B)\log(i\,\tan(dx+c)-1)}{a^4}-\frac{25\,A\tan(dx+c)^4-25i\,B\tan(dx+c)^4-124i\,A\tan(dx+c)^3-124\,B\tan(dx+c)^3-246\,A\tan(dx}{a^4(\tan(dx+c)-i)}}{384\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] -1/384*(12*(A - I*B)*log(I*tan(d*x + c) + 1)/a^4 - 12*(A - I*B)*log(I*tan(d
*x + c) - 1)/a^4 - (25*A*tan(d*x + c)^4 - 25*I*B*tan(d*x + c)^4 - 124*I*A*t
an(d*x + c)^3 - 124*B*tan(d*x + c)^3 - 246*A*tan(d*x + c)^2 + 246*I*B*tan(d
```

```
*x + c)^2 + 252*I*A*tan(d*x + c) + 124*B*tan(d*x + c) + 57*A - 25*I*B)/(a^4
*(tan(d*x + c) - I)^4))/d
```

3.63 $\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=145

$$\frac{B+iA}{16d\left(a^4+ia^4\tan(c+dx)\right)}+\frac{B+iA}{16d\left(a^2+ia^2\tan(c+dx)\right)^2}+\frac{x(A-iB)}{16a^4}+\frac{-B+iA}{8d(a+ia\tan(c+dx))^4}+\frac{B+iA}{12ad(a+ia\tan(c+d}$$

```
[Out] ((A - I*B)*x)/(16*a^4) + (I*A - B)/(8*d*(a + I*a*Tan[c + d*x])^4) + (I*A +
B)/(12*a*d*(a + I*a*Tan[c + d*x])^3) + (I*A + B)/(16*d*(a^2 + I*a^2*Tan[c +
 d*x])^2) + (I*A + B)/(16*d*(a^4 + I*a^4*Tan[c + d*x]))
```

Rubi [A] time = 0.106414, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3526, 3479, 8}

$$\frac{B+iA}{16d\left(a^4+ia^4\tan(c+dx)\right)}+\frac{B+iA}{16d\left(a^2+ia^2\tan(c+dx)\right)^2}+\frac{x(A-iB)}{16a^4}+\frac{-B+iA}{8d(a+ia\tan(c+dx))^4}+\frac{B+iA}{12ad(a+ia\tan(c+d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] ((A - I*B)*x)/(16*a^4) + (I*A - B)/(8*d*(a + I*a*Tan[c + d*x])^4) + (I*A +
B)/(12*a*d*(a + I*a*Tan[c + d*x])^3) + (I*A + B)/(16*d*(a^2 + I*a^2*Tan[c +
 d*x])^2) + (I*A + B)/(16*d*(a^4 + I*a^4*Tan[c + d*x]))
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^4}dx = \frac{iA-B}{8d(a+ia\tan(c+dx))^4} + \frac{(A-iB)\int \frac{1}{(a+ia\tan(c+dx))^3}dx}{2a}$$
$$= \frac{iA-B}{8d(a+ia\tan(c+dx))^4} + \frac{iA+B}{12ad(a+ia\tan(c+dx))^3} + \frac{(A-iB)\int \frac{1}{(a+ia\tan(c+dx))^2}dx}{4a^2}$$
$$= \frac{iA-B}{8d(a+ia\tan(c+dx))^4} + \frac{iA+B}{12ad(a+ia\tan(c+dx))^3} + \frac{iA+B}{16d\left(a^2+ia^2\tan(c+dx)\right)^2} + \frac{(A$$
$$= \frac{iA-B}{8d(a+ia\tan(c+dx))^4} + \frac{iA+B}{12ad(a+ia\tan(c+dx))^3} + \frac{iA+B}{16d\left(a^2+ia^2\tan(c+dx)\right)^2} + \frac{}{16d$$
$$= \frac{(A-iB)x}{16a^4} + \frac{iA-B}{8d(a+ia\tan(c+dx))^4} + \frac{iA+B}{12ad(a+ia\tan(c+dx))^3} + \frac{iA+B}{16d\left(a^2+ia^2\tan(c+\right.}$$

Mathematica [A] time = 0.817563, size = 160, normalized size = 1.1

$$\frac{\sec^4(c+dx)(16(B+4iA)\cos(2(c+dx))+3(8Adx+iA-8iBdx-B)\cos(4(c+dx))-32A\sin(2(c+dx))+24iAdx\sin}{384a^4d(\tan(c+dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (Sec[c + d*x]^4*((36*I)*A + 16*((4*I)*A + B)*Cos[2*(c + d*x)] + 3*(I*A - B
+ 8*A*d*x - (8*I)*B*d*x)*Cos[4*(c + d*x)] - 32*A*Sin[2*(c + d*x)] + (32*I)*
B*Sin[2*(c + d*x)] + 3*A*Sin[4*(c + d*x)] + (3*I)*B*Sin[4*(c + d*x)] + (24*
I)*A*d*x*Sin[4*(c + d*x)] + 24*B*d*x*Sin[4*(c + d*x)]))/(384*a^4*d*(-I + Ta
n[c + d*x])^4)
```

Maple [A] time = 0.031, size = 244, normalized size = 1.7

$$\frac{\frac{i}{8}A}{a^4d(\tan(dx+c)-i)^4} - \frac{B}{8a^4d(\tan(dx+c)-i)^4} - \frac{\frac{i}{32}\ln(\tan(dx+c)-i)A}{a^4d} - \frac{\ln(\tan(dx+c)-i)B}{32a^4d} - \frac{A}{12a^4d(\tan(dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] 1/8*I/d/a^4/(tan(d*x+c)-I)^4*A-1/8/d/a^4/(tan(d*x+c)-I)^4*B-1/32*I/d/a^4*ln
(tan(d*x+c)-I)*A-1/32/d/a^4*ln(tan(d*x+c)-I)*B-1/12/d/a^4/(tan(d*x+c)-I)^3*
A+1/12*I/d/a^4/(tan(d*x+c)-I)^3*B-1/16*I/d/a^4/(tan(d*x+c)-I)^2*A-1/16/d/a^
4/(tan(d*x+c)-I)^2*B+1/16/d/a^4/(tan(d*x+c)-I)*A-1/16*I/d/a^4/(tan(d*x+c)-I
)*B+1/32/d/a^4*B*ln(tan(d*x+c)+I)+1/32*I/d/a^4*A*ln(tan(d*x+c)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.42516, size = 261, normalized size = 1.8

$$\frac{\left(24\,(A-i\,B)dxe^{(8i\,dx+8i\,c)}+(48i\,A+24\,B)e^{(6i\,dx+6i\,c)}+36i\,Ae^{(4i\,dx+4i\,c)}+(16i\,A-8\,B)e^{(2i\,dx+2i\,c)}+3i\,A-3\,B\right)e^{(-8i\,dx-8i\,c)}}{384\,a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/384*(24*(A - I*B)*d*x*e^(8*I*d*x + 8*I*c) + (48*I*A + 24*B)*e^(6*I*d*x +
6*I*c) + 36*I*A*e^(4*I*d*x + 4*I*c) + (16*I*A - 8*B)*e^(2*I*d*x + 2*I*c) +
3*I*A - 3*B)*e^(-8*I*d*x - 8*I*c)/(a^4*d)
```

Sympy [A] time = 11.3457, size = 301, normalized size = 2.08

$$\begin{cases} \frac{\left(294912iAa^{12}d^3e^{16ic}e^{-4idx}+\left(24576iAa^{12}d^3e^{12ic}-24576Ba^{12}d^3e^{12ic}\right)e^{-8idx}+\left(131072iAa^{12}d^3e^{14ic}-65536Ba^{12}d^3e^{14ic}\right)e^{-6idx}+\left(393216iAa^{12}d^3e^{18ic}+196608Ba^{12}d^3\right.\right.}{3145728a^{16}d^4} \\ x\left(-\frac{A-iB}{16a^4}+\frac{\left(Ae^{8ic}+4Ae^{6ic}+6Ae^{4ic}+4Ae^{2ic}+A-iBe^{8ic}-2iBe^{6ic}+2iBe^{2ic}+iB\right)e^{-8ic}}{16a^4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Piecewise(((294912*I*A*a**12*d**3*exp(16*I*c)*exp(-4*I*d*x) + (24576*I*A*a*
*12*d**3*exp(12*I*c) - 24576*B*a**12*d**3*exp(12*I*c))*exp(-8*I*d*x) + (131
072*I*A*a**12*d**3*exp(14*I*c) - 65536*B*a**12*d**3*exp(14*I*c))*exp(-6*I*d
*x) + (393216*I*A*a**12*d**3*exp(18*I*c) + 196608*B*a**12*d**3*exp(18*I*c))
*exp(-2*I*d*x))*exp(-20*I*c)/(3145728*a**16*d**4), Ne(3145728*a**16*d**4*ex
p(20*I*c), 0)), (x*(-(A - I*B)/(16*a**4) + (A*exp(8*I*c) + 4*A*exp(6*I*c) +
 6*A*exp(4*I*c) + 4*A*exp(2*I*c) + A - I*B*exp(8*I*c) - 2*I*B*exp(6*I*c) +
2*I*B*exp(2*I*c) + I*B)*exp(-8*I*c)/(16*a**4)), True)) + x*(A - I*B)/(16*a*
*4)
```

Giac [A] time = 1.33658, size = 208, normalized size = 1.43

$$-\frac{\frac{12\,(-i\,A-B)\log(\tan(dx+c)+i)}{a^4}-\frac{12\,(-i\,A-B)\log(\tan(dx+c)-i)}{a^4}-\frac{25i\,A\tan(dx+c)^4+25\,B\tan(dx+c)^4+124\,A\tan(dx+c)^3-124i\,B\tan(dx+c)^3-246i\,A\tan(\cdots}{a^4(\tan(dx+c)-\cdots}}{384\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="giac")
```

```
[Out] -1/384*(12*(-I*A - B)*log(tan(d*x + c) + I)/a^4 - 12*(-I*A - B)*log(tan(d*x
 + c) - I)/a^4 - (25*I*A*tan(d*x + c)^4 + 25*B*tan(d*x + c)^4 + 124*A*tan(d
*x + c)^3 - 124*I*B*tan(d*x + c)^3 - 246*I*A*tan(d*x + c)^2 - 246*B*tan(d*x
 + c)^2 - 252*A*tan(d*x + c) + 252*I*B*tan(d*x + c) + 153*I*A + 57*B)/(a^4*
(tan(d*x + c) - I)^4))/d
```

3.64 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=162

$$\frac{15A+iB}{16a^4d(1+i\tan(c+dx))}+\frac{7A+iB}{16a^4d(1+i\tan(c+dx))^2}-\frac{x(-B+15iA)}{16a^4}+\frac{A\log(\sin(c+dx))}{a^4d}+\frac{A+iB}{8d(a+ia\tan(c+dx))^4}+$$

```
[Out] -((((15*I)*A - B)*x)/(16*a^4) + (A*Log[Sin[c + d*x]])/(a^4*d) + (7*A + I*B)/
(16*a^4*d*(1 + I*Tan[c + d*x])^2) + (15*A + I*B)/(16*a^4*d*(1 + I*Tan[c + d
*x])) + (A + I*B)/(8*d*(a + I*a*Tan[c + d*x])^4) + (3*A + I*B)/(12*a*d*(a +
 I*a*Tan[c + d*x])^3)
```

Rubi [A] time = 0.494243, antiderivative size = 162, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3596, 3531, 3475}

$$\frac{15A+iB}{16a^4d(1+i\tan(c+dx))}+\frac{7A+iB}{16a^4d(1+i\tan(c+dx))^2}-\frac{x(-B+15iA)}{16a^4}+\frac{A\log(\sin(c+dx))}{a^4d}+\frac{A+iB}{8d(a+ia\tan(c+dx))^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```


```
[Out] -((((15*I)*A - B)*x)/(16*a^4) + (A*Log[Sin[c + d*x]])/(a^4*d) + (7*A + I*B)/
(16*a^4*d*(1 + I*Tan[c + d*x])^2) + (15*A + I*B)/(16*a^4*d*(1 + I*Tan[c + d
*x])) + (A + I*B)/(8*d*(a + I*a*Tan[c + d*x])^4) + (3*A + I*B)/(12*a*d*(a +
 I*a*Tan[c + d*x])^3)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}dx = \frac{A+iB}{8d(a+ia\tan(c+dx))^4}+\frac{\int \frac{\cot(c+dx)(8aA-4a(iA-B)\tan(c+dx))}{(a+ia\tan(c+dx))^3}dx}{8a^2}$$

$$= \frac{A+iB}{8d(a+ia\tan(c+dx))^4}+\frac{3A+iB}{12ad(a+ia\tan(c+dx))^3}+\frac{\int \frac{\cot(c+dx)\left(48a^2A-12a^2(3i\right.}{(a+ia\tan(c+d}}{48a^4}$$

$$= \frac{7A+iB}{16a^4d(1+i\tan(c+dx))^2}+\frac{A+iB}{8d(a+ia\tan(c+dx))^4}+\frac{3A+iB}{12ad(a+ia\tan(c+dx)}$$

$$= \frac{7A+iB}{16a^4d(1+i\tan(c+dx))^2}+\frac{A+iB}{8d(a+ia\tan(c+dx))^4}+\frac{3A+iB}{12ad(a+ia\tan(c+dx)}$$

$$= -\frac{(15iA-B)x}{16a^4}+\frac{7A+iB}{16a^4d(1+i\tan(c+dx))^2}+\frac{A+iB}{8d(a+ia\tan(c+dx))^4}+\frac{}{12ad(a}$$

$$= -\frac{(15iA-B)x}{16a^4}+\frac{A\log(\sin(c+dx))}{a^4d}+\frac{7A+iB}{16a^4d(1+i\tan(c+dx))^2}+\frac{A}{8d(a+ia\,ta}$$

Mathematica [A] time = 1.12394, size = 193, normalized size = 1.19

$$\frac{\sec^4(c+dx)(16(21A+4iB)\cos(2(c+dx))+3\cos(4(c+dx))(128A\log(\sin(c+dx))-120iAdx+A+8Bdx+iB)+28}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (Sec[c + d*x]^4*(96*A + (36*I)*B + 16*(21*A + (4*I)*B)*Cos[2*(c + d*x)] + 3
*Cos[4*(c + d*x)]*(A + I*B - (120*I)*A*d*x + 8*B*d*x + 128*A*Log[Sin[c + d*
```

```
x]]) + (288*I)*A*Sin[2*(c + d*x)] - 32*B*Sin[2*(c + d*x)] - (3*I)*A*Sin[4*(
c + d*x)] + 3*B*Sin[4*(c + d*x)] + 360*A*d*x*Sin[4*(c + d*x)] + (24*I)*B*d*
x*Sin[4*(c + d*x)] + (384*I)*A*Log[Sin[c + d*x]]*Sin[4*(c + d*x)]))/(384*a^
4*d*(-I + Tan[c + d*x])^4)
```

Maple [A] time = 0.122, size = 259, normalized size = 1.6

$$\frac{A}{8\,a^4d\,(\tan(dx+c)-i)^4}+\frac{\frac{i}{8}B}{a^4d\,(\tan(dx+c)-i)^4}-\frac{\frac{i}{32}\ln(\tan(dx+c)-i)\,B}{a^4d}-\frac{31\,\ln(\tan(dx+c)-i)\,A}{32\,a^4d}-\frac{\frac{15\,i}{16}A}{a^4d\,(\tan(dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] 1/8/d/a^4/(tan(d*x+c)-I)^4*A+1/8*I/d/a^4/(tan(d*x+c)-I)^4*B-1/32*I/d/a^4*ln
(tan(d*x+c)-I)*B-31/32/d/a^4*ln(tan(d*x+c)-I)*A-15/16*I/d/a^4/(tan(d*x+c)-I
)*A+1/16/d/a^4/(tan(d*x+c)-I)*B-1/12/d/a^4/(tan(d*x+c)-I)^3*B+1/4*I/d/a^4/(
tan(d*x+c)-I)^3*A-7/16/d/a^4/(tan(d*x+c)-I)^2*A-1/16*I/d/a^4/(tan(d*x+c)-I)
^2*B-1/32/d/a^4*A*ln(tan(d*x+c)+I)+1/32*I/d/a^4*B*ln(tan(d*x+c)+I)+1/d/a^4*
A*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.53233, size = 362, normalized size = 2.23

$$\frac{\left((-744i\,A+24\,B)dxe^{(8i\,dx+8i\,c)}+384\,Ae^{(8i\,dx+8i\,c)}\log\left(e^{(2i\,dx+2i\,c)}-1\right)+24\,(13\,A+2i\,B)e^{(6i\,dx+6i\,c)}+12\,(8\,A+3i\,B)e^{(4i\,dx+4}}{384\,a^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] 1/384*((-744*I*A + 24*B)*d*x*e^(8*I*d*x + 8*I*c) + 384*A*e^(8*I*d*x + 8*I*c
)*log(e^(2*I*d*x + 2*I*c) - 1) + 24*(13*A + 2*I*B)*e^(6*I*d*x + 6*I*c) + 12
*(8*A + 3*I*B)*e^(4*I*d*x + 4*I*c) + 8*(3*A + 2*I*B)*e^(2*I*d*x + 2*I*c) +
3*A + 3*I*B)*e^(-8*I*d*x - 8*I*c)/(a^4*d)
```

Sympy [A] time = 23.5548, size = 360, normalized size = 2.22

$$\frac{A\log\left(e^{2idx}-e^{-2ic}\right)}{a^4d}+\begin{cases}\frac{\left(\left(24576Aa^{12}d^3e^{12ic}+24576iBa^{12}d^3e^{12ic}\right)e^{-8idx}+\left(196608Aa^{12}d^3e^{14ic}+131072iBa^{12}d^3e^{14ic}\right)e^{-6idx}+\left(786432Aa^{12}d^3e^{16ic}+294912\right.\right.}{3145728a^{16}d^4} \\ x\left(\frac{31iA-B}{16a^4}-\frac{\left(31iAe^{8ic}+26iAe^{6ic}+16iAe^{4ic}+6iAe^{2ic}+iA-Be^{8ic}-4Be^{6ic}-6Be^{4ic}-4Be^{2ic}-B\right)e^{-8ic}}{16a^4}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] A*log(exp(2*I*d*x) - exp(-2*I*c))/(a**4*d) + Piecewise((((24576*A*a**12*d**
3*exp(12*I*c) + 24576*I*B*a**12*d**3*exp(12*I*c))*exp(-8*I*d*x) + (196608*A
*a**12*d**3*exp(14*I*c) + 131072*I*B*a**12*d**3*exp(14*I*c))*exp(-6*I*d*x)
+ (786432*A*a**12*d**3*exp(16*I*c) + 294912*I*B*a**12*d**3*exp(16*I*c))*exp
(-4*I*d*x) + (2555904*A*a**12*d**3*exp(18*I*c) + 393216*I*B*a**12*d**3*exp(
18*I*c))*exp(-2*I*d*x))*exp(-20*I*c)/(3145728*a**16*d**4), Ne(3145728*a**16
*d**4*exp(20*I*c), 0)), (x*((31*I*A - B)/(16*a**4) - (31*I*A*exp(8*I*c) + 2
6*I*A*exp(6*I*c) + 16*I*A*exp(4*I*c) + 6*I*A*exp(2*I*c) + I*A - B*exp(8*I*c
) - 4*B*exp(6*I*c) - 6*B*exp(4*I*c) - 4*B*exp(2*I*c) - B)*exp(-8*I*c)/(16*a
**4)), True)) + x*(-31*I*A + B)/(16*a**4)
```

Giac [A] time = 1.34165, size = 224, normalized size = 1.38

$$-\frac{\frac{12\,(A-i\,B)\log(\tan(dx+c)+i)}{a^4}+\frac{12\,(31\,A+i\,B)\log(\tan(dx+c)-i)}{a^4}-\frac{384\,A\log(|\tan(dx+c)|)}{a^4}-\frac{775\,A\tan(dx+c)^4+25i\,B\tan(dx+c)^4-3460i\,A\tan(dx+c)^3+1}{}}{384\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] -1/384*(12*(A - I*B)*log(tan(d*x + c) + I)/a^4 + 12*(31*A + I*B)*log(tan(d*
x + c) - I)/a^4 - 384*A*log(abs(tan(d*x + c)))/a^4 - (775*A*tan(d*x + c)^4
+ 25*I*B*tan(d*x + c)^4 - 3460*I*A*tan(d*x + c)^3 + 124*B*tan(d*x + c)^3 -
5898*A*tan(d*x + c)^2 - 246*I*B*tan(d*x + c)^2 + 4612*I*A*tan(d*x + c) - 25
2*B*tan(d*x + c) + 1447*A + 153*I*B)/(a^4*(tan(d*x + c) - I)^4))/d
```

3.65 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=220

$$-\frac{5(13A+3iB)\cot(c+dx)}{16a^4d}-\frac{(-B+4iA)\log(\sin(c+dx))}{a^4d}+\frac{(4A+iB)\cot(c+dx)}{2a^4d(1+i\tan(c+dx))}+\frac{(31A+9iB)\cot(c+dx)}{48a^4d(1+i\tan(c+dx))^2}-\frac{5x(}{}$$

```
[Out] (-5*(13*A + (3*I)*B)*x)/(16*a^4) - (5*(13*A + (3*I)*B)*Cot[c + d*x])/(16*a^
4*d) - (((4*I)*A - B)*Log[Sin[c + d*x]])/(a^4*d) + ((31*A + (9*I)*B)*Cot[c
+ d*x])/(48*a^4*d*(1 + I*Tan[c + d*x])^2) + ((4*A + I*B)*Cot[c + d*x])/(2*a
^4*d*(1 + I*Tan[c + d*x])) + ((A + I*B)*Cot[c + d*x])/(8*d*(a + I*a*Tan[c +
 d*x])^4) + ((7*A + (3*I)*B)*Cot[c + d*x])/(24*a*d*(a + I*a*Tan[c + d*x])^3
)
```

Rubi [A] time = 0.720652, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{5(13A+3iB)\cot(c+dx)}{16a^4d}-\frac{(-B+4iA)\log(\sin(c+dx))}{a^4d}+\frac{(4A+iB)\cot(c+dx)}{2a^4d(1+i\tan(c+dx))}+\frac{(31A+9iB)\cot(c+dx)}{48a^4d(1+i\tan(c+dx))^2}-\frac{5x(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```


```
[Out] (-5*(13*A + (3*I)*B)*x)/(16*a^4) - (5*(13*A + (3*I)*B)*Cot[c + d*x])/(16*a^
4*d) - (((4*I)*A - B)*Log[Sin[c + d*x]])/(a^4*d) + ((31*A + (9*I)*B)*Cot[c
+ d*x])/(48*a^4*d*(1 + I*Tan[c + d*x])^2) + ((4*A + I*B)*Cot[c + d*x])/(2*a
^4*d*(1 + I*Tan[c + d*x])) + ((A + I*B)*Cot[c + d*x])/(8*d*(a + I*a*Tan[c +
 d*x])^4) + ((7*A + (3*I)*B)*Cot[c + d*x])/(24*a*d*(a + I*a*Tan[c + d*x])^3
)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = \frac{(A+iB)\cot(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{\int \frac{\cot^2(c+dx)(a(9A+iB)-5a(iA-B)\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx}{8a^2}$$

$$= \frac{(A+iB)\cot(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(7A+3iB)\cot(c+dx)}{24ad(a+ia\tan(c+dx))^3} + \frac{\int \frac{\cot^2(c+dx)\left(4a^2(17A+3iB\right.}{(a+ia\tan}}{48}$$

$$= \frac{(31A+9iB)\cot(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\cot(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(7A+3iB)\cot(c+d}{24ad(a+ia\tan(c+d}$$

$$= \frac{(31A+9iB)\cot(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\cot(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(7A+3iB)\cot(c+d}{24ad(a+ia\tan(c+d}$$

$$= -\frac{5(13A+3iB)\cot(c+dx)}{16a^4d} + \frac{(31A+9iB)\cot(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\cot(c+}{8d(a+ia\tan(c+}$$

$$= -\frac{5(13A+3iB)x}{16a^4} - \frac{5(13A+3iB)\cot(c+dx)}{16a^4d} + \frac{(31A+9iB)\cot(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{}{8}$$

$$= -\frac{5(13A+3iB)x}{16a^4} - \frac{5(13A+3iB)\cot(c+dx)}{16a^4d} - \frac{(4iA-B)\log(\sin(c+dx))}{a^4d} +$$

Mathematica [B] time = 7.0038, size = 1466, normalized size = 6.66

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (((-15*I)*A + 8*B)*Cos[4*d*x]*Sec[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])^4*(A +
 B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c +
d*x])^4) + (((-4*I)*A + 3*B)*Cos[6*d*x]*Sec[c + d*x]^3*(Cos[2*c]/48 - (I/48
)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d
*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + (((-36*I)*A + 13*B)*Cos[2
*d*x]*Sec[c + d*x]^3*(Cos[2*c]/16 + (I/16)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x]
)^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan
[c + d*x])^4) + (Sec[c + d*x]^3*((-4*I)*A*Cos[2*c] + B*Cos[2*c] + 4*A*Sin[2
*c] + I*B*Sin[2*c])*((-I)*ArcTan[Tan[d*x]]*Cos[2*c] + ArcTan[Tan[d*x]]*Sin[
2*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] +
B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + (Sec[c + d*x]^3*((-4*I)*A*Cos[2
*c] + B*Cos[2*c] + 4*A*Sin[2*c] + I*B*Sin[2*c])*((Cos[2*c]*Log[Sin[c + d*x]
^2])/2 + (I/2)*Log[Sin[c + d*x]^2]*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^4*(A +
```

```
B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x
])^4) + (x*Sec[c + d*x]^3*(-12*A*Cos[c]^2 - (3*I)*B*Cos[c]^2 + (4*I)*A*Cos[
c]^2*Cot[c] - B*Cos[c]^2*Cot[c] - (12*I)*A*Cos[c]*Sin[c] + 3*B*Cos[c]*Sin[c
] + 4*A*Sin[c]^2 + I*B*Sin[c]^2 + ((-4*I)*A + B)*Cot[c]*(Cos[4*c] + I*Sin[4
*c]))*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/((A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + (((-I)*A + B)*Cos[8*d*x]*Sec[c +
d*x]^3*(Cos[4*c]/128 - (I/128)*Sin[4*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*T
an[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4
) + ((13*A + (3*I)*B)*Sec[c + d*x]^3*((-5*d*x*Cos[4*c])/16 - ((5*I)/16)*d*x
*Sin[4*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*
x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + ((36*A + (13*I)*B)*Sec[c +
 d*x]^3*(-Cos[2*c]/16 - (I/16)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^4*Sin[2*d*
x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[
c + d*x])^4) - ((15*A + (8*I)*B)*Sec[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])^4*S
in[4*d*x]*(A + B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a
+ I*a*Tan[c + d*x])^4) + ((4*A + (3*I)*B)*Sec[c + d*x]^3*(-Cos[2*c]/48 + (I
/48)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^4*Sin[6*d*x]*(A + B*Tan[c + d*x]))/(
d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + ((A + I*B)*
Sec[c + d*x]^3*(-Cos[4*c]/128 + (I/128)*Sin[4*c])*(Cos[d*x] + I*Sin[d*x])^4
*Sin[8*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a +
 I*a*Tan[c + d*x])^4) + (Csc[c]*Csc[c + d*x]*Sec[c + d*x]^3*(Cos[d*x] + I*S
in[d*x])^4*((I/2)*A*Cos[4*c - d*x] - (I/2)*A*Cos[4*c + d*x] - (A*Sin[4*c -
d*x])/2 + (A*Sin[4*c + d*x])/2)*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] +
B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4)
```

Maple [A] time = 0.122, size = 293, normalized size = 1.3

$$\frac{5A}{12a^4d(\tan(dx+c)-i)^3}+\frac{\frac{i}{4}B}{a^4d(\tan(dx+c)-i)^3}-\frac{31\ln(\tan(dx+c)-i)B}{32a^4d}+\frac{\frac{129i}{32}\ln(\tan(dx+c)-i)A}{a^4d}-\frac{}{16a^4d(\tan}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] 5/12/d/a^4/(tan(d*x+c)-I)^3*A+1/4*I/d/a^4/(tan(d*x+c)-I)^3*B-31/32/d/a^4*ln
(tan(d*x+c)-I)*B+129/32*I/d/a^4*ln(tan(d*x+c)-I)*A-7/16/d/a^4/(tan(d*x+c)-I
)^2*B+17/16*I/d/a^4/(tan(d*x+c)-I)^2*A-1/8*I/d/a^4/(tan(d*x+c)-I)^4*A+1/8/d
/a^4/(tan(d*x+c)-I)^4*B-49/16/d/a^4/(tan(d*x+c)-I)*A-15/16*I/d/a^4/(tan(d*x
+c)-I)*B-1/32/d/a^4*B*ln(tan(d*x+c)+I)-1/32*I/d/a^4*A*ln(tan(d*x+c)+I)-1/d/
a^4*A/tan(d*x+c)-4*I/d/a^4*A*ln(tan(d*x+c))+1/d/a^4*B*ln(tan(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.78027, size = 578, normalized size = 2.63

$$-\frac{24\,(129\,A+31i\,B)dxe^{(10i\,dx+10i\,c)}-(24\,(129\,A+31i\,B)dx-1632i\,A+312\,B)e^{(8i\,dx+8i\,c)}-(684i\,A-216\,B)e^{(6i\,dx+6i\,c)}-(}{384}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
fricas")
```

```
[Out] -1/384*(24*(129*A + 31*I*B)*d*x*e^(10*I*d*x + 10*I*c) - (24*(129*A + 31*I*B
)*d*x - 1632*I*A + 312*B)*e^(8*I*d*x + 8*I*c) - (684*I*A - 216*B)*e^(6*I*d*
x + 6*I*c) - (148*I*A - 72*B)*e^(4*I*d*x + 4*I*c) - (29*I*A - 21*B)*e^(2*I*
d*x + 2*I*c) - ((-1536*I*A + 384*B)*e^(10*I*d*x + 10*I*c) + (1536*I*A - 384
*B)*e^(8*I*d*x + 8*I*c))*log(e^(2*I*d*x + 2*I*c) - 1) - 3*I*A + 3*B)/(a^4*d
*e^(10*I*d*x + 10*I*c) - a^4*d*e^(8*I*d*x + 8*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.30358, size = 278, normalized size = 1.26

$$\frac{\frac{12\,(-i\,A-B)\log(\tan(dx+c)+i)}{a^4}-\frac{12\,(-129i\,A+31\,B)\log(\tan(dx+c)-i)}{a^4}-\frac{384\,(4i\,A-B)\log(|\tan(dx+c)|)}{a^4}-\frac{384\,(-4i\,A\tan(dx+c)+B\tan(dx+c)+A)}{a^4\tan(dx+c)}-\frac{3225i\,A}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
giac")
```

```
[Out] 1/384*(12*(-I*A - B)*log(tan(d*x + c) + I)/a^4 - 12*(-129*I*A + 31*B)*log(t
an(d*x + c) - I)/a^4 - 384*(4*I*A - B)*log(abs(tan(d*x + c)))/a^4 - 384*(-4
*I*A*tan(d*x + c) + B*tan(d*x + c) + A)/(a^4*tan(d*x + c)) - (3225*I*A*tan(
d*x + c)^4 - 775*B*tan(d*x + c)^4 + 14076*A*tan(d*x + c)^3 + 3460*I*B*tan(d
*x + c)^3 - 23286*I*A*tan(d*x + c)^2 + 5898*B*tan(d*x + c)^2 - 17404*A*tan(
d*x + c) - 4612*I*B*tan(d*x + c) + 5017*I*A - 1447*B)/(a^4*(tan(d*x + c) -
I)^4))/d
```

3.66 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx$

Optimal. Leaf size=255

$$-\frac{(11A+4iB)\cot^2(c+dx)}{2a^4d}+\frac{5(-13B+35iA)\cot(c+dx)}{16a^4d}-\frac{(11A+4iB)\log(\sin(c+dx))}{a^4d}+\frac{5(35A+13iB)\cot^2(c+dx}{48a^4d(1+i\tan(c+dx))}$$

```
[Out] (5*((35*I)*A - 13*B)*x)/(16*a^4) + (5*((35*I)*A - 13*B)*Cot[c + d*x])/(16*a
^4*d) - ((11*A + (4*I)*B)*Cot[c + d*x]^2)/(2*a^4*d) - ((11*A + (4*I)*B)*Log
[Sin[c + d*x]])/(a^4*d) + ((43*A + (17*I)*B)*Cot[c + d*x]^2)/(48*a^4*d*(1 +
 I*Tan[c + d*x])^2) + (5*(35*A + (13*I)*B)*Cot[c + d*x]^2)/(48*a^4*d*(1 + I
*Tan[c + d*x])) + ((A + I*B)*Cot[c + d*x]^2)/(8*d*(a + I*a*Tan[c + d*x])^4)
 + ((2*A + I*B)*Cot[c + d*x]^2)/(6*a*d*(a + I*a*Tan[c + d*x])^3)
```

Rubi [A] time = 0.789628, antiderivative size = 255, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3529, 3531, 3475}

$$-\frac{(11A+4iB)\cot^2(c+dx)}{2a^4d}+\frac{5(-13B+35iA)\cot(c+dx)}{16a^4d}-\frac{(11A+4iB)\log(\sin(c+dx))}{a^4d}+\frac{5(35A+13iB)\cot^2(c+dx}{48a^4d(1+i\tan(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```


```
[Out] (5*((35*I)*A - 13*B)*x)/(16*a^4) + (5*((35*I)*A - 13*B)*Cot[c + d*x])/(16*a
^4*d) - ((11*A + (4*I)*B)*Cot[c + d*x]^2)/(2*a^4*d) - ((11*A + (4*I)*B)*Log
[Sin[c + d*x]])/(a^4*d) + ((43*A + (17*I)*B)*Cot[c + d*x]^2)/(48*a^4*d*(1 +
 I*Tan[c + d*x])^2) + (5*(35*A + (13*I)*B)*Cot[c + d*x]^2)/(48*a^4*d*(1 + I
*Tan[c + d*x])) + ((A + I*B)*Cot[c + d*x]^2)/(8*d*(a + I*a*Tan[c + d*x])^4)
 + ((2*A + I*B)*Cot[c + d*x]^2)/(6*a*d*(a + I*a*Tan[c + d*x])^3)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = \frac{(A+iB)\cot^2(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{\int \frac{\cot^3(c+dx)(2a(5A+iB)-6a(iA-B)\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx}{8a^2}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(2A+iB)\cot^2(c+dx)}{6ad(a+ia\tan(c+dx))^3} + \frac{\int \frac{\cot^3(c+dx)\left(4a^2(23A+7iB)-\right.}{(a+ia\tan(}}{48}$$

$$= \frac{(43A+17iB)\cot^2(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\cot^2(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(2A+iB)\cot^2(c+d}{6ad(a+ia\tan(c+dx}$$

$$= \frac{(43A+17iB)\cot^2(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\cot^2(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(2A+iB)\cot^2(c+d}{6ad(a+ia\tan(c+dx}$$

$$= -\frac{(11A+4iB)\cot^2(c+dx)}{2a^4d} + \frac{(43A+17iB)\cot^2(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\cot^2(c+}{8d(a+ia\tan(c+}$$

$$= \frac{5(35iA-13B)\cot(c+dx)}{16a^4d} - \frac{(11A+4iB)\cot^2(c+dx)}{2a^4d} + \frac{(43A+17iB)\cot^2(}{48a^4d(1+i\tan(c+}$$

$$= \frac{5(35iA-13B)x}{16a^4} + \frac{5(35iA-13B)\cot(c+dx)}{16a^4d} - \frac{(11A+4iB)\cot^2(c+dx)}{2a^4d} +$$

$$= \frac{5(35iA-13B)x}{16a^4} + \frac{5(35iA-13B)\cot(c+dx)}{16a^4d} - \frac{(11A+4iB)\cot^2(c+dx)}{2a^4d} -$$

Mathematica [B] time = 7.2365, size = 1625, normalized size = 6.37

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] (-3*(8*A + (5*I)*B)*Cos[4*d*x]*Sec[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])^4*(A
+ B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c +
 d*x])^4) + ((5*A + (4*I)*B)*Cos[6*d*x]*Sec[c + d*x]^3*(-Cos[2*c]/48 + (I/4
8)*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c +
d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + ((25*A + (12*I)*B)*Cos[2
*d*x]*Sec[c + d*x]^3*((-3*Cos[2*c])/16 - ((3*I)/16)*Sin[2*c])*(Cos[d*x] + I
*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a
+ I*a*Tan[c + d*x])^4) + (Sec[c + d*x]^3*(11*A*Cos[2*c] + (4*I)*B*Cos[2*c]
+ (11*I)*A*Sin[2*c] - 4*B*Sin[2*c])*(I*ArcTan[Tan[d*x]]*Cos[2*c] - ArcTan[T
an[d*x]]*Sin[2*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Co
```

```
s[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + (Sec[c + d*x]^3*(1
1*A*Cos[2*c] + (4*I)*B*Cos[2*c] + (11*I)*A*Sin[2*c] - 4*B*Sin[2*c])*(-(Cos[
2*c]*Log[Sin[c + d*x]^2])/2 - (I/2)*Log[Sin[c + d*x]^2]*Sin[2*c])*(Cos[d*x]
 + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])
*(a + I*a*Tan[c + d*x])^4) + (x*Sec[c + d*x]^3*((33*I)*A*Cos[c]^2 - 12*B*Co
s[c]^2 + 11*A*Cos[c]^2*Cot[c] + (4*I)*B*Cos[c]^2*Cot[c] - 33*A*Cos[c]*Sin[c
] - (12*I)*B*Cos[c]*Sin[c] - (11*I)*A*Sin[c]^2 + 4*B*Sin[c]^2 + (11*A + (4*
I)*B)*Cot[c]*(-Cos[4*c] - I*Sin[4*c]))*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan
[c + d*x]))/((A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) +
((A + I*B)*Cos[8*d*x]*Sec[c + d*x]^3*(-Cos[4*c]/128 + (I/128)*Sin[4*c])*(Co
s[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c +
 d*x])*(a + I*a*Tan[c + d*x])^4) + (Csc[c + d*x]^2*Sec[c + d*x]^3*(-(A*Cos[
4*c])/2 - (I/2)*A*Sin[4*c])*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))
/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + ((35*A +
(13*I)*B)*Sec[c + d*x]^3*(((5*I)/16)*d*x*Cos[4*c] - (5*d*x*Sin[4*c])/16)*(C
os[d*x] + I*Sin[d*x])^4*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c
+ d*x])*(a + I*a*Tan[c + d*x])^4) + ((25*A + (12*I)*B)*Sec[c + d*x]^3*(((3*
I)/16)*Cos[2*c] - (3*Sin[2*c])/16)*(Cos[d*x] + I*Sin[d*x])^4*Sin[2*d*x]*(A
+ B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*
x])^4) + (((3*I)/32)*(8*A + (5*I)*B)*Sec[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])
^4*Sin[4*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a
 + I*a*Tan[c + d*x])^4) + ((5*A + (4*I)*B)*Sec[c + d*x]^3*((I/48)*Cos[2*c]
+ Sin[2*c]/48)*(Cos[d*x] + I*Sin[d*x])^4*Sin[6*d*x]*(A + B*Tan[c + d*x]))/(
d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4) + ((A + I*B)*
Sec[c + d*x]^3*((I/128)*Cos[4*c] + Sin[4*c]/128)*(Cos[d*x] + I*Sin[d*x])^4*
Sin[8*d*x]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a +
I*a*Tan[c + d*x])^4) + (Csc[c]*Csc[c + d*x]*Sec[c + d*x]^3*(Cos[d*x] + I*Si
n[d*x])^4*(2*A*Cos[4*c - d*x] + (I/2)*B*Cos[4*c - d*x] - 2*A*Cos[4*c + d*x]
 - (I/2)*B*Cos[4*c + d*x] + (2*I)*A*Sin[4*c - d*x] - (B*Sin[4*c - d*x])/2 -
 (2*I)*A*Sin[4*c + d*x] + (B*Sin[4*c + d*x])/2)*(A + B*Tan[c + d*x]))/(d*(A
*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4)
```

Maple [A] time = 0.136, size = 329, normalized size = 1.3

$$-\frac{A}{8\,a^4d\left(\tan\left(dx+c\right)-i\right)^4}-\frac{\frac{7i}{12}A}{a^4d\left(\tan\left(dx+c\right)-i\right)^3}-\frac{49\,B}{16\,a^4d\left(\tan\left(dx+c\right)-i\right)}+\frac{4\,iA}{a^4d\tan\left(dx+c\right)}+\frac{31\,A}{16\,a^4d\left(\tan\left(dx+c\right)-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] -1/8/d/a^4/(tan(d*x+c)-I)^4*A-7/12*I/d/a^4/(tan(d*x+c)-I)^3*A-49/16/d/a^4/(
```

```
tan(d*x+c)-I)*B+4*I/d/a^4/tan(d*x+c)*A+31/16/d/a^4/(tan(d*x+c)-I)^2*A+111/1
6*I/d/a^4/(tan(d*x+c)-I)*A+5/12/d/a^4/(tan(d*x+c)-I)^3*B+17/16*I/d/a^4/(tan
(d*x+c)-I)^2*B+351/32/d/a^4*ln(tan(d*x+c)-I)*A-1/32*I/d/a^4*B*ln(tan(d*x+c)
+I)+1/32/d/a^4*A*ln(tan(d*x+c)+I)-4*I/d/a^4*B*ln(tan(d*x+c))-1/2/d/a^4*A/ta
n(d*x+c)^2+129/32*I/d/a^4*ln(tan(d*x+c)-I)*B-11/d/a^4*A*ln(tan(d*x+c))-1/8*
I/d/a^4/(tan(d*x+c)-I)^4*B-1/d/a^4/tan(d*x+c)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
maxima")

[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.82941, size = 772, normalized size = 3.03

$$\frac{(8424i\,A - 3096\,B)dxe^{(12i\,dx+12i\,c)} + ((-16848i\,A + 6192\,B)dx - 4104\,A - 1632i\,B)e^{(10i\,dx+10i\,c)} + ((8424i\,A - 3096\,B)dx \cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
fricas")

[Out] 1/384*((8424*I*A - 3096*B)*d*x*e^(12*I*d*x + 12*I*c) + ((-16848*I*A + 6192*
B)*d*x - 4104*A - 1632*I*B)*e^(10*I*d*x + 10*I*c) + ((8424*I*A - 3096*B)*d*
x + 6384*A + 2316*I*B)*e^(8*I*d*x + 8*I*c) - 8*(158*A + 67*I*B)*e^(6*I*d*x
+ 6*I*c) - (211*A + 119*I*B)*e^(4*I*d*x + 4*I*c) - 2*(17*A + 13*I*B)*e^(2*I
*d*x + 2*I*c) - 384*((11*A + 4*I*B)*e^(12*I*d*x + 12*I*c) - 2*(11*A + 4*I*B
)*e^(10*I*d*x + 10*I*c) + (11*A + 4*I*B)*e^(8*I*d*x + 8*I*c))*log(e^(2*I*d*
x + 2*I*c) - 1) - 3*A - 3*I*B)/(a^4*d*e^(12*I*d*x + 12*I*c) - 2*a^4*d*e^(10
*I*d*x + 10*I*c) + a^4*d*e^(8*I*d*x + 8*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.40691, size = 309, normalized size = 1.21

$$\frac{\frac{12\,(A-i\,B)\log(\tan(dx+c)+i)}{a^4}+\frac{36\,(117\,A+43i\,B)\log(\tan(dx+c)-i)}{a^4}-\frac{384\,(11\,A+4i\,B)\log(|\tan(dx+c)|)}{a^4}+\frac{192\left(33\,A\tan(dx+c)^2+12i\,B\tan(dx+c)^2+8i\,A\tan(\right.}{a^4\tan(dx+c)^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
giac")
```

```
[Out] 1/384*(12*(A - I*B)*log(tan(d*x + c) + I)/a^4 + 36*(117*A + 43*I*B)*log(tan
(d*x + c) - I)/a^4 - 384*(11*A + 4*I*B)*log(abs(tan(d*x + c)))/a^4 + 192*(3
3*A*tan(d*x + c)^2 + 12*I*B*tan(d*x + c)^2 + 8*I*A*tan(d*x + c) - 2*B*tan(d
*x + c) - A)/(a^4*tan(d*x + c)^2) - (8775*A*tan(d*x + c)^4 + 3225*I*B*tan(d
*x + c)^4 - 37764*I*A*tan(d*x + c)^3 + 14076*B*tan(d*x + c)^3 - 61386*A*tan
(d*x + c)^2 - 23286*I*B*tan(d*x + c)^2 + 44804*I*A*tan(d*x + c) - 17404*B*t
an(d*x + c) + 12455*A + 5017*I*B)/(a^4*(tan(d*x + c) - I)^4))/d
```

3.67 $\int \tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=194

$$\frac{2(7A-iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d}-\frac{2(7A-31iB)(a+ia\tan(c+dx))^{3/2}}{105ad}-\frac{8(7A-iB)\sqrt{a+ia\tan(c+dx)}}{35d}+$$

```
[Out] (Sqrt[2]*Sqrt[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt
[a])])/d - (8*(7*A - I*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (2*(7*A - I*
B)*Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (2*B*Tan[c + d*x]^3*
Sqrt[a + I*a*Tan[c + d*x]])/(7*d) - (2*(7*A - (31*I)*B)*(a + I*a*Tan[c + d*
x])^(3/2))/(105*a*d)
```

Rubi [A] time = 0.51827, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3597, 3592, 3527, 3480, 206}

$$\frac{2(7A-iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d}-\frac{2(7A-31iB)(a+ia\tan(c+dx))^{3/2}}{105ad}-\frac{8(7A-iB)\sqrt{a+ia\tan(c+dx)}}{35d}+$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[2]*Sqrt[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt
[a])])/d - (8*(7*A - I*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (2*(7*A - I*
B)*Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (2*B*Tan[c + d*x]^3*
Sqrt[a + I*a*Tan[c + d*x]])/(7*d) - (2*(7*A - (31*I)*B)*(a + I*a*Tan[c + d*
x])^(3/2))/(105*a*d)
```


Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
```

```
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{2B\tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{7d} + \frac{2\int \tan^2(c+dx)\sqrt{}}{}$$

$$= \frac{2(7A-iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2B\tan^3(c}{}$$

$$= \frac{2(7A-iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2B\tan^3(c}{}$$

$$= -\frac{8(7A-iB)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2(7A-iB)\tan^2(c+d}{35}$$

$$= -\frac{8(7A-iB)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2(7A-iB)\tan^2(c+d}{35}$$

$$= \frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{8(7A-iB)\sqrt{a+}}{35}$$

Mathematica [A] time = 3.31257, size = 201, normalized size = 1.04

$$\frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\left(\frac{\sqrt{2}(A-iB)\sinh^{-1}\left(e^{i(c+dx)}\right)}{\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}} + \frac{2}{105}\sqrt{\sec(c+dx)}\left((-46B-7iA)\tan(c+dx)+3\sec^2(c\right.\right.}{d\sec^{\frac{3}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x])*((Sqrt[2]*(A - I*B)*ArcSin
h[E^(I*(c + d*x))])/(Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1
 + E^((2*I)*(c + d*x))]) + (2*Sqrt[Sec[c + d*x]]*(-112*A + (46*I)*B + ((-7*
I)*A - 46*B)*Tan[c + d*x] + 3*Sec[c + d*x]^2*(7*A - I*B + 5*B*Tan[c + d*x])
))/105))/(d*Sec[c + d*x]^(3/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.069, size = 162, normalized size = 0.8

$$-2\,\frac{1}{a^3d}\left(-i/7B\,(a+ia\tan(dx+c))^{7/2} + 2/5\,iB\,(a+ia\tan(dx+c))^{5/2}\,a + 1/5\,A\,(a+ia\tan(dx+c))^{5/2}\,a - 2/3\,iB\,(a+ia\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -2/d/a^3*(-1/7*I*B*(a+I*a*tan(d*x+c))^(7/2)+2/5*I*B*(a+I*a*tan(d*x+c))^(5/2
)*a+1/5*A*(a+I*a*tan(d*x+c))^(5/2)*a-2/3*I*B*(a+I*a*tan(d*x+c))^(3/2)*a^2-1
/3*A*(a+I*a*tan(d*x+c))^(3/2)*a^2+A*a^3*(a+I*a*tan(d*x+c))^(1/2)-1/2*a^(7/2
)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.82687, size = 1253, normalized size = 6.46

$$-\frac{4\sqrt{2}\left((119\,A-92i\,B)e^{(6i\,dx+6i\,c)}+7\,(37\,A-16i\,B)e^{(4i\,dx+4i\,c)}+35\,(7\,A-4i\,B)e^{(2i\,dx+2i\,c)}+105\,A\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}-1\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/210*(4*sqrt(2)*((119*A - 92*I*B)*e^(6*I*d*x + 6*I*c) + 7*(37*A - 16*I*B)
*e^(4*I*d*x + 4*I*c) + 35*(7*A - 4*I*B)*e^(2*I*d*x + 2*I*c) + 105*A)*sqrt(a
/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 105*(d*e^(6*I*d*x + 6*I*c) +
3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((2*A^2 - 4*I*A*
B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*d*sqrt((2*A^2 - 4*I*A*B
```

```
 - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 105
*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c)
 + d)*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*
d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) -
 I*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
 - 2*I*c)/(I*A + B)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*
d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)\tan^{3}\left(c+dx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*tan(d*x+c)**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))*tan(c + d*x)**3,
 x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] Timed out
```

3.68 $\int \tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=143

$$-\frac{2(B+5iA)(a+ia\tan(c+dx))^{3/2}}{15ad}+\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2B\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5d}-\frac{8B\ldots}{}$$

```
[Out] (Sqrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt
[a])])/d - (8*B*Sqrt[a + I*a*Tan[c + d*x]])/(5*d) + (2*B*Tan[c + d*x]^2*Sqr
t[a + I*a*Tan[c + d*x]])/(5*d) - (2*((5*I)*A + B)*(a + I*a*Tan[c + d*x])^(3
/2))/(15*a*d)
```

Rubi [A] time = 0.3021, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3597, 3592, 3527, 3480, 206}

$$-\frac{2(B+5iA)(a+ia\tan(c+dx))^{3/2}}{15ad}+\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2B\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5d}-\frac{8B\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt
[a])])/d - (8*B*Sqrt[a + I*a*Tan[c + d*x]])/(5*d) + (2*B*Tan[c + d*x]^2*Sqr
t[a + I*a*Tan[c + d*x]])/(5*d) - (2*((5*I)*A + B)*(a + I*a*Tan[c + d*x])^(3
/2))/(15*a*d)
```


Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{2B\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5d} + \frac{2\int \tan(c+dx)\sqrt{a}}{}$$

$$= \frac{2B\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5d} - \frac{2(5iA+B)(a+ia}{15ad}$$

$$= -\frac{8B\sqrt{a+ia\tan(c+dx)}}{5d} + \frac{2B\tan^2(c+dx)\sqrt{a+ia\tan(c}}{5d}$$

$$= -\frac{8B\sqrt{a+ia\tan(c+dx)}}{5d} + \frac{2B\tan^2(c+dx)\sqrt{a+ia\tan(c}}{5d}$$

$$= \frac{\sqrt{2}\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{8B\sqrt{a+ia\tan(}}{5d}$$

Mathematica [A] time = 2.50878, size = 184, normalized size = 1.29

$$\frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\left(\frac{\sqrt{2}(B+iA)\sinh^{-1}\left(e^{i(c+dx)}\right)}{\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}}+\frac{2}{15}\sqrt{\sec(c+dx)}\left((5A-iB)\tan(c+dx)-5iA+3B\sec^2(\right.\right.}{d\sec^{\frac{3}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x])*((Sqrt[2]*(I*A + B)*ArcSin
h[E^(I*(c + d*x))])/(Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1
 + E^((2*I)*(c + d*x))]) + (2*Sqrt[Sec[c + d*x]]*((-5*I)*A - 16*B + 3*B*Sec
[c + d*x]^2 + (5*A - I*B)*Tan[c + d*x]))/15))/(d*Sec[c + d*x]^(3/2)*(A*Cos[
c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.062, size = 124, normalized size = 0.9

$$\frac{-2i}{a^2d}\left(-\frac{i}{5}B(a+ia\tan(dx+c))^{\frac{5}{2}}+\frac{i}{3}B(a+ia\tan(dx+c))^{\frac{3}{2}}a+\frac{Aa}{3}(a+ia\tan(dx+c))^{\frac{3}{2}}-ia^2B\sqrt{a+ia\tan(dx+c)}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I/d/a^2*(-1/5*I*B*(a+I*a*tan(d*x+c))^(5/2)+1/3*I*B*(a+I*a*tan(d*x+c))^(3
/2)*a+1/3*A*(a+I*a*tan(d*x+c))^(3/2)*a-I*a^2*B*(a+I*a*tan(d*x+c))^(1/2)-1/2
*a^(5/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/
2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.78475, size = 1084, normalized size = 7.58

$$\sqrt{2}\Big((-40i\,A-68\,B)e^{(4i\,dx+4i\,c)}+(-40i\,A-80\,B)e^{(2i\,dx+2i\,c)}-60\,B\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}+15\left(de^{(4i\,dx+4i\,c)}+2\,de^{(2i\,dx+2i\,c)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/30*(sqrt(2)*((-40*I*A - 68*B)*e^(4*I*d*x + 4*I*c) + (-40*I*A - 80*B)*e^(2
*I*d*x + 2*I*c) - 60*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) +
 15*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt(-(2*A^2 - 4*
I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B
)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + d*sqrt(-(2*A^2 - 4*I*
A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) -
15*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt(-(2*A^2 - 4*I
*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - d*sqrt(-(2*A^2 - 4*I*A
*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d
*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)\tan^{2}\left(c+dx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*tan(d*x+c)**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))*tan(c + d*x)**2,
 x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] Timed out
```

3.69 $\int \tan(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=105

$$-\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2A\sqrt{a+ia\tan(c+dx)}}{d}-\frac{2iB(a+ia\tan(c+dx))^{3/2}}{3ad}$$

```
[Out] -((Sqrt[2]*Sqrt[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d) + (2*A*Sqrt[a + I*a*Tan[c + d*x]])/d - (((2*I)/3)*B*(a + I*a*Ta
n[c + d*x])^(3/2))/(a*d)
```

Rubi [A] time = 0.136788, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3592, 3527, 3480, 206}

$$-\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2A\sqrt{a+ia\tan(c+dx)}}{d}-\frac{2iB(a+ia\tan(c+dx))^{3/2}}{3ad}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((Sqrt[2]*Sqrt[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d) + (2*A*Sqrt[a + I*a*Tan[c + d*x]])/d - (((2*I)/3)*B*(a + I*a*Ta
n[c + d*x])^(3/2))/(a*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{2iB(a+ia\tan(c+dx))^{3/2}}{3ad} + \int \sqrt{a+ia\tan(c+dx)}(-B+$$

$$= \frac{2A\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2iB(a+ia\tan(c+dx))^{3/2}}{3ad} - (iA+$$

$$= \frac{2A\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2iB(a+ia\tan(c+dx))^{3/2}}{3ad} - \frac{(2a(A}{}$$

$$= -\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{2A\sqrt{a+ia\tan(c}}{d}$$

Mathematica [A] time = 1.29348, size = 132, normalized size = 1.26

$$\frac{e^{-i(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(-3(A-iB)\left(1+e^{2i(c+dx)}\right)^{3/2}\sinh^{-1}\left(e^{i(c+dx)}\right)+6Ae^{i(c+dx)}\left(1+e^{2i(c+dx)}\right)-4iBe^{3i(c+dx)}\right)}{3d\left(1+e^{2i(c+dx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (((-4*I)*B*E^((3*I)*(c + d*x)) + 6*A*E^(I*(c + d*x))*(1 + E^((2*I)*(c + d*x
))) - 3*(A - I*B)*(1 + E^((2*I)*(c + d*x)))^(3/2)*ArcSinh[E^(I*(c + d*x))])
*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*E^(I*(c + d*x))*(1 + E^((2*I)*(c + d*x)))
)
```

Maple [A] time = 0.018, size = 82, normalized size = 0.8

$$2\frac{1}{ad}\left(-i/3B\left(a+ia\tan\left(dx+c\right)\right)^{3/2}+A\sqrt{a+ia\tan\left(dx+c\right)}a-1/2\,a^{3/2}\left(A-iB\right)\sqrt{2}\text{Artanh}\left(1/2\,\frac{\sqrt{a+ia\tan\left(dx+c\right)}\sqrt{2}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/d/a*(-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)+A*(a+I*a*tan(d*x+c))^(1/2)*a-1/2*a
^(3/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)
))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.50508, size = 919, normalized size = 8.75

$$4\sqrt{2}\left((3\,A-2i\,B)e^{(2i\,dx+2i\,c)}+3\,A\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}-3\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(2\,A^2-4i\,AB-2\,B^2\right)a}{d^2}}\log\left(\frac{\left(\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,\ldots\right.\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/6*(4*sqrt(2)*((3*A - 2*I*B)*e^(2*I*d*x + 2*I*c) + 3*A)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*e^(I*d*x + I*c) - 3*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((2*A^2
 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*
A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*d*sqrt((2*A^2
- 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A +
B)) + 3*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*l
og((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*e^(I*d*x + I*c) - I*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^
(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(2*I*d*x + 2*I*c)
+ d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)\tan\left(c+dx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))*tan(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.70 $\int \sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=75

$$\frac{2B\sqrt{a+ia\tan(c+dx)}}{d}-\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}$$

```
[Out] -((Sqrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d) + (2*B*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.0721885, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {3527, 3480, 206}

$$\frac{2B\sqrt{a+ia\tan(c+dx)}}{d}-\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((Sqrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d) + (2*B*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\begin{aligned}\int \sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx &= \frac{2B\sqrt{a+ia\tan(c+dx)}}{d}-(-A+iB)\int \sqrt{a+ia\tan(c+dx)}\,dx\\ &= \frac{2B\sqrt{a+ia\tan(c+dx)}}{d}-\frac{(2a(iA+B))\,\text{Subst}\left(\int \frac{1}{2a-x^2}\,dx,x,\sqrt{a+ia\tan(c+dx)}\right)}{d}\\ &= -\frac{\sqrt{2}\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2B\sqrt{a+ia\tan(c+dx)}}{d}\end{aligned}$$

Mathematica [A] time = 1.16491, size = 87, normalized size = 1.16

$$\frac{e^{-i(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(2Be^{i(c+dx)}-i(A-iB)\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((2*B*E^(I*(c + d*x)) - I*(A - I*B)*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcSinh[E
^(I*(c + d*x))])*Sqrt[a + I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x)))
```

Maple [A] time = 0.018, size = 63, normalized size = 0.8

$$\frac{2\,i}{d}\left(-iB\sqrt{a+ia\tan(dx+c)}-\frac{(A-iB)\sqrt{2}}{2}\sqrt{a}\text{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{a+ia\tan(dx+c)}\frac{1}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*I/d*(-I*B*(a+I*a*tan(d*x+c))^(1/2)-1/2*a^(1/2)*(A-I*B)*2^(1/2)*arctanh(1/
2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.46742, size = 755, normalized size = 10.07

$$\frac{4\sqrt{2}B\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)} - d\sqrt{-\frac{\left(2\,A^2-4i\,AB-2\,B^2\right)a}{d^2}}\log\left(\frac{\left(\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}+d\sqrt{-\frac{\left(2\,A^2-4i\,AB-2\,B^2\right)a}{d^2}}e^{(2i\,d}\right.}{i\,A+B}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(4*sqrt(2)*B*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - d*sqrt
(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I
*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + d*sqrt(-
(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/
(I*A + B)) + d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A +
B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c) - d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^
(-2*I*d*x - 2*I*c)/(I*A + B)))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.71 $\int \cot(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=86

$$\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}$$

```
[Out] (-2*Sqrt[a]*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d + (Sqrt[2]*Sqr
t[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/d
```

Rubi [A] time = 0.227318, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {3600, 3480, 206, 3599, 63, 208}

$$\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*Sqrt[a]*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d + (Sqrt[2]*Sqr
t[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/d
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}\int \cot(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx &= \frac{A\int \cot(c+dx)(a-ia\tan(c+dx))\sqrt{a+ia\tan(c+dx)}\,dx}{a} + \\ &= \frac{(aA)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+iax}}\,dx,x,\tan(c+dx)\right)}{d} + \frac{(2a(A-iB))\,\text{Su}}{} \\ &= \frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{(2iA)\,\text{Subst}\left(\int \frac{1}{i-}\right.}{} \\ &= -\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\sqrt{}\right.}{d}\end{aligned}$$

Mathematica [A] time = 1.64546, size = 113, normalized size = 1.31

$$\frac{e^{-i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\sqrt{a+ia\tan(c+dx)}\left((A-iB)\sinh^{-1}\left(e^{i(c+dx)}\right)-\sqrt{2}A\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[1 + E^((2*I)*(c + d*x))]*((A - I*B)*ArcSinh[E^(I*(c + d*x))] - Sqrt[2
]*A*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])*Sqrt[
a + I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x)))
```

Maple [B] time = 0.414, size = 312, normalized size = 3.6

$$-\frac{\sin(dx+c)}{d\left(i\sin(dx+c)+\cos(dx+c)-1\right)}\sqrt{\frac{a\left(i\sin(dx+c)+\cos(dx+c)\right)}{\cos(dx+c)}}\sqrt{-2\frac{\cos(dx+c)}{\cos(dx+c)+1}}\left(iA\arctan\left(\frac{\sqrt{2}}{2}\sqrt{-2\frac{\cos}{\cos(}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/d*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2)*(I*A*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))
*2^(1/2)+I*B*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d
*x+c)/cos(d*x+c))*2^(1/2)+I*A*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
)-A*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos
(d*x+c))*2^(1/2)+B*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))
*2^(1/2)-A*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)
-1)/sin(d*x+c)))*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.55173, size = 1139, normalized size = 13.24

$$-\sqrt{\frac{A^2a}{d^2}}\log\left(\frac{\left(\sqrt{2}\left(Ae^{(2i\,dx+2i\,c)}+A\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}+2\sqrt{\frac{A^2a}{d^2}}de^{(2i\,dx+2i\,c)}\right)e^{(-2i\,dx-2i\,c)}}{A}\right)+\sqrt{\frac{A^2a}{d^2}}\log\left(\frac{\left(\sqrt{2}\left(Ae^{(2i\,dx+2i\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -sqrt(A^2*a/d^2)*log((sqrt(2)*(A*e^(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*sqrt(A^2*a/d^2)*d*e^(2*I*d*x + 2*I*c))
*e^(-2*I*d*x - 2*I*c)/A) + sqrt(A^2*a/d^2)*log((sqrt(2)*(A*e^(2*I*d*x + 2*I
*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*sqrt(A^2*a/d
^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/A) + 1/2*sqrt((2*A^2 - 4*I*
A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*d*sqrt((2*A^2 - 4*I*A
*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 1
/2*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x
 + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*
d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
2*I*c)/(I*A + B))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)\cot\left(c+dx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))*cot(c + d*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c), x)
```

3.72 $\int \cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=123

$$-\frac{\sqrt{a}(2B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{A\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d}$$

```
[Out] -((Sqrt[a]*(I*A + 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d) + (S
qrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a
])])/d - (A*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.384709, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3598, 3600, 3480, 206, 3599, 63, 208}

$$-\frac{\sqrt{a}(2B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{A\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((Sqrt[a]*(I*A + 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d) + (S
qrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a
])])/d - (A*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{A\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{\int \cot(c+dx)\sqrt{a+ia}}{}$$

$$= -\frac{A\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d} + (-A+iB)\int \sqrt{a+ia}$$

$$= -\frac{A\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{(2a(iA+B))\,\mathrm{Subst}\Big(}{}$$

$$= \frac{\sqrt{2}\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{A\cot(c+dx)\sqrt{a}}{d}$$

$$= -\frac{\sqrt{a}(iA+2B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{\sqrt{2}\sqrt{a}(iA+B)\tan}{}$$

Mathematica [B] time = 4.61775, size = 293, normalized size = 2.38

$$\frac{\sqrt{a+ia\tan(c+dx)}\left(-8A\cot(c+dx)+e^{-i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\left(\sqrt{2}(2B+iA)\left(\log\left(\left(-1+e^{i(c+dx)}\right)^2\right)-\log\left(\left(1+e^{i(c+dx)}\right)^2\right)\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-8*A*Cot[c + d*x] + (Sqrt[1 + E^((2*I)*(c + d*x))]*(8*(I*A + B)*ArcSinh[E
^(I*(c + d*x))] + Sqrt[2]*(I*A + 2*B)*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[
(1 + E^(I*(c + d*x)))^2] + Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1
 + E^((2*I)*(c + d*x))] - 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*
(c + d*x))])] - Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)
*(c + d*x))] + 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))]
)])))/E^(I*(c + d*x)))*Sqrt[a + I*a*Tan[c + d*x]])/(8*d)
```

Maple [B] time = 0.553, size = 1179, normalized size = 9.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(-2*I*A*cos(d*x+c)^2-2
*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2))*cos(d*x+c)*sin(d*x+c)-2*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)*sin
(d*x+c)*2^(1/2)+2*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)
*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)*sin(d*x+c)*2^(1/2)+2*I*A*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*sin(d*x+c)*2^(1/2)+2*B*(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)/cos(d*x+c))*cos(d*x+c)*sin(d*x+c)*2^(1/2)+2*I*A*(-2*cos
(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*cos(d*x+c)*sin(d*x+c)*2^(1/2)-2*I*A*cos(
d*x+c)+A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2))*cos(d*x+c)*sin(d*x+c)+2*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)*2
^(1/2)-2*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)*2^(1/2)+2*B*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*s
in(d*x+c)/cos(d*x+c))*sin(d*x+c)*2^(1/2)+I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/
sin(d*x+c))*sin(d*x+c)+2*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*
x+c)*sin(d*x+c)+A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-2*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+2*B*(-2*cos
(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*si
n(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)+I*A*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c
)-1)/sin(d*x+c))*cos(d*x+c)*sin(d*x+c)+2*A*cos(d*x+c)*sin(d*x+c))/(I*sin(d*
x+c)+cos(d*x+c)-1)/(cos(d*x+c)+1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.79056, size = 1644, normalized size = 13.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(-2*I*A*e^(2*I*d*x + 2*I*c) - 2*I*A)*sqrt(a/(e^(2*I*d*x + 2*I*
c) + 1))*e^(I*d*x + I*c) - (d*e^(2*I*d*x + 2*I*c) - d)*sqrt(-(A^2 - 4*I*A*B
 - 4*B^2)*a/d^2)*log((sqrt(2)*((I*A + 2*B)*e^(2*I*d*x + 2*I*c) + I*A + 2*B)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*d*sqrt(-(A^2 - 4*I*A
*B - 4*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + 2*B)) +
 (d*e^(2*I*d*x + 2*I*c) - d)*sqrt(-(A^2 - 4*I*A*B - 4*B^2)*a/d^2)*log((sqrt
(2)*((I*A + 2*B)*e^(2*I*d*x + 2*I*c) + I*A + 2*B)*sqrt(a/(e^(2*I*d*x + 2*I*
c) + 1))*e^(I*d*x + I*c) - 2*d*sqrt(-(A^2 - 4*I*A*B - 4*B^2)*a/d^2)*e^(2*I*
d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + 2*B)) + (d*e^(2*I*d*x + 2*I*c) -
d)*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*
x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + d
*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
2*I*c)/(I*A + B)) - (d*e^(2*I*d*x + 2*I*c) - d)*sqrt(-(2*A^2 - 4*I*A*B - 2*
B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^
2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(2*I*d
*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{ia\tan(dx+c)+a}\cot(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c)^2, x
)
```

3.73 $\int \cot^3(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=169

$$\frac{\sqrt{a}(7A-4iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{(4B+iA)\cot(c+dx)\sqrt{a+ia\tan(c+}{4d}$$

```
[Out] (Sqrt[a]*(7*A - (4*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*d)
 - (Sqrt[2]*Sqrt[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d - ((I*A + 4*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*d) -
 (A*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(2*d)
```

Rubi [A] time = 0.565097, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{\sqrt{a}(7A-4iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{(4B+iA)\cot(c+dx)\sqrt{a+ia\tan(c+}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[a]*(7*A - (4*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*d)
 - (Sqrt[2]*Sqrt[a]*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d - ((I*A + 4*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*d) -
 (A*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(2*d)
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^3(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{A\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{2d} + \frac{\int \cot^2(c+dx)\sqrt{a+\cdots}}{}$$

$$= -\frac{(iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d} - \frac{A\cot^2(c+d\cdots}{}$$

$$= -\frac{(iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d} - \frac{A\cot^2(c+d\cdots}{}$$

$$= -\frac{(iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d} - \frac{A\cot^2(c+d\cdots}{}$$

$$= -\frac{\sqrt{2}\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{(iA+4B)\cot(c\cdots}{}$$

$$= \frac{\sqrt{a}(7A-4iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d} - \frac{\sqrt{2}\sqrt{a}(A-iB)\tan\cdots}{}$$

Mathematica [A] time = 3.17976, size = 230, normalized size = 1.36

$$\frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\left(\frac{2(7A-4iB)\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)-8\sqrt{2}(A-iB)\sinh^{-1}\left(e^{i(c+dx)}\right)}{\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}} - \frac{2\csc(c+dx)(2A\csc(c+dx)+(4B+iA)\sec\cdots}{\sec^{\frac{3}{2}}(c+dx)}\right.}{8d\sec^{\frac{3}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (((-8*Sqrt[2]*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + 2*(7*A - (4*I)*B)*ArcTan
h[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])/(Sqrt[E^(I*(c +
 d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))]) - (2*Csc[c
 + d*x]*(2*A*Csc[c + d*x] + (I*A + 4*B)*Sec[c + d*x]))/Sec[c + d*x]^(3/2))*
Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(8*d*Sec[c + d*x]^(3/2)*(A
*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.536, size = 2240, normalized size = 13.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/8/d*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(8*A*2^(1/2)*cos(d*x+
c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-8*B*2^(1/2)*cos(d*x+c)*(-2*cos
(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2))+7*I*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(
1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*I*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+
cos(d*x+c)-1)/sin(d*x+c))+7*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*I*B*cos(d*x+c)^2*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-8*I*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-7*
I*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2))-8*I*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x
+c))-4*I*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-8*A*2^(1/2)
*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+8*B*2^(1/2)*cos(d*x
+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2))-8*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*
x+c)/cos(d*x+c))+8*B*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+8*I*A*2^(1/2)*
cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2))-2*A*cos(d*x+c)*sin(d*x+c)-2*I*A*cos(d*x+c)-
6*A*cos(d*x+c)^2*sin(d*x+c)+6*I*A*cos(d*x+c)^3+4*I*A*cos(d*x+c)^2+7*A*(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-4*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-7*A*cos(d*x+c)^3*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin
(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+4*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-7*A*cos(d*x+c)^
2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+4*B*cos(d*x+c)^2*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+8*A*2
^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+7*A*cos(d*x+c)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*
x+c)+cos(d*x+c)-1)/sin(d*x+c))-8*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
```

```
1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*B*cos(d*x+c
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+8*I*B*sin(d*x+c)*cos(d*x+c)^2-7*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+8*I*B*cos(d*x+c)*si
n(d*x+c)-4*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-8*B*cos(d*x+c)+8*c
os(d*x+c)^3*B+8*I*B*2^(1/2)*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(
d*x+c))+8*I*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arc
tan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+8*I*B*2^(1/2)*cos(d*x
+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-8*I*A*2^(1/2)*cos(d*x+c)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2))-8*I*B*2^(1/2)*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos
(d*x+c)))/(I*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)/(cos(d*x+c)+1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.87883, size = 1921, normalized size = 11.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((3*A - 4*I*B)*e^(4*I*d*x + 4*I*c) + 4*A*e^(2*I*d*x + 2*I*c)
 + A + 4*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (d*e^(4*I
*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((49*A^2 - 56*I*A*B - 16*B
```

```
^2)*a/d^2)*log((sqrt(2)*((7*I*A + 4*B)*e^(2*I*d*x + 2*I*c) + 7*I*A + 4*B)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*I*d*sqrt((49*A^2 - 56*
I*A*B - 16*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(7*I*A + 4
*B)) - (d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((49*A^2 -
 56*I*A*B - 16*B^2)*a/d^2)*log((sqrt(2)*((7*I*A + 4*B)*e^(2*I*d*x + 2*I*c)
+ 7*I*A + 4*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*I*d*sq
rt((49*A^2 - 56*I*A*B - 16*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2
*I*c)/(7*I*A + 4*B)) - 4*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) +
 d)*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*
x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I
*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
 2*I*c)/(I*A + B)) + 4*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d
)*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x
+ 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*d
*sqrt((2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2
*I*c)/(I*A + B)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\cot(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c)^3, x
)
```

3.74 $\int \cot^4(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=210

$$\frac{\sqrt{a}(14B+9iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{(6B+iA)\cot^2(c+dx)\sqrt{a+ia\tan(c}}{12d}$$

```
[Out] (Sqrt[a]*((9*I)*A + 14*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(8*d
) - (Sqrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*
Sqrt[a])])/d + ((7*A - (2*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(8
*d) - ((I*A + 6*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(12*d) - (A*C
ot[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```

Rubi [A] time = 0.751938, antiderivative size = 210, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{\sqrt{a}(14B+9iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{\sqrt{2}\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{(6B+iA)\cot^2(c+dx)\sqrt{a+ia\tan(c}}{12d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[a]*((9*I)*A + 14*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(8*d
) - (Sqrt[2]*Sqrt[a]*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*
Sqrt[a])])/d + ((7*A - (2*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(8
*d) - ((I*A + 6*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(12*d) - (A*C
ot[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
```

```
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^4(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{A\cot^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{3d}+\frac{\int \cot^3(c+dx)\sqrt{a+}}{}$$

$$= -\frac{(iA+6B)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{12d}-\frac{A\cot^3(c+}{}$$

$$= \frac{(7A-2iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{(iA+6B)\cot}{}$$

$$= \frac{(7A-2iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{(iA+6B)\cot}{}$$

$$= \frac{(7A-2iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{(iA+6B)\cot}{}$$

$$= -\frac{\sqrt{2}\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{(7A-2iB)\cot(}{}$$

$$= \frac{\sqrt{a}(9iA+14B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{\sqrt{2}\sqrt{a}(iA+B)\,\mathrm{ta}}{}$$

Mathematica [A] time = 4.42029, size = 414, normalized size = 1.97

$$\frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\left(-\frac{2i\left((9A-14iB)\left(\log\left(\left(-1+e^{i(c+dx)}\right)^2\right)-\log\left(\left(1+e^{i(c+dx)}\right)^2\right)+\log\left(-2e^{i(c+dx)}\left(1+\sqrt{2}\sqrt{1+e^{2i(c+dx)}}\right)+3e^{2i(c+dx)}+\right.\right.\right.}{\sqrt{\frac{}{1}}}\right.}{64d\sec^{\frac{3}{2}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^4*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((((-2*I)*(32*Sqrt[2]*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + (9*A - (14*I)*B)
*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c + d*x)))^2] + Log[3 + 3*
E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] - 2*E^(I*(c +
 d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])] - Log[3 + 3*E^((2*I)*(c
 + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] + 2*E^(I*(c + d*x))*(1 +
 Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])])))/(Sqrt[E^(I*(c + d*x))/(1 + E^((
2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))]) - (4*Csc[c + d*x]^3*(-13*A
 + (6*I)*B + (29*A - (6*I)*B)*Cos[2*(c + d*x)] + 2*(I*A + 6*B)*Sin[2*(c + d
```

```
*x)]))/(3*Sqrt[Sec[c + d*x]]))*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*
x]))/(64*d*Sec[c + d*x]^(3/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.513, size = 1783, normalized size = 8.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/48/d*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(27*A*cos(d*x+c)^4*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2))+42*B*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-54*A*co
s(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2))-84*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x
+c))+48*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*I*A*cos(d*x+c)^2*sin(d*x+c)-42*I*A*c
os(d*x+c)*sin(d*x+c)+27*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-42*I*
B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+62*I*A*cos(d*x+c)^3*sin(d*x+c)+48*B*2^(1/2)*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*s
in(d*x+c)/cos(d*x+c))-46*A*cos(d*x+c)^2+42*A*cos(d*x+c)+62*A*cos(d*x+c)^4-5
8*A*cos(d*x+c)^3+48*I*A*2^(1/2)*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/
cos(d*x+c))-12*B*cos(d*x+c)*sin(d*x+c)-24*B*cos(d*x+c)^2*sin(d*x+c)+36*B*co
s(d*x+c)^3*sin(d*x+c)+27*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+42*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(
d*x+c))-36*I*B*cos(d*x+c)^4+12*I*B*cos(d*x+c)^3+36*I*B*cos(d*x+c)^2-12*I*B*
cos(d*x+c)-48*I*B*2^(1/2)*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-96*I*A*2^(1/2)*co
s(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos
(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+96*I*B*2^(1/2)*cos(d*x
+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2))+27*I*A*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/
sin(d*x+c))-42*I*B*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan
(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-54*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)
```

```
/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c
)+cos(d*x+c)-1)/sin(d*x+c))+84*I*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+48*I*A*2^(1/2)*(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-48*I*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+48
*A*2^(1/2)*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(
1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+48*B*2^(1/2)*cos(d*x+c)^4*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-96*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2))-96*B*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan
h(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c)))/
(I*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.01517, size = 2192, normalized size = 10.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/48*(2*sqrt(2)*((31*I*A + 18*B)*e^(6*I*d*x + 6*I*c) + (5*I*A + 6*B)*e^(4*I
*d*x + 4*I*c) + (I*A - 18*B)*e^(2*I*d*x + 2*I*c) + 27*I*A - 6*B)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^
(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*sqrt(-(81*A^2 - 252*I*A*B
- 196*B^2)*a/d^2)*log((sqrt(2)*((9*I*A + 14*B)*e^(2*I*d*x + 2*I*c) + 9*I*A
```

```
+ 14*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*d*sqrt(-(81*A
^2 - 252*I*A*B - 196*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/
(9*I*A + 14*B)) - 3*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*
e^(2*I*d*x + 2*I*c) - d)*sqrt(-(81*A^2 - 252*I*A*B - 196*B^2)*a/d^2)*log((s
qrt(2)*((9*I*A + 14*B)*e^(2*I*d*x + 2*I*c) + 9*I*A + 14*B)*sqrt(a/(e^(2*I*d
*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*d*sqrt(-(81*A^2 - 252*I*A*B - 196*B^2
)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(9*I*A + 14*B)) - 24*(d*
e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d
)*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x
 + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + d*
sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2
*I*c)/(I*A + B)) + 24*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*
d*e^(2*I*d*x + 2*I*c) - d)*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*log((sqrt
(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*e^(I*d*x + I*c) - d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)*a/d^2)*e^(2*I*d*x
+ 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(
4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\cot(dx+c)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c)^4, x
)
```

3.75 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=197

$$\frac{2\sqrt{2}a^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(8B+7iA)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d}-\frac{4(19B+21iA)(a+ia\tan(c}{105d}$$

```
[Out] (2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d - (8*a*((7*I)*A + 8*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (2*a
*((7*I)*A + 8*B)*Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (((2*I
)/7)*a*B*Tan[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/d - (4*((21*I)*A + 19*B
)*(a + I*a*Tan[c + d*x])^(3/2))/(105*d)
```

Rubi [A] time = 0.532475, antiderivative size = 197, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3594, 3597, 3592, 3527, 3480, 206}

$$\frac{2\sqrt{2}a^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(8B+7iA)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d}-\frac{4(19B+21iA)(a+ia\tan(c}{105d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d - (8*a*((7*I)*A + 8*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (2*a
*((7*I)*A + 8*B)*Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(35*d) + (((2*I
)/7)*a*B*Tan[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/d - (4*((21*I)*A + 19*B
)*(a + I*a*Tan[c + d*x])^(3/2))/(105*d)
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{7d} + \frac{2}{7}\int \tan^2(c+d$$

$$= \frac{2a(7iA+8B)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2iaB\,\mathrm{ta}}{}$$

$$= \frac{2a(7iA+8B)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2iaB\,\mathrm{ta}}{}$$

$$= -\frac{8a(7iA+8B)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2a(7iA+8B)\tan^2}{}$$

$$= -\frac{8a(7iA+8B)\sqrt{a+ia\tan(c+dx)}}{35d} + \frac{2a(7iA+8B)\tan^2}{}$$

$$= \frac{2\sqrt{2}a^{3/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{8a(7iA+8B)}{}$$

Mathematica [A] time = 4.27191, size = 239, normalized size = 1.21

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{2\sqrt{2}(B+iA)\sinh^{-1}\left(e^{i(c+dx)}\right)}{\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{3/2}\left(1+e^{2i(c+dx)}\right)^{3/2}} - \frac{1}{210}(\tan(c+dx)+i)\sec^{\frac{5}{2}}(c+dx)(21(17A-18iB)\,\mathrm{c}\right.}{d\sec^{\frac{5}{2}}(c+dx)(A\cos}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] ((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x])*((2*Sqrt[2]*(I*A + B)*Ar
cSinh[E^(I*(c + d*x))])/((E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^(3/2)*
(1 + E^((2*I)*(c + d*x)))^(3/2)) - (Sec[c + d*x]^(5/2)*(21*(17*A - (18*I)*B
)*Cos[c + d*x] + (147*A - (158*I)*B)*Cos[3*(c + d*x)] + (42*I)*A*Sin[c + d*
x] - 7*B*Sin[c + d*x] + (42*I)*A*Sin[3*(c + d*x)] + 53*B*Sin[3*(c + d*x)])*
(I + Tan[c + d*x]))/210))/(d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c +
 d*x]))
```

Maple [A] time = 0.027, size = 164, normalized size = 0.8

$$\frac{-2\,i}{a^2 d}\left(-\frac{i}{7}B\left(a+ia\tan(dx+c)\right)^{\frac{7}{2}} + \frac{i}{5}B\left(a+ia\tan(dx+c)\right)^{\frac{5}{2}}a + \frac{Aa}{5}\left(a+ia\tan(dx+c)\right)^{\frac{5}{2}} - \frac{i}{3}a^2B\left(a+ia\tan(dx+c)\right)^{\frac{3}{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I/d/a^2*(-1/7*I*B*(a+I*a*tan(d*x+c))^(7/2)+1/5*I*B*(a+I*a*tan(d*x+c))^(5
/2)*a+1/5*A*(a+I*a*tan(d*x+c))^(5/2)*a-1/3*I*a^2*B*(a+I*a*tan(d*x+c))^(3/2)
-I*B*a^3*(a+I*a*tan(d*x+c))^(1/2)+A*a^3*(a+I*a*tan(d*x+c))^(1/2)-a^(7/2)*(A
-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.81235, size = 1365, normalized size = 6.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/210*(sqrt(2)*((-756*I*A - 844*B)*a*e^(6*I*d*x + 6*I*c) + (-1596*I*A - 148
4*B)*a*e^(4*I*d*x + 4*I*c) + (-1260*I*A - 1540*B)*a*e^(2*I*d*x + 2*I*c) + (
-420*I*A - 420*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 10
5*sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^
(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B
)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*e^(I*d*x + I*c) + sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x
+ 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) - 105*sqrt(-(8*A^2 - 16*I
*A*B - 8*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3
*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*
```

```
c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - s
qrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
 - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I
*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] Timed out
```

3.76 $\int \tan(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=137

$$-\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(A-iB)\sqrt{a+ia\tan(c+dx)}}{d}+\frac{2A(a+ia\tan(c+dx))^{3/2}}{3d}-\frac{2iB(a+ia\,\mathrm{t}}{5}$$

```
[Out] (-2*Sqrt[2]*a^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (2*a*(A - I*B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*A*(a + I*a*
Tan[c + d*x])^(3/2))/(3*d) - (((2*I)/5)*B*(a + I*a*Tan[c + d*x])^(5/2))/(a*
d)
```

Rubi [A] time = 0.176307, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3592, 3527, 3478, 3480, 206}

$$-\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(A-iB)\sqrt{a+ia\tan(c+dx)}}{d}+\frac{2A(a+ia\tan(c+dx))^{3/2}}{3d}-\frac{2iB(a+ia\,\mathrm{t}}{5}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*Sqrt[2]*a^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (2*a*(A - I*B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*A*(a + I*a*
Tan[c + d*x])^(3/2))/(3*d) - (((2*I)/5)*B*(a + I*a*Tan[c + d*x])^(5/2))/(a*
d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
```

```
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{2iB(a+ia\tan(c+dx))^{5/2}}{5ad}+\int(a+ia\tan(c+dx))^{3/2}(-B$$

$$= \frac{2A(a+ia\tan(c+dx))^{3/2}}{3d}-\frac{2iB(a+ia\tan(c+dx))^{5/2}}{5ad}-($$

$$= \frac{2a(A-iB)\sqrt{a+ia\tan(c+dx)}}{d}+\frac{2A(a+ia\tan(c+dx))^{3/}}{3d}$$

$$= \frac{2a(A-iB)\sqrt{a+ia\tan(c+dx)}}{d}+\frac{2A(a+ia\tan(c+dx))^{3/}}{3d}$$

$$= -\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(A-iB)\sqrt{}}{}$$

Mathematica [A] time = 3.64747, size = 204, normalized size = 1.49

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{1}{15}(\tan(c+dx)+i)\sec^{\frac{3}{2}}(c+dx)((5A-6iB)\sin(2(c+dx))+(-21B-20iA)\right.}{d\sec^{\frac{5}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x])*((-2*Sqrt[2]*(A - I*B)*A
rcSinh[E^(I*(c + d*x))])/((E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^(3/2)
*(1 + E^((2*I)*(c + d*x)))^(3/2)) + (Sec[c + d*x]^(3/2)*((-20*I)*A - 15*B +
 ((-20*I)*A - 21*B)*Cos[2*(c + d*x)] + (5*A - (6*I)*B)*Sin[2*(c + d*x)])*(I
 + Tan[c + d*x]))/15))/(d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*
x]))
```

Maple [A] time = 0.018, size = 123, normalized size = 0.9

$$2\,\frac{1}{ad}\left(-i/5B\,(a+ia\tan(dx+c))^{5/2}+1/3\,A\,(a+ia\tan(dx+c))^{3/2}\,a-ia^2B\sqrt{a+ia\tan(dx+c)}+a^2A\sqrt{a+ia\tan(dx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/d/a*(-1/5*I*B*(a+I*a*tan(d*x+c))^(5/2)+1/3*A*(a+I*a*tan(d*x+c))^(3/2)*a-I
*a^2*B*(a+I*a*tan(d*x+c))^(1/2)+a^2*A*(a+I*a*tan(d*x+c))^(1/2)-a^(5/2)*(A-I
*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.75105, size = 1180, normalized size = 8.61

$$\frac{4\sqrt{2}\left((25A - 27iB)ae^{(4idx+4ic)} + 10(4A - 3iB)ae^{(2idx+2ic)} + 15(A - iB)a\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}e^{(idx+ic)} - 15\sqrt{\frac{(8A^2-16iAB-8B^2)a^3}{d^2}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/30*(4*sqrt(2)*((25*A - 27*I*B)*a*e^(4*I*d*x + 4*I*c) + 10*(4*A - 3*I*B)*a
*e^(2*I*d*x + 2*I*c) + 15*(A - I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^
(I*d*x + I*c) - 15*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*(d*e^(4*I*d*x +
 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I
*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
 + I*c) + I*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))
*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) + 15*sqrt((8*A^2 - 16*I*A*B - 8*B^
2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt
(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/
d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(
4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a(i\tan(c+dx)+1))^{\frac{3}{2}}(A+B\tan(c+dx))\tan(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**(3/2)*(A + B*tan(c + d*x))*tan(c + d*x),
 x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.77 $\int (a + ia\tan(c + dx))^{3/2}(A + B\tan(c + dx))\,dx$

Optimal. Leaf size=107

$$-\frac{2\sqrt{2}a^{3/2}(B + iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{2a(B + iA)\sqrt{a + ia\tan(c + dx)}}{d} + \frac{2B(a + ia\tan(c + dx))^{3/2}}{3d}$$

```
[Out] (-2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (2*a*(I*A + B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*B*(a + I*a*
Tan[c + d*x])^(3/2))/(3*d)
```

Rubi [A] time = 0.0999415, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3527, 3478, 3480, 206}

$$-\frac{2\sqrt{2}a^{3/2}(B + iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{2a(B + iA)\sqrt{a + ia\tan(c + dx)}}{d} + \frac{2B(a + ia\tan(c + dx))^{3/2}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (2*a*(I*A + B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*B*(a + I*a*
Tan[c + d*x])^(3/2))/(3*d)
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2B(a+ia\tan(c+dx))^{3/2}}{3d} - (-A+iB)\int (a+ia\tan(c+dx))^{3/2}\,dx$$
$$= \frac{2a(iA+B)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2B(a+ia\tan(c+dx))^{3/2}}{3d} + (2a(A$$
$$= \frac{2a(iA+B)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2B(a+ia\tan(c+dx))^{3/2}}{3d} - \frac{(4a^2(i$$
$$= -\frac{2\sqrt{2}a^{3/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{2a(iA+B)\sqrt{a+ia\tan(}{d}$$

Mathematica [A] time = 2.54725, size = 190, normalized size = 1.78

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{2}{3}(\cos(c)-i\sin(c))\sqrt{\sec(c+dx)}(\sin(dx)+i\cos(dx))(3A+B\tan(c+dx)-\right.}{d\sec^{\frac{5}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x])*(((-2*I)*Sqrt[2]*(A - I*
B)*ArcSinh[E^(I*(c + d*x))])/((E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^(
3/2)*(1 + E^((2*I)*(c + d*x)))^(3/2)) + (2*Sqrt[Sec[c + d*x]]*(Cos[c] - I*S
in[c])*(I*Cos[d*x] + Sin[d*x])*(3*A - (4*I)*B + B*Tan[c + d*x]))/3))/(d*Sec
[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.018, size = 99, normalized size = 0.9

$$\frac{2i}{d}\left(-\frac{i}{3}B\left(a+ia\tan\left(dx+c\right)\right)^{\frac{3}{2}}-iBa\sqrt{a+ia\tan\left(dx+c\right)}+A\sqrt{a+ia\tan\left(dx+c\right)}a-a^{\frac{3}{2}}\left(A-iB\right)\sqrt{2}\mathrm{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{a+i\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*I/d*(-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)-I*B*a*(a+I*a*tan(d*x+c))^(1/2)+A*(
a+I*a*tan(d*x+c))^(1/2)*a-a^(3/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*
x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.70316, size = 1017, normalized size = 9.5

$$\frac{\sqrt{2}\left((12i\,A+20\,B)ae^{(2i\,dx+2i\,c)}+(12i\,A+12\,B)a\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}-3\sqrt{-\frac{\left(8\,A^2-16i\,AB-8\,B^2\right)a^3}{d^2}}\left(de^{(2i\,dx+2i\,c)}+d\right)\log\left(\left(\frac{\sqrt{2}(\cdots}{\cdots}\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(sqrt(2)*((12*I*A + 20*B)*a*e^(2*I*d*x + 2*I*c) + (12*I*A + 12*B)*a)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 3*sqrt(-(8*A^2 - 16*I*A*B
```

```
 - 8*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*
a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
e^(I*d*x + I*c) + sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x +
2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) + 3*sqrt(-(8*A^2 - 16*I*A*B
 - 8*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*
a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
e^(I*d*x + I*c) - sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x +
2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(2*I*d*x + 2*I*c) + d
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a\,(i\tan{(c+dx)}+1))^{\frac{3}{2}}\,(A+B\tan{(c+dx)})\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**(3/2)*(A + B*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.78 $\int \cot(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=113

$$\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2iaB\sqrt{a+ia\tan(c+dx)}}{d}$$

```
[Out] (-2*a^(3/2)*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d + (2*Sqrt[2]*a
^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/d +
 ((2*I)*a*B*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.374943, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3594, 3600, 3480, 206, 3599, 63, 208}

$$\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2iaB\sqrt{a+ia\tan(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*a^(3/2)*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d + (2*Sqrt[2]*a
^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/d +
 ((2*I)*a*B*Sqrt[a + I*a*Tan[c + d*x]])/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2iaB\sqrt{a+ia\tan(c+dx)}}{d} + 2\int \cot(c+dx)\sqrt{a+ia\tan(c$$
$$= \frac{2iaB\sqrt{a+ia\tan(c+dx)}}{d} + A\int \cot(c+dx)(a-ia\tan(c$$
$$= \frac{2iaB\sqrt{a+ia\tan(c+dx)}}{d} + \frac{\left(a^2A\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+iax}}\,dx, x,$$
$$= \frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{2iaB\sqrt{a+ia\,\text{ta}}}{d}$$
$$= -\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{2\sqrt{2}a^{3/2}(A-iB)\tanh}{d}$$

Mathematica [A] time = 1.92784, size = 157, normalized size = 1.39

$$\frac{\sqrt{2}ae^{-i(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(\sqrt{2}(A-iB)\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)-A\sqrt{1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)+i\sqrt{2}B}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[2]*a*(I*Sqrt[2]*B*E^(I*(c + d*x)) + Sqrt[2]*(A - I*B)*Sqrt[1 + E^((2*
I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))] - A*Sqrt[1 + E^((2*I)*(c + d*x))]*A
rcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])*Sqrt[a + I
*a*Tan[c + d*x]])/(d*E^(I*(c + d*x)))
```

Maple [B] time = 0.345, size = 467, normalized size = 4.1

$$-\frac{a}{d\left(i\sin(dx+c)+\cos(dx+c)-1\right)}\sqrt{\frac{a\left(i\sin(dx+c)+\cos(dx+c)\right)}{\cos(dx+c)}}\left(2\,iA\sqrt{2}\sqrt{-2\,\frac{\cos(dx+c)}{\cos(dx+c)+1}}\arctan\left(\frac{\sqrt{2}}{2}\sqrt{-2\,\frac{}{\text{co}}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/d*a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(2*I*A*2^(1/2)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))*sin(d*x+c)+2*I*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x
+c))*sin(d*x+c)-2*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/
2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*sin(d
*x+c)+I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2))*sin(d*x+c)+2*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-A*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-2*I*B*cos(d*x+c)+2*I*B+
2*B*sin(d*x+c))/(I*sin(d*x+c)+cos(d*x+c)-1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.86401, size = 1354, normalized size = 11.98

$$4i\sqrt{2}Ba\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}e^{(idx+ic)} - 2\sqrt{\frac{A^2a^3}{d^2}}d\log\left(\frac{\left(\sqrt{2}\left(Aae^{(2idx+2ic)}+Aa\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}e^{(idx+ic)}+2\sqrt{\frac{A^2a^3}{d^2}}de^{(2idx+2ic)}\right)e^{(-2idx-2ic)}}{Aa}\right)+2\sqrt{\frac{A^2a}{d^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/2*(4*I*sqrt(2)*B*a*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*
sqrt(A^2*a^3/d^2)*d*log((sqrt(2)*(A*a*e^(2*I*d*x + 2*I*c) + A*a)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*sqrt(A^2*a^3/d^2)*d*e^(2*I*d*x
```

```
+ 2*I*c))*e^(-2*I*d*x - 2*I*c)/(A*a)) + 2*sqrt(A^2*a^3/d^2)*d*log((sqrt(2)*
(A*a*e^(2*I*d*x + 2*I*c) + A*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c) - 2*sqrt(A^2*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(A
*a)) + sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*log((sqrt(2)*((2*I*A + 2*
B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c) + I*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*
x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) - sqrt((8*A^2 - 16*I*A*
B - 8*B^2)*a^3/d^2)*d*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (
2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt(
(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*
I*c)/((2*I*A + 2*B)*a)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c), x
)
```

3.79 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=125

$$-\frac{a^{3/2}(2B+3iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2\sqrt{2}a^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{aA\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d}$$

```
[Out] -((a^(3/2)*((3*I)*A + 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d)
+ (2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*
Sqrt[a])])/d - (a*A*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.390221, antiderivative size = 125, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3593, 3600, 3480, 206, 3599, 63, 208}

$$-\frac{a^{3/2}(2B+3iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2\sqrt{2}a^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{aA\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] -((a^(3/2)*((3*I)*A + 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d)
+ (2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*
Sqrt[a])])/d - (a*A*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/d
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d} + \int \cot(c+dx)\sqrt{}$$
$$= -\frac{aA\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d} - \frac{1}{2}(-3iA-2B)\int$$
$$= -\frac{aA\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{\left(4a^2(iA+B)\right)\mathrm{S}}{}$$
$$= \frac{2\sqrt{2}a^{3/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{aA\cot(c+}{}$$
$$= -\frac{a^{3/2}(3iA+2B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{2\sqrt{2}a^{3/2}(iA}{}$$

Mathematica [A] time = 2.9835, size = 201, normalized size = 1.61

$$-\frac{ae^{-\frac{1}{2}i(4c+5dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sec(c+dx)\left(\cos\left(\frac{dx}{2}\right)+i\sin\left(\frac{dx}{2}\right)\right)\left((-4B-4iA)\sinh^{-1}\left(e^{i(c+dx)}\right)+\sqrt{2}(2B+3\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] -(a*Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(1 + E^((2*I)*(
c + d*x)))^(3/2)*(((-4*I)*A - 4*B)*ArcSinh[E^(I*(c + d*x))] + Sqrt[2]*((3*I
)*A + 2*B)*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]]
 + A*Sqrt[1 + E^((2*I)*(c + d*x))]*Csc[c + d*x])*Sec[c + d*x]*(Cos[(d*x)/2]
 + I*Sin[(d*x)/2]))/(2*Sqrt[2]*d*E^((I/2)*(4*c + 5*d*x)))
```

Maple [B] time = 0.437, size = 1117, normalized size = 8.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*sin(d*x+c)*(-2*I*B*c
os(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2))-3*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-4*I*B*
2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2+4*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2))+2*I*A*cos(d*x+c)*sin(d*x+c)+4*B*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*sin(d*x+c)/cos(d*x+c))+3*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*I*A*2^(1/2)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+2*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*
x+c)-1)/sin(d*x+c))+4*I*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arct
an(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*I*A*2^(1/2)*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*cos(d*x+c)^2+2*I*B*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*A*2^(1/2)*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2))+3*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c
)^2-4*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+2*A*cos(d*x+c)^2-
3*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))-2*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2*A*cos(d*x+c))/
(cos(d*x+c)+1)/(I*sin(d*x+c)+cos(d*x+c)-1)/(cos(d*x+c)-1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.89847, size = 1796, normalized size = 14.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(-2*I*A*a*e^(2*I*d*x + 2*I*c) - 2*I*A*a)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-(9*A^2 - 12*I*A*B - 4*B^2)*a^3/d^2)*(d
*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((3*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c)
 + (3*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*s
qrt(-(9*A^2 - 12*I*A*B - 4*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
 - 2*I*c)/((3*I*A + 2*B)*a)) + sqrt(-(9*A^2 - 12*I*A*B - 4*B^2)*a^3/d^2)*(d
*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((3*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c)
 + (3*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*s
qrt(-(9*A^2 - 12*I*A*B - 4*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
 - 2*I*c)/((3*I*A + 2*B)*a)) + sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*(d
*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c)
 + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqr
t(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
 2*I*c)/((2*I*A + 2*B)*a)) - sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*(d*e
^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) +
 (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(
-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2
*I*c)/((2*I*A + 2*B)*a)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^2,
 x)
```

3.80 $\int \cot^3(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=171

$$\frac{a^{3/2}(11A-12iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a(4B+5iA)\cot(c+dx)\sqrt{a+ia}}{4d}$$

```
[Out] (a^(3/2)*(11*A - (12*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*
d) - (2*Sqrt[2]*a^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d - (a*((5*I)*A + 4*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]
])/(4*d) - (a*A*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(2*d)
```

Rubi [A] time = 0.58305, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3593, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{a^{3/2}(11A-12iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a(4B+5iA)\cot(c+dx)\sqrt{a+ia}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^(3/2)*(11*A - (12*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*
d) - (2*Sqrt[2]*a^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d - (a*((5*I)*A + 4*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]
])/(4*d) - (a*A*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(2*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{2d}+\frac{1}{2}\int \cot^2(c+d$$

$$= -\frac{a(5iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= -\frac{a(5iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= -\frac{a(5iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= -\frac{2\sqrt{2}a^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a(5iA+4B$$

$$= \frac{a^{3/2}(11A-12iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{2\sqrt{2}a^{3/2}(A-$$

Mathematica [B] time = 5.65381, size = 400, normalized size = 2.34

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{-2(11A-12iB)\left(\log\left(\left(-1+e^{i(c+dx)}\right)^2\right)-\log\left(\left(1+e^{i(c+dx)}\right)^2\right)+\log\left(-2e^{i(c+dx)}\left(1+\sqrt{2}\sqrt{1+e^{2i(c+dx)}}\right)+3e^{2i(c+}\right.\right.}{\left(\frac{}{1+}\right.}\right.}{32d\sec^{\frac{5}{2}}(c}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] ((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x])*((-64*Sqrt[2]*(A - I*B)*
ArcSinh[E^(I*(c + d*x))] - 2*(11*A - (12*I)*B)*(Log[(-1 + E^(I*(c + d*x)))^
```

```
2] - Log[(1 + E^(I*(c + d*x)))^2] + Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[
2]*Sqrt[1 + E^((2*I)*(c + d*x))] - 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 +
E^((2*I)*(c + d*x))])] - Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 +
 E^((2*I)*(c + d*x))] + 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c
 + d*x))])]))/((E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^(3/2)*(1 + E^((2
*I)*(c + d*x)))^(3/2)) + ((8*I)*Csc[c + d*x]*(2*A*Csc[c + d*x] + ((5*I)*A +
 4*B)*Sec[c + d*x])*(I + Tan[c + d*x]))/Sec[c + d*x]^(5/2)))/(32*d*Sec[c +
d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.45, size = 1290, normalized size = 7.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/8/d*a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(11*I*A*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos
(d*x+c)^2*sin(d*x+c)-12*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+14*I*A*cos(d*x+c)^2*sin(d*x+c
)-10*I*A*cos(d*x+c)*sin(d*x+c)+12*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x
+c))*cos(d*x+c)^2*sin(d*x+c)-4*A*cos(d*x+c)^2-10*A*cos(d*x+c)+14*A*cos(d*x+
c)^3-8*I*B*cos(d*x+c)^3-8*B*cos(d*x+c)*sin(d*x+c)+8*B*cos(d*x+c)^2*sin(d*x+
c)+8*I*B*cos(d*x+c)+16*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arcta
nh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*
sin(d*x+c)-16*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(
1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+11*A*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+
cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-16*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2
^(1/2)-16*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*sin(d*x+c)*2^(1/2)-
16*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*cos(d*x+c)^2*sin(d*x+c)*2^(1
/2)+16*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arcta
n(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-11*A*(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d
*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c)^2*sin(d*x+c)+12*B*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d
*x+c)^2*sin(d*x+c)-11*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2
```

```
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-12*I*B*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*
x+c)-1)/sin(d*x+c))*sin(d*x+c)+16*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
cos(d*x+c)^2*sin(d*x+c)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2))*2^(1/2)+16*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/
2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*cos(d*x+c)^2
*sin(d*x+c)*2^(1/2))/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos(d*x+c)-1)/(cos(d*x+c)
+1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.98599, size = 2080, normalized size = 12.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((7*A - 4*I*B)*a*e^(4*I*d*x + 4*I*c) + 4*A*a*e^(2*I*d*x + 2*
I*c) - (3*A - 4*I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) +
 sqrt((121*A^2 - 264*I*A*B - 144*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d
*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((11*I*A + 12*B)*a*e^(2*I*d*x + 2*I*
c) + (11*I*A + 12*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) +
 2*I*sqrt((121*A^2 - 264*I*A*B - 144*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e
^(-2*I*d*x - 2*I*c)/((11*I*A + 12*B)*a)) - sqrt((121*A^2 - 264*I*A*B - 144*
B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sq
rt(2)*((11*I*A + 12*B)*a*e^(2*I*d*x + 2*I*c) + (11*I*A + 12*B)*a)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*I*sqrt((121*A^2 - 264*I*A*B -
144*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((11*I*A + 12
```

```
*B)*a)) - 4*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c)
 - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x +
2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
 + I*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*
I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) + 4*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d
^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*
I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*
I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e
^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(4*I*d*x
+ 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^3,
 x)
```

3.81 $\int \cot^4(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=213

$$\frac{a^{3/2}(22B+23iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{2\sqrt{2}a^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a(6B+7iA)\cot^2(c+dx)\sqrt{a+i}}{12d}$$

```
[Out] (a^(3/2)*((23*I)*A + 22*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(8*
d) - (2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d + (a*(9*A - (10*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x
]])/(8*d) - (a*((7*I)*A + 6*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(
12*d) - (a*A*Cot[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```

Rubi [A] time = 0.771934, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3593, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{a^{3/2}(22B+23iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{2\sqrt{2}a^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a(6B+7iA)\cot^2(c+dx)\sqrt{a+i}}{12d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^(3/2)*((23*I)*A + 22*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(8*
d) - (2*Sqrt[2]*a^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d + (a*(9*A - (10*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x
]])/(8*d) - (a*((7*I)*A + 6*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(
12*d) - (a*A*Cot[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^4(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{3d}+\frac{1}{3}\int \cot^3(c+d$$

$$= -\frac{a(7iA+6B)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{12d}-\frac{aA\,\mathrm{co}}{}$$

$$= \frac{a(9A-10iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a(7iA+}{}$$

$$= \frac{a(9A-10iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a(7iA+}{}$$

$$= \frac{a(9A-10iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a(7iA+}{}$$

$$= -\frac{2\sqrt{2}a^{3/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{a(9A-10}{}$$

$$= \frac{a^{3/2}(23iA+22B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{2\sqrt{2}a^{3/2}(iA}{}$$

Mathematica [B] time = 6.37591, size = 439, normalized size = 2.06

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(-\frac{2i\left((23A-22iB)\left(\log\left(\left(-1+e^{i(c+dx)}\right)^2\right)-\log\left(\left(1+e^{i(c+dx)}\right)^2\right)+\log\left(-2e^{i(c+dx)}\left(1+\sqrt{2}\sqrt{1+e^{2i(c+dx)}}\right)+3e^{2i(}\right.\right.\right.}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] ((((-2*I)*(64*Sqrt[2]*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + (23*A - (22*I)*B
)*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c + d*x)))^2] + Log[3 + 3
*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] - 2*E^(I*(c
+ d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])] - Log[3 + 3*E^((2*I)*(
c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] + 2*E^(I*(c + d*x))*(1
+ Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])])))/((E^(I*(c + d*x))/(1 + E^((2*I
)*(c + d*x))))^(3/2)*(1 + E^((2*I)*(c + d*x)))^(3/2)) - (4*Csc[c + d*x]^3*(
Cos[c] - I*Sin[c])*(-19*A + (30*I)*B + 5*(7*A - (6*I)*B)*Cos[2*(c + d*x)] +
 2*((7*I)*A + 6*B)*Sin[2*(c + d*x)]))/(Sqrt[Sec[c + d*x]]*(3*Cos[d*x] + (3*
I)*Sin[d*x])))*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/(64*d*Sec
[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.522, size = 1804, normalized size = 8.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/48/d*a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(69*A*cos(d*x+c)^4*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2))+66*B*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-138*A*
cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2))-132*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(
d*x+c))+96*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+96*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin
(d*x+c)/cos(d*x+c))+69*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*
x+c)^4-66*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^4-138*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/s
in(d*x+c))*cos(d*x+c)^2+132*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan
(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2+96*I*A*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)+96*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
```

```
1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/co
s(d*x+c))*2^(1/2)*cos(d*x+c)^4+98*I*A*cos(d*x+c)^3*sin(d*x+c)-28*I*A*cos(d*
x+c)^2*sin(d*x+c)-192*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*
2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)
*cos(d*x+c)^2+192*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/
2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)*cos(d*x+c)^2-96*I*B*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))*2^(1/2)*cos(d*x+c)^4-82*A*cos(d*x+c)^2+54*A*cos(d*x+c)+98*A*co
s(d*x+c)^4-70*A*cos(d*x+c)^3-60*B*cos(d*x+c)*sin(d*x+c)-24*B*cos(d*x+c)^2*s
in(d*x+c)+84*B*cos(d*x+c)^3*sin(d*x+c)+69*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+66*B*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+c
os(d*x+c)-1)/sin(d*x+c))+60*I*B*cos(d*x+c)^3+84*I*B*cos(d*x+c)^2-60*I*B*cos
(d*x+c)-84*I*B*cos(d*x+c)^4-96*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arc
tan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+96*A*2^(1/2)*
cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2))+96*B*2^(1/2)*cos(d*x+c)^4*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*sin(d*x+c)/cos(d*x+c))-192*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-192*
B*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(
1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+69*I*A*(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-54*I*A*cos(d*x+c)*sin(d*x+c)-66*I*B*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2)))/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)/(cos(d*x+c)
+1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.8727, size = 2348, normalized size = 11.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/48*(2*sqrt(2)*((49*I*A + 42*B)*a*e^(6*I*d*x + 6*I*c) + (11*I*A - 18*B)*a*
e^(4*I*d*x + 4*I*c) + (-17*I*A - 42*B)*a*e^(2*I*d*x + 2*I*c) + (21*I*A + 18
*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*sqrt(-(529*A^2
 - 1012*I*A*B - 484*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x +
 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((23*I*A + 22*B)*a*e^(2
*I*d*x + 2*I*c) + (23*I*A + 22*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I
*d*x + I*c) + 2*sqrt(-(529*A^2 - 1012*I*A*B - 484*B^2)*a^3/d^2)*d*e^(2*I*d*
x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((23*I*A + 22*B)*a)) - 3*sqrt(-(529*A^2 -
1012*I*A*B - 484*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*
I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((23*I*A + 22*B)*a*e^(2*I*
d*x + 2*I*c) + (23*I*A + 22*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c) - 2*sqrt(-(529*A^2 - 1012*I*A*B - 484*B^2)*a^3/d^2)*d*e^(2*I*d*x +
 2*I*c))*e^(-2*I*d*x - 2*I*c)/((23*I*A + 22*B)*a)) - 24*sqrt(-(8*A^2 - 16*I
*A*B - 8*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3
*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*
c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + s
qrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
 - 2*I*c)/((2*I*A + 2*B)*a)) + 24*sqrt(-(8*A^2 - 16*I*A*B - 8*B^2)*a^3/d^2)
*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c)
 - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-(8*A^2 - 16*I*A*B
 - 8*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*
B)*a)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x +
 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^4,
 x)
```

3.82 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=246

$$-\frac{2a^2(3A-4iB)\tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{21d}+\frac{2a^2(46B+45iA)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d}-\frac{8a^2(46B+45iA}{}$$

```
[Out] (4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d - (8*a^2*((45*I)*A + 46*B)*Sqrt[a + I*a*Tan[c + d*x]])/(105*d) +
 (2*a^2*((45*I)*A + 46*B)*Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(105*d
) - (2*a^2*(3*A - (4*I)*B)*Tan[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/(21*d
) - (8*a*((60*I)*A + 59*B)*(a + I*a*Tan[c + d*x])^(3/2))/(315*d) + (((2*I)/
9)*a*B*Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.753477, antiderivative size = 246, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3594, 3597, 3592, 3527, 3480, 206}

$$-\frac{2a^2(3A-4iB)\tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{21d}+\frac{2a^2(46B+45iA)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d}-\frac{8a^2(46B+45iA}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sq
rt[a])])/d - (8*a^2*((45*I)*A + 46*B)*Sqrt[a + I*a*Tan[c + d*x]])/(105*d) +
 (2*a^2*((45*I)*A + 46*B)*Tan[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(105*d
) - (2*a^2*(3*A - (4*I)*B)*Tan[c + d*x]^3*Sqrt[a + I*a*Tan[c + d*x]])/(21*d
) - (8*a*((60*I)*A + 59*B)*(a + I*a*Tan[c + d*x])^(3/2))/(315*d) + (((2*I)/
9)*a*B*Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^(3/2))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
```

```
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^3(c+dx)(a+ia\tan(c+dx))^{3/2}}{9d} + \frac{2}{9}\int \tan^2(c+$$

$$= -\frac{2a^2(3A-4iB)\tan^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{21d} + \frac{2iaB}{}$$

$$= \frac{2a^2(45iA+46B)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d} - \frac{2a^2(}{}$$

$$= \frac{2a^2(45iA+46B)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d} - \frac{2a^2(}{}$$

$$= -\frac{8a^2(45iA+46B)\sqrt{a+ia\tan(c+dx)}}{105d} + \frac{2a^2(45iA+46B}{}$$

$$= -\frac{8a^2(45iA+46B)\sqrt{a+ia\tan(c+dx)}}{105d} + \frac{2a^2(45iA+46B}{}$$

$$= \frac{4\sqrt{2}a^{5/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{8a^2(45iA+4}{}$$

Mathematica [A] time = 5.6426, size = 284, normalized size = 1.15

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(4\sqrt{2}(B+iA)e^{-3i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right) - \frac{i(\cos(2c)-i\sin(2}{}\right.}{d\sec^{\frac{7}{2}}(c+dx)(A}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (((4*Sqrt[2]*(I*A + B)*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt
[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))])/E^((3*I)*(c + d*x)) - (
(I/1260)*Sec[c + d*x]^(9/2)*(Cos[2*c] - I*Sin[2*c])*(2205*A - (2331*I)*B +
12*(260*A - (251*I)*B)*Cos[2*(c + d*x)] + (915*A - (961*I)*B)*Cos[4*(c + d*
x)] + (390*I)*A*Sin[2*(c + d*x)] + 282*B*Sin[2*(c + d*x)] + (285*I)*A*Sin[4
*(c + d*x)] + 331*B*Sin[4*(c + d*x)]))/(Cos[d*x] + I*Sin[d*x])^2)*(a + I*a*
Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*Sec[c + d*x]^(7/2)*(A*Cos[c +
d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.027, size = 206, normalized size = 0.8

$$\frac{-2i}{a^2 d}\left(-\frac{i}{9}B\left(a+ia\tan\left(dx+c\right)\right)^{\frac{9}{2}}+\frac{i}{7}B\left(a+ia\tan\left(dx+c\right)\right)^{\frac{7}{2}}a+\frac{Aa}{7}\left(a+ia\tan\left(dx+c\right)\right)^{\frac{7}{2}}-\frac{i}{5}Ba^2\left(a+ia\tan\left(dx+c\right)\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I/d/a^2*(-1/9*I*B*(a+I*a*tan(d*x+c))^(9/2)+1/7*I*B*(a+I*a*tan(d*x+c))^(7
/2)*a+1/7*A*(a+I*a*tan(d*x+c))^(7/2)*a-1/5*I*B*a^2*(a+I*a*tan(d*x+c))^(5/2)
-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)*a^3+1/3*A*(a+I*a*tan(d*x+c))^(3/2)*a^3-2*
I*B*a^4*(a+I*a*tan(d*x+c))^(1/2)+2*A*a^4*(a+I*a*tan(d*x+c))^(1/2)-2*a^(9/2)
*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.79612, size = 1585, normalized size = 6.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/630*(sqrt(2)*((-4800*I*A - 5168*B)*a^2*e^(8*I*d*x + 8*I*c) + (-14040*I*A
- 13176*B)*a^2*e^(6*I*d*x + 6*I*c) + (-17640*I*A - 18648*B)*a^2*e^(4*I*d*x
+ 4*I*c) + (-10920*I*A - 10920*B)*a^2*e^(2*I*d*x + 2*I*c) + (-2520*I*A - 25
20*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 315*sqrt(-(3
```

```
2*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x
 + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqr
t(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt(-(32*A^2 - 64*I*A*B - 32*B^2
)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2))
 - 315*sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(8*I*d*x + 8*I*c) +
 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c
) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*
a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-(32*A^2 - 64
*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I
*A + 4*B)*a^2)))/(d*e^(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(
4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\tan(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*tan(d*x + c)^2,
 x)
```

3.83 $\int \tan(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=171

$$\frac{4a^2(A-iB)\sqrt{a+ia\tan(c+dx)}}{d}-\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(A-iB)(a+ia\tan(c+dx))^{3/2}}{3d}+\frac{2A(a}{}$$

```
[Out] (-4*Sqrt[2]*a^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (4*a^2*(A - I*B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*a*(A - I*
B)*(a + I*a*Tan[c + d*x])^(3/2))/(3*d) + (2*A*(a + I*a*Tan[c + d*x])^(5/2))
/(5*d) - (((2*I)/7)*B*(a + I*a*Tan[c + d*x])^(7/2))/(a*d)
```

Rubi [A] time = 0.199722, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3592, 3527, 3478, 3480, 206}

$$\frac{4a^2(A-iB)\sqrt{a+ia\tan(c+dx)}}{d}-\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(A-iB)(a+ia\tan(c+dx))^{3/2}}{3d}+\frac{2A(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-4*Sqrt[2]*a^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (4*a^2*(A - I*B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*a*(A - I*
B)*(a + I*a*Tan[c + d*x])^(3/2))/(3*d) + (2*A*(a + I*a*Tan[c + d*x])^(5/2))
/(5*d) - (((2*I)/7)*B*(a + I*a*Tan[c + d*x])^(7/2))/(a*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
```

```
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{2iB(a+ia\tan(c+dx))^{7/2}}{7ad} + \int (a+ia\tan(c+dx))^{5/2}(-B$$

$$= \frac{2A(a+ia\tan(c+dx))^{5/2}}{5d} - \frac{2iB(a+ia\tan(c+dx))^{7/2}}{7ad} - ($$

$$= \frac{2a(A-iB)(a+ia\tan(c+dx))^{3/2}}{3d} + \frac{2A(a+ia\tan(c+dx)}{5d}$$

$$= \frac{4a^2(A-iB)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2a(A-iB)(a+ia\tan(}{3d}$$

$$= \frac{4a^2(A-iB)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2a(A-iB)(a+ia\tan(}{3d}$$

$$= -\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{4a^2(A-iB)\sqrt{}}{}$$

Mathematica [A] time = 3.93588, size = 268, normalized size = 1.57

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\frac{(\cos(2c)-i\sin(2c))\sec^{\frac{7}{2}}(c+dx)(21(37A-35iB)\cos(c+dx)+(287A-305iB)\cos(3(c+dx))+77iA\sin(c+\ldots}{210(\cos(dx)+i\sin(dx))^2}\right.}{d\sec^{\frac{7}{2}}(c+dx)(A\cos(c+dx\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (((-4*Sqrt[2]*(A - I*B)*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqr
t[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))])/E^((3*I)*(c + d*x)) +
(Sec[c + d*x]^(7/2)*(Cos[2*c] - I*Sin[2*c])*(21*(37*A - (35*I)*B)*Cos[c + d
*x] + (287*A - (305*I)*B)*Cos[3*(c + d*x)] + (77*I)*A*Sin[c + d*x] + 35*B*S
in[c + d*x] + (77*I)*A*Sin[3*(c + d*x)] + 95*B*Sin[3*(c + d*x)]))/(210*(Cos
[d*x] + I*Sin[d*x])^2))*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/
(d*Sec[c + d*x]^(7/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.019, size = 165, normalized size = 1.

$$2\,\frac{1}{ad}\left(-i/7B\left(a+ia\tan\left(dx+c\right)\right)^{7/2}+1/5\,A\left(a+ia\tan\left(dx+c\right)\right)^{5/2}a-i/3a^2B\left(a+ia\tan\left(dx+c\right)\right)^{3/2}+1/3\,A\left(a+ia\tan\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/d/a*(-1/7*I*B*(a+I*a*tan(d*x+c))^(7/2)+1/5*A*(a+I*a*tan(d*x+c))^(5/2)*a-1
/3*I*a^2*B*(a+I*a*tan(d*x+c))^(3/2)+1/3*A*(a+I*a*tan(d*x+c))^(3/2)*a^2-2*I*
B*a^3*(a+I*a*tan(d*x+c))^(1/2)+2*A*a^3*(a+I*a*tan(d*x+c))^(1/2)-2*a^(7/2)*(
A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.76055, size = 1385, normalized size = 8.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/210*(8*sqrt(2)*(2*(91*A - 100*I*B)*a^2*e^(6*I*d*x + 6*I*c) + 7*(61*A - 55
*I*B)*a^2*e^(4*I*d*x + 4*I*c) + 350*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + 105
*(A - I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 105*sqr
t((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I
*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^
2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*e^(I*d*x + I*c) + I*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d
*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 105*sqrt((32*A^2 -
 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*
c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*
x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c) - I*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c)
)*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e
^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{5}{2}}\tan(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*tan(d*x + c), x
)
```

3.84 $\int (a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=141

$$\frac{4a^2(B+iA)\sqrt{a+ia\tan(c+dx)}}{d}-\frac{4\sqrt{2}a^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(B+iA)(a+ia\tan(c+dx))^{3/2}}{3d}+\frac{2B(a$$

```
[Out] (-4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (4*a^2*(I*A + B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*a*(I*A +
B)*(a + I*a*Tan[c + d*x])^(3/2))/(3*d) + (2*B*(a + I*a*Tan[c + d*x])^(5/2))
/(5*d)
```

Rubi [A] time = 0.125664, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3527, 3478, 3480, 206}

$$\frac{4a^2(B+iA)\sqrt{a+ia\tan(c+dx)}}{d}-\frac{4\sqrt{2}a^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{2a(B+iA)(a+ia\tan(c+dx))^{3/2}}{3d}+\frac{2B(a$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*S
qrt[a])])/d + (4*a^2*(I*A + B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (2*a*(I*A +
B)*(a + I*a*Tan[c + d*x])^(3/2))/(3*d) + (2*B*(a + I*a*Tan[c + d*x])^(5/2))
/(5*d)
```


Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
```

```
1]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2B(a+ia\tan(c+dx))^{5/2}}{5d} - (-A+iB)\int (a+ia\tan(c+dx))^{5/2}\,dx$$

$$= \frac{2a(iA+B)(a+ia\tan(c+dx))^{3/2}}{3d} + \frac{2B(a+ia\tan(c+dx))^{5/2}}{5d} + (2a($$

$$= \frac{4a^2(iA+B)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2a(iA+B)(a+ia\tan(c+dx))^{3/2}}{3d}$$

$$= \frac{4a^2(iA+B)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2a(iA+B)(a+ia\tan(c+dx))^{3/2}}{3d}$$

$$= -\frac{4\sqrt{2}a^{5/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{4a^2(iA+B)\sqrt{a+ia\tan}}{d}$$

Mathematica [A] time = 3.01935, size = 236, normalized size = 1.67

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\frac{(\cos(2c)-i\sin(2c))\sec^{\frac{5}{2}}(c+dx)((-5A+11iB)\sin(2(c+dx))+(41B+35iA)\cos(2(c+dx))+35(B+iA))}{15(\cos(dx)+i\sin(dx))^2} - \right.}{d\sec^{\frac{7}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((((-4*I)*Sqrt[2]*(A - I*B)*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]
*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))])/E^((3*I)*(c + d*x)
```

```
) + (Sec[c + d*x]^(5/2)*(Cos[2*c] - I*Sin[2*c])*(35*(I*A + B) + ((35*I)*A +
 41*B)*Cos[2*(c + d*x)] + (-5*A + (11*I)*B)*Sin[2*(c + d*x)]))/(15*(Cos[d*x
] + I*Sin[d*x])^2))*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*S
ec[c + d*x]^(7/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [A] time = 0.017, size = 141, normalized size = 1.

$$\frac{2i}{d}\left(-\frac{i}{5}B\left(a+ia\tan\left(dx+c\right)\right)^{\frac{5}{2}}-\frac{i}{3}B\left(a+ia\tan\left(dx+c\right)\right)^{\frac{3}{2}}a+\frac{Aa}{3}\left(a+ia\tan\left(dx+c\right)\right)^{\frac{3}{2}}-2\,iB\sqrt{a+ia\tan\left(dx+c\right)}a^{2}+2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*I/d*(-1/5*I*B*(a+I*a*tan(d*x+c))^(5/2)-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)*a
+1/3*A*(a+I*a*tan(d*x+c))^(3/2)*a-2*I*B*(a+I*a*tan(d*x+c))^(1/2)*a^2+2*a^2*
A*(a+I*a*tan(d*x+c))^(1/2)-2*a^(5/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan
(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.74943, size = 1223, normalized size = 8.67

$$\frac{\sqrt{2}\left((160i\,A+208\,B)a^{2}e^{(4i\,dx+4i\,c)}+(280i\,A+280\,B)a^{2}e^{(2i\,dx+2i\,c)}+(120i\,A+120\,B)a^{2}\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}-15\sqrt{-\frac{(32\,A^{2}}{}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/30*(sqrt(2)*((160*I*A + 208*B)*a^2*e^(4*I*d*x + 4*I*c) + (280*I*A + 280*B
)*a^2*e^(2*I*d*x + 2*I*c) + (120*I*A + 120*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c) - 15*sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*
(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A
+ 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*
I*c) + 1))*e^(I*d*x + I*c) + sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*
e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 15*sqrt(-(
32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*
x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*
A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-(32
*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I
*c)/((4*I*A + 4*B)*a^2)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c)
+ d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.85 $\int \cot(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=147

$$-\frac{2a^2(A-2iB)\sqrt{a+ia\tan(c+dx)}}{d}+\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2iaB(}{}$$

```
[Out] (-2*a^(5/2)*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d + (4*Sqrt[2]*a
^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/d -
 (2*a^2*(A - (2*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (((2*I)/3)*a*B*(a + I
*a*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.534141, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3594, 3600, 3480, 206, 3599, 63, 208}

$$-\frac{2a^2(A-2iB)\sqrt{a+ia\tan(c+dx)}}{d}+\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2iaB(}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*a^(5/2)*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d + (4*Sqrt[2]*a
^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/d -
 (2*a^2*(A - (2*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/d + (((2*I)/3)*a*B*(a + I
*a*Tan[c + d*x])^(3/2))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2iaB(a+ia\tan(c+dx))^{3/2}}{3d} + \frac{2}{3}\int \cot(c+dx)(a+ia\tan($$

$$= -\frac{2a^2(A-2iB)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2iaB(a+ia\tan(c+}{3d}$$

$$= -\frac{2a^2(A-2iB)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2iaB(a+ia\tan(c+}{3d}$$

$$= -\frac{2a^2(A-2iB)\sqrt{a+ia\tan(c+dx)}}{d} + \frac{2iaB(a+ia\tan(c+}{3d}$$

$$= \frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{2a^2(A-2iB)\sqrt{}}{}$$

$$= -\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{}}{d}$$

Mathematica [B] time = 7.93852, size = 429, normalized size = 2.92

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left((3A-8iB)\left(-\frac{2}{3}\cos(2c)+\frac{2}{3}i\sin(2c)\right)+\sec(c+dx)\left(-\frac{2}{3}B\sin(3c\right.\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[E^(I*d*x)]*(8*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + Sqrt[2]*A*(Log[1 -
 E^(I*(c + d*x))] - Log[1 + E^(I*(c + d*x))] + Log[1 - E^(I*(c + d*x)) + Sq
rt[2]*Sqrt[1 + E^((2*I)*(c + d*x))]] - Log[1 + E^(I*(c + d*x)) + Sqrt[2]*Sq
rt[1 + E^((2*I)*(c + d*x))]]))*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c +
d*x]))/(Sqrt[2]*d*E^((2*I)*c)*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))
)]*Sqrt[1 + E^((2*I)*(c + d*x))]*Sec[c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])
^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^3*((3*A - (8*I)*B
)*((-2*Cos[2*c])/3 + ((2*I)/3)*Sin[2*c]) + Sec[c + d*x]*(((-2*I)/3)*B*Cos[3
*c + d*x] - (2*B*Sin[3*c + d*x])/3))*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Ta
n[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x])
)
```

Maple [B] time = 0.431, size = 965, normalized size = 6.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/6/d*a^2*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(3*I*A*arctan(1/(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*si
n(d*x+c)+12*I*B*2^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*sin(d*x+c)/cos(d*x+c))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*sin(d*x+c
)+12*I*A*2^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*sin(d*x+c)-28*I*B*cos(d*x+c)-12*A*cos(d
*x+c)*sin(d*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*arctanh(1/2*2
^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+3*I*A*co
s(d*x+c)*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*arctan(1/(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2))+12*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(3/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2))-12*I*A*cos(d*x+c)*sin(d*x+c)-3*A*cos(d*x+c)*sin(d*x+c)*ln(-(-(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-2*cos
(d*x+c)/(cos(d*x+c)+1))^(3/2)-12*A*2^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(3/2)*sin(d*x+c)+12*B*2^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*sin(d*x+c)-3*A*ln(-(-(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*sin(d*x+c)-4*I*B+12*I*A*cos(d*x+c)*sin(d
*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*arctan(1/2*2^(1/2)*(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2))-12*A*cos(d*x+c)^2+12*I*B*cos(d*x+c)*sin(d*
x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(3/2)*arctanh(1/2*2^(1/2)*(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-32*B*cos(d*x+c)*sin(
d*x+c)+12*A*cos(d*x+c)+32*I*B*cos(d*x+c)^2+4*B*sin(d*x+c))/(I*sin(d*x+c)+co
s(d*x+c)-1)/cos(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.884, size = 1652, normalized size = 11.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/6*(4*sqrt(2)*((3*A - 8*I*B)*a^2*e^(2*I*d*x + 2*I*c) + 3*(A - 2*I*B)*a^2)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 6*sqrt(A^2*a^5/d^2)*(d
*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*(A*a^2*e^(2*I*d*x + 2*I*c) + A*a^2)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*sqrt(A^2*a^5/d^2)*d*e
^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(A*a^2)) - 6*sqrt(A^2*a^5/d^2)*(d*
e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*(A*a^2*e^(2*I*d*x + 2*I*c) + A*a^2)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*sqrt(A^2*a^5/d^2)*d*e^
(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(A*a^2)) - 3*sqrt((32*A^2 - 64*I*A*
B - 32*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B
)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*e^(I*d*x + I*c) + I*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2
*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 3*sqrt((32*A^2
 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4
*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d
^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^
(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c), x
)
```

3.86 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=158

$$\frac{a^2(-2B+iA)\sqrt{a+ia\tan(c+dx)}}{d}-\frac{a^{5/2}(2B+5iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{4\sqrt{2}a^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-$$

```
[Out] -((a^(5/2)*((5*I)*A + 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d)
+ (4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*
Sqrt[a])])/d + (a^2*(I*A - 2*B)*Sqrt[a + I*a*Tan[c + d*x]])/d - (a*A*Cot[c
+ d*x]*(a + I*a*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.552072, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3593, 3594, 3600, 3480, 206, 3599, 63, 208}

$$\frac{a^2(-2B+iA)\sqrt{a+ia\tan(c+dx)}}{d}-\frac{a^{5/2}(2B+5iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{4\sqrt{2}a^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a^(5/2)*((5*I)*A + 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/d)
+ (4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*
Sqrt[a])])/d + (a^2*(I*A - 2*B)*Sqrt[a + I*a*Tan[c + d*x]])/d - (a*A*Cot[c
+ d*x]*(a + I*a*Tan[c + d*x])^(3/2))/d
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)(a+ia\tan(c+dx))^{3/2}}{d} + \int \cot(c+dx)(a$$

$$= \frac{a^2(iA-2B)\sqrt{a+ia\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+ia\,t}{d}$$

$$= \frac{a^2(iA-2B)\sqrt{a+ia\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+ia\,t}{d}$$

$$= \frac{a^2(iA-2B)\sqrt{a+ia\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+ia\,t}{d}$$

$$= \frac{4\sqrt{2}a^{5/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{a^2(iA-2B)\sqrt{}}{}$$

$$= -\frac{a^{5/2}(5iA+2B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{4\sqrt{2}a^{5/2}(iA+}{}$$

Mathematica [B] time = 6.89558, size = 413, normalized size = 2.61

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(e^{-3i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\left(2(2B+5iA)\left(\log\left(\left(-1+e^{i(c+dx)}\right)^2\right)-\log\left(\left(\right.\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (((Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d
*x))]*(32*Sqrt[2]*(I*A + B)*ArcSinh[E^(I*(c + d*x))] + 2*((5*I)*A + 2*B)*(L
og[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c + d*x)))^2] + Log[3 + 3*E^(
```

```
(2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] - 2*E^(I*(c + d*
x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])] - Log[3 + 3*E^((2*I)*(c +
d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] + 2*E^(I*(c + d*x))*(1 + Sq
rt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])])))/E^((3*I)*(c + d*x)) - (8*(A*Csc[c
+ d*x] + 2*B*Sec[c + d*x])*(Cos[2*c] - I*Sin[2*c]))/(Sqrt[Sec[c + d*x]]*(Co
s[d*x] + I*Sin[d*x])^2))*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))
/(8*d*Sec[c + d*x]^(7/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.471, size = 1141, normalized size = 7.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*a^2*(-2*I*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan
(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-5*I*A*ln(-(-(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2)+8*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-8*I*B*2^(1/2)*cos
(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2))+8*B*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*si
n(d*x+c)/cos(d*x+c))-4*I*B*cos(d*x+c)^2+2*I*A*cos(d*x+c)*sin(d*x+c)+5*A*cos
(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2))-8*I*A*2^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)+
2*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-8*A*2^(1/2)*(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2))+4*I*B+8*I*B*2^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)-8*B*2^(1/2)*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*sin(d*x+c)/cos(d*x+c))+8*I*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*sin(d*x+c)/cos(d*x+c))+2*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arcta
n(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+2*A*cos(d*x+c)^2-5*A*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*B
*cos(d*x+c)*sin(d*x+c)-2*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2*A*co
s(d*x+c)-4*B*sin(d*x+c)+5*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
```

```
1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/si
n(d*x+c)))*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(I*sin(d*x+c)+cos
(d*x+c)-1)/sin(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.90083, size = 1872, normalized size = 11.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/2*(sqrt(2)*((-2*I*A - 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (-2*I*A + 4*B)*a^2)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-(25*A^2 - 20*I*A*
B - 4*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((5*I*A + 2*B)
*a^2*e^(2*I*d*x + 2*I*c) + (5*I*A + 2*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*e^(I*d*x + I*c) + 2*sqrt(-(25*A^2 - 20*I*A*B - 4*B^2)*a^5/d^2)*d*e^(2*
I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((5*I*A + 2*B)*a^2)) + sqrt(-(25*A^2 -
 20*I*A*B - 4*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((5*I*
A + 2*B)*a^2*e^(2*I*d*x + 2*I*c) + (5*I*A + 2*B)*a^2)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*e^(I*d*x + I*c) - 2*sqrt(-(25*A^2 - 20*I*A*B - 4*B^2)*a^5/d^2)
*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((5*I*A + 2*B)*a^2)) + sqrt(-(
32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(
2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*
a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) -
 sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*lo
g((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt
```

```
(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-(32*A^2 - 64*I*A*B -
32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)
*a^2)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^2,
 x)
```

3.87 $\int \cot^3(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=173

$$\frac{a^{5/2}(23A-20iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a^2(4B+7iA)\cot(c+dx)\sqrt{a+ia}}{4d}$$

```
[Out] (a^(5/2)*(23*A - (20*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*
d) - (4*Sqrt[2]*a^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d - (a^2*((7*I)*A + 4*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*
x]])/(4*d) - (a*A*Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(3/2))/(2*d)
```

Rubi [A] time = 0.605962, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3593, 3600, 3480, 206, 3599, 63, 208}

$$\frac{a^{5/2}(23A-20iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a^2(4B+7iA)\cot(c+dx)\sqrt{a+ia}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^(5/2)*(23*A - (20*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*
d) - (4*Sqrt[2]*a^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d - (a^2*((7*I)*A + 4*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*
x]])/(4*d) - (a*A*Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(3/2))/(2*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)(a+ia\tan(c+dx))^{3/2}}{2d} + \frac{1}{2}\int \cot^2(c+$$

$$= -\frac{a^2(7iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d} - \frac{aA\cot^2}{}$$

$$= -\frac{a^2(7iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d} - \frac{aA\cot^2}{}$$

$$= -\frac{a^2(7iA+4B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d} - \frac{aA\cot^2}{}$$

$$= -\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} - \frac{a^2(7iA+4B}{}$$

$$= \frac{a^{5/2}(23A-20iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4d} - \frac{4\sqrt{2}a^{5/2}(A-}{}$$

Mathematica [B] time = 8.45932, size = 427, normalized size = 2.47

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(-2e^{-3i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\left((23A-20iB)\left(\log\left(\left(-1+e^{i(c+dx)}\right)^2\right)-\log\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (((-2*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c
+ d*x))]*(64*Sqrt[2]*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + (23*A - (20*I)*B)
*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c + d*x)))^2] + Log[3 + 3*
E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] - 2*E^(I*(c +
 d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])] - Log[3 + 3*E^((2*I)*(c
 + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] + 2*E^(I*(c + d*x))*(1 +
 Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])])))/E^((3*I)*(c + d*x)) - (8*Csc[c
+ d*x]*(2*A*Csc[c + d*x] + ((9*I)*A + 4*B)*Sec[c + d*x])*(Cos[2*c] - I*Sin[
2*c]))/(Sec[c + d*x]^(3/2)*(Cos[d*x] + I*Sin[d*x])^2))*(a + I*a*Tan[c + d*x
])^(5/2)*(A + B*Tan[c + d*x]))/(32*d*Sec[c + d*x]^(7/2)*(A*Cos[c + d*x] + B
*Sin[c + d*x]))
```

Maple [B] time = 0.445, size = 1292, normalized size = 7.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/8/d*a^2*(20*I*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin
(d*x+c))-20*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-23*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-20*I*B*sin(d*x
+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-32*I*A*sin(d*x+c)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2))*2^(1/2)-4*A*cos(d*x+c)^2-18*A*cos(d*x+c)+22*A*cos(d*x+c)^3-8*I*B*co
s(d*x+c)^3-8*B*cos(d*x+c)*sin(d*x+c)+8*B*cos(d*x+c)^2*sin(d*x+c)+8*I*B*cos(
d*x+c)+32*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*sin(d*x+c)-32
*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-32*I*B*sin(d*x+c)*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)+23*I*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+2
3*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)+32*I*A*sin(d*x+c)*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2))*2^(1/2)*cos(d*x+c)^2+32*I*B*sin(d*x+c)*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*sin(d*x+c)/cos(d*x+c))*2^(1/2)*cos(d*x+c)^2-32*A*(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d
*x+c)/cos(d*x+c))*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+32*B*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2))*2^(1/2)+22*I*A*cos(d*x+c)^2*sin(d*x+c)-18*I*A*sin(d*
x+c)*cos(d*x+c)-23*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c)^2
*sin(d*x+c)+20*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2*sin(d*x+c))*(a*(I*sin(d*x+c)+cos(d*x
+c))/cos(d*x+c))^(1/2)/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos(d*x+c)-1)/(cos(d*x+
c)+1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.82976, size = 2133, normalized size = 12.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((11*A - 4*I*B)*a^2*e^(4*I*d*x + 4*I*c) + 4*A*a^2*e^(2*I*d*x
 + 2*I*c) - (7*A - 4*I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
 I*c) + sqrt((529*A^2 - 920*I*A*B - 400*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c
) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((23*I*A + 20*B)*a^2*e^(2*I*d
*x + 2*I*c) + (23*I*A + 20*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d
*x + I*c) + 2*I*sqrt((529*A^2 - 920*I*A*B - 400*B^2)*a^5/d^2)*d*e^(2*I*d*x
+ 2*I*c))*e^(-2*I*d*x - 2*I*c)/((23*I*A + 20*B)*a^2)) - sqrt((529*A^2 - 920
*I*A*B - 400*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c)
 + d)*log((sqrt(2)*((23*I*A + 20*B)*a^2*e^(2*I*d*x + 2*I*c) + (23*I*A + 20*
B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*I*sqrt((529*A
^2 - 920*I*A*B - 400*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I
*c)/((23*I*A + 20*B)*a^2)) - 4*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(
d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A +
 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c) + I*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*
e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 4*sqrt((32
*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x
+ 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A
+ 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((32*
A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*
c)/((4*I*A + 4*B)*a^2)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) +
```

```
d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^3,
 x)
```

3.88 $\int \cot^4(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=217

$$\frac{a^{5/2}(46B+45iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{4\sqrt{2}a^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a^2(2B+3iA)\cot^2(c+dx)\sqrt{a+i}}{4d}$$

```
[Out] (a^(5/2)*((45*I)*A + 46*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(8*
d) - (4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d + (a^2*(19*A - (18*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c +
d*x]])/(8*d) - (a^2*((3*I)*A + 2*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x
]])/(4*d) - (a*A*Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^(3/2))/(3*d)
```

Rubi [A] time = 0.797316, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3593, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{a^{5/2}(46B+45iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{4\sqrt{2}a^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a^2(2B+3iA)\cot^2(c+dx)\sqrt{a+i}}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] (a^(5/2)*((45*I)*A + 46*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(8*
d) - (4*Sqrt[2]*a^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[
2]*Sqrt[a])])/d + (a^2*(19*A - (18*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c +
d*x]])/(8*d) - (a^2*((3*I)*A + 2*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x
]])/(4*d) - (a*A*Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^(3/2))/(3*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^4(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)(a+ia\tan(c+dx))^{3/2}}{3d}+\frac{1}{3}\int \cot^3(c+$$

$$= -\frac{a^2(3iA+2B)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}-\frac{aA\cot}{}$$

$$= \frac{a^2(19A-18iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a^2(3iA}{}$$

$$= \frac{a^2(19A-18iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a^2(3iA}{}$$

$$= \frac{a^2(19A-18iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a^2(3iA}{}$$

$$= -\frac{4\sqrt{2}a^{5/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}+\frac{a^2(19A-18}{}$$

$$= \frac{a^{5/2}(45iA+46B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{8d}-\frac{4\sqrt{2}a^{5/2}(iA+}{}$$

Mathematica [B] time = 8.60248, size = 634, normalized size = 2.92

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\csc(c)\left(\frac{1}{12}\cos(2c)-\frac{1}{12}i\sin(2c)\right)\csc^2(c+dx)(-13iA\sin(c)-4A}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] ((-I/32)*Sqrt[E^(I*d*x)]*(256*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + Sqrt[2]*
(45*A - (46*I)*B)*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c + d*x))
)^2] + Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x
))] - 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])] - Log[
3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] + 2*E^(
I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])]))*(a + I*a*Tan[c
+ d*x])^(5/2)*(A + B*Tan[c + d*x]))/(Sqrt[2]*d*E^((2*I)*c)*Sqrt[E^(I*(c + d
*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))]*Sec[c + d*x]^
(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (C
os[c + d*x]^3*(Csc[c]*(65*A*Cos[c] - (54*I)*B*Cos[c] + (26*I)*A*Sin[c] + 12
*B*Sin[c])*(Cos[2*c]/24 - (I/24)*Sin[2*c]) + Csc[c]*Csc[c + d*x]^2*(-4*A*Co
s[c] - (13*I)*A*Sin[c] - 6*B*Sin[c])*(Cos[2*c]/12 - (I/12)*Sin[2*c]) + A*Cs
c[c]*Csc[c + d*x]^3*(Cos[2*c]/3 - (I/3)*Sin[2*c])*Sin[d*x] + Csc[c]*Csc[c +
 d*x]*(Cos[2*c]/24 - (I/24)*Sin[2*c])*(-65*A*Sin[d*x] + (54*I)*B*Sin[d*x]))
*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*
x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.483, size = 2506, normalized size = 11.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/48/d*a^2*(192*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-135*A
*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2))*cos(d*x+c)*sin(d*x+c)-192*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)*2^(1/2)
-192*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*sin(d*x+c)*2^(1/2)-138*B*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c)*sin(d*x+c)-114*A*cos(d*
x+c)*sin(d*x+c)-192*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/
2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)*sin(d*x+c)*2^(1/2)+182*
A*cos(d*x+c)^3*sin(d*x+c)+114*I*A*cos(d*x+c)-130*I*A*cos(d*x+c)^3+166*I*A*c
os(d*x+c)^2-182*I*A*cos(d*x+c)^4-135*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-138*B*(-2*cos(d*
```

```
x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d
*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)+52*A*cos(d*x+c)^2*sin(d*x+c)-192
*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*cos(d*x+c)*sin(d*x+c)*2^(1/2)+
135*A*cos(d*x+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1
/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+138*B*cos(d*x+c)^3*sin(d*x+c)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*s
in(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+135*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+
138*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-135
*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)+138*I*B*sin(d*x+c
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+108*B*cos(d*x+c)-108*cos(d*x+c)^3*B-132*cos(d*x+c)^4*B+132*B*cos
(d*x+c)^2+192*I*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*
x+c)/cos(d*x+c))-192*I*B*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))
+192*I*A*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(
d*x+c))-192*I*B*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-192*I*A*
2^(1/2)*cos(d*x+c)*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(
1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+192
*I*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arc
tan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+192*B*2^(1/2)*cos(d*x
+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+192*A*2^(1/2)*co
s(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/
2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+192*B*2^(1/2)*cos(d*x+c)^2*sin(d*x
+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-192*I*A*2^(1/2)*sin(d*x+c)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))+192*I*B*2^(1/2)*sin(d*x+c)*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+135*I*A*cos(d*x+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/si
n(d*x+c))-138*I*B*cos(d*x+c)^3*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+135*I*A*cos(d*x+c)^2*sin
(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-138*I*B*cos(d*x+c)^2*sin(
d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2))-135*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c
```

```
)*sin(d*x+c)+138*I*B*cos(d*x+c)*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+108*I*B*cos(d*x+c)*sin(
d*x+c)-132*I*B*cos(d*x+c)^3*sin(d*x+c)-24*I*B*sin(d*x+c)*cos(d*x+c)^2)*(a*(
I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos
(d*x+c)-1)/(cos(d*x+c)+1)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.84368, size = 2412, normalized size = 11.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/48*(2*sqrt(2)*((91*I*A + 66*B)*a^2*e^(6*I*d*x + 6*I*c) + (-7*I*A - 42*B)*
a^2*e^(4*I*d*x + 4*I*c) + (-59*I*A - 66*B)*a^2*e^(2*I*d*x + 2*I*c) + (39*I*
A + 42*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*sqrt(-
(2025*A^2 - 4140*I*A*B - 2116*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^
(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((45*I*A + 46
*B)*a^2*e^(2*I*d*x + 2*I*c) + (45*I*A + 46*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c) + 2*sqrt(-(2025*A^2 - 4140*I*A*B - 2116*B^2)*a^5/
d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((45*I*A + 46*B)*a^2)) - 3
*sqrt(-(2025*A^2 - 4140*I*A*B - 2116*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) -
 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((45*I
*A + 46*B)*a^2*e^(2*I*d*x + 2*I*c) + (45*I*A + 46*B)*a^2)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*sqrt(-(2025*A^2 - 4140*I*A*B - 2116*B^
2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((45*I*A + 46*B)*a^
2)) - 24*sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c)
```

```
 - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*
I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x
+ 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2
)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 24*sqr
t(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*
I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a
^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c) - sqrt(-(32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d
*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(6*I*d*x + 6*I
*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^4,
 x)
```

3.89 $\int \cot^5(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=261

$$-\frac{3a^{5/2}(121A-120iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{64d}+\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a^2(8B+11iA)\cot^3(c+dx)}{24d}$$

```
[Out] (-3*a^(5/2)*(121*A - (120*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]]
)/(64*d) + (4*Sqrt[2]*a^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/
(Sqrt[2]*Sqrt[a])])/d + (a^2*((149*I)*A + 152*B)*Cot[c + d*x]*Sqrt[a + I*a*
Tan[c + d*x]])/(64*d) + (a^2*(107*A - (104*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*
a*Tan[c + d*x]])/(96*d) - (a^2*((11*I)*A + 8*B)*Cot[c + d*x]^3*Sqrt[a + I*a
*Tan[c + d*x]])/(24*d) - (a*A*Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^(3/2))/
(4*d)
```

Rubi [A] time = 1.0046, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3593, 3598, 3600, 3480, 206, 3599, 63, 208}

$$-\frac{3a^{5/2}(121A-120iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{64d}+\frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d}-\frac{a^2(8B+11iA)\cot^3(c+dx)}{24d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-3*a^(5/2)*(121*A - (120*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]]
)/(64*d) + (4*Sqrt[2]*a^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/
(Sqrt[2]*Sqrt[a])])/d + (a^2*((149*I)*A + 152*B)*Cot[c + d*x]*Sqrt[a + I*a*
Tan[c + d*x]])/(64*d) + (a^2*(107*A - (104*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*
a*Tan[c + d*x]])/(96*d) - (a^2*((11*I)*A + 8*B)*Cot[c + d*x]^3*Sqrt[a + I*a
*Tan[c + d*x]])/(24*d) - (a*A*Cot[c + d*x]^4*(a + I*a*Tan[c + d*x])^(3/2))/
(4*d)
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
```

```
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
```

```
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^5(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^4(c+dx)(a+ia\tan(c+dx))^{3/2}}{4d} + \frac{1}{4}\int \cot^4(c+$$

$$= -\frac{a^2(11iA+8B)\cot^3(c+dx)\sqrt{a+ia\tan(c+dx)}}{24d} - \frac{aA\,c}{}$$

$$= \frac{a^2(107A-104iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{96d} - \frac{a^2}{}$$

$$= \frac{a^2(149iA+152B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{64d} + \frac{a^2(}{}$$

$$= \frac{a^2(149iA+152B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{64d} + \frac{a^2(}{}$$

$$= \frac{a^2(149iA+152B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{64d} + \frac{a^2(}{}$$

$$= \frac{4\sqrt{2}a^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{d} + \frac{a^2(149iA+}{}$$

$$= -\frac{3a^{5/2}(121A-120iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{64d} + \frac{4\sqrt{2}a^{5/}}{}$$

Mathematica [B] time = 8.98414, size = 698, normalized size = 2.67

$$\cos^3(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\csc(c)\left(\frac{1}{24}\cos(2c)-\frac{1}{24}i\sin(2c)\right)\csc^3(c+dx)(8B\sin(dx)+17iA\sin$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^5*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Sqrt[E^(I*d*x)]*(2048*(A - I*B)*ArcSinh[E^(I*(c + d*x))] + 3*Sqrt[2]*(121*
A - (120*I)*B)*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c + d*x)))^2
] + Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))]
 - 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])] - Log[3 +
 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))] + 2*E^(I*(
c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])]))*(a + I*a*Tan[c + d
*x])^(5/2)*(A + B*Tan[c + d*x]))/(256*Sqrt[2]*d*E^((2*I)*c)*Sqrt[E^(I*(c +
d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))]*Sec[c + d*x]
^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (
Cos[c + d*x]^3*(Csc[c]*((583*I)*A*Cos[c] + 520*B*Cos[c] - 262*A*Sin[c] + (2
08*I)*B*Sin[c])*(Cos[2*c]/192 - (I/192)*Sin[2*c]) + Csc[c + d*x]^4*(-(A*Cos
[2*c])/4 + (I/4)*A*Sin[2*c]) + Csc[c]*Csc[c + d*x]^2*((87*I)*A + 72*B - (22
3*I)*A*Cos[2*c] - 136*B*Cos[2*c] + 223*A*Sin[2*c] - (136*I)*B*Sin[2*c])*(Co
s[3*c]/192 - (I/192)*Sin[3*c]) + Csc[c]*Csc[c + d*x]*(Cos[2*c]/192 - (I/192
)*Sin[2*c])*((-583*I)*A*Sin[d*x] - 520*B*Sin[d*x]) + Csc[c]*Csc[c + d*x]^3*
(Cos[2*c]/24 - (I/24)*Sin[2*c])*((17*I)*A*Sin[d*x] + 8*B*Sin[d*x]))*(a + I*
a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^2*(A
*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.429, size = 3444, normalized size = 13.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/384/d*a^2*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(1536*I*B*cos(d*
x+c)^5*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)+1536*I*A*cos(d*x+c
```

)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2))*2^(1/2)+1536*I*B*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin
(d*x+c)/cos(d*x+c))*2^(1/2)-3072*I*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2
)-3072*I*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^
(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)-3
072*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-3072*I*B*cos(d*x+c)^2*(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)+1536*I*A*cos(d*x+c)*(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2))*2^(1/2)+1536*I*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*a
rctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+
c))*2^(1/2)-1536*A*2^(1/2)*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x
+c))+1536*B*2^(1/2)*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(
1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+3072*A*2^(1/2)*cos(d*x+c)
^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-3072*B*2^(1/2)*cos(d*x+c)^3*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2))+3072*A*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/
cos(d*x+c))-3072*B*2^(1/2)*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-1690*A*cos(d*x+c
)^4*sin(d*x+c)+1690*I*A*cos(d*x+c)^5+524*I*A*cos(d*x+c)^4-2488*I*A*cos(d*x+
c)^3-428*I*A*cos(d*x+c)^2+894*I*A*cos(d*x+c)+1536*I*A*cos(d*x+c)^5*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))*2^(1/2)+894*A*cos(d*x+c)*sin(d*x+c)-1166*A*cos(d*x+c)^3*sin(d*x+
c)+1322*A*cos(d*x+c)^2*sin(d*x+c)-1089*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(
d*x+c))+1080*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2))+1456*cos(d*x+c)^5*B+1080*B*cos(d*x+c)^4*(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+14
56*I*B*cos(d*x+c)^4*sin(d*x+c)+1040*I*B*cos(d*x+c)^3*sin(d*x+c)-1328*I*B*si
n(d*x+c)*cos(d*x+c)^2+1089*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(
1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-912*I*B*cos(d*x+c)*sin(d*x+c)+1080*
I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-1089*A*cos(d*x+c)^5*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(
d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+1080*B*cos(d*x+c)^5*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-1089*A*cos(d*
x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+2178*A*cos(d*x+c)^3*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*s

```
in(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2160*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+2178*A*cos
(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2160*B*cos(d*x+c)^2*(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2))-1536*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/
2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))-1089*A*cos(d
*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+1536*B*2^(1/2)*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2))+1080*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+912*B*cos(d*x+c)-2368*cos(d*x+c)^3*B-1536
*A*cos(d*x+c)^5*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)/cos(d*x+c))*2^(1/2)+1536*B*co
s(d*x+c)^5*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-1536*A*cos(d*x+c)^4*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*sin(d*x+c)/cos(d*x+c))*2^(1/2)+1536*B*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(
1/2)+1089*I*A*cos(d*x+c)^5*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+1080*I*B*cos(d*x+c)^5*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+c
os(d*x+c)-1)/sin(d*x+c))+1089*I*A*cos(d*x+c)^4*(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+1080*I*B*cos(d*x+c)
^4*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2178*I*A*cos(d*x+c)^3*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))
-2160*I*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2178*I*A*c
os(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2))-2160*I*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/si
n(d*x+c))+1536*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+1536*I*B*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctanh(1/2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*s
in(d*x+c)/cos(d*x+c))*2^(1/2)+1089*I*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+1080*I*B*cos(d*x
+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+416*cos(d*x+c)^4*B-416*B*cos(
d*x+c)^2)/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)/(cos(d*x+c)
+1)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.93416, size = 2722, normalized size = 10.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/384*(2*sqrt(2)*(13*(65*A - 56*I*B)*a^2*e^(8*I*d*x + 8*I*c) - 2*(215*A -
392*I*B)*a^2*e^(6*I*d*x + 6*I*c) - 4*(35*A - 104*I*B)*a^2*e^(4*I*d*x + 4*I*
c) + 2*(407*A - 392*I*B)*a^2*e^(2*I*d*x + 2*I*c) - 3*(107*A - 104*I*B)*a^2)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*sqrt((131769*A^2 - 2
61360*I*A*B - 129600*B^2)*a^5/d^2)*(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x
+ 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt
(2)*((363*I*A + 360*B)*a^2*e^(2*I*d*x + 2*I*c) + (363*I*A + 360*B)*a^2)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*I*sqrt((131769*A^2 - 261
360*I*A*B - 129600*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c
)/((363*I*A + 360*B)*a^2)) - 3*sqrt((131769*A^2 - 261360*I*A*B - 129600*B^2
)*a^5/d^2)*(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*
x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((363*I*A + 360*B)*a
^2*e^(2*I*d*x + 2*I*c) + (363*I*A + 360*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c)
 + 1))*e^(I*d*x + I*c) - 2*I*sqrt((131769*A^2 - 261360*I*A*B - 129600*B^2)*
a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((363*I*A + 360*B)*a^2
)) - 192*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(8*I*d*x + 8*I*c)
- 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*
c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)
*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((32*A^2 -
64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4
*I*A + 4*B)*a^2)) + 192*sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*(d*e^(8*
I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^
```

```
(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c)
+ (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*
sqrt((32*A^2 - 64*I*A*B - 32*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d
*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x +
 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^5,
 x)
```

3.90 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=205

$$-\frac{(25A+23iB)(a+ia\tan(c+dx))^{3/2}}{15a^2d}+\frac{(-B+iA)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(5A+7iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5ad}+\frac{4(5A$$

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*
Sqrt[a]*d) + ((I*A - B)*Tan[c + d*x]^3)/(d*Sqrt[a + I*a*Tan[c + d*x]]) + (4
*(5*A + (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(5*a*d) - ((5*A + (7*I)*B)*Tan
[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(5*a*d) - ((25*A + (23*I)*B)*(a + I
*a*Tan[c + d*x])^(3/2))/(15*a^2*d)
```

Rubi [A] time = 0.524372, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3595, 3597, 3592, 3527, 3480, 206}

$$-\frac{(25A+23iB)(a+ia\tan(c+dx))^{3/2}}{15a^2d}+\frac{(-B+iA)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(5A+7iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5ad}+\frac{4(5A$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```


```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*
Sqrt[a]*d) + ((I*A - B)*Tan[c + d*x]^3)/(d*Sqrt[a + I*a*Tan[c + d*x]]) + (4
*(5*A + (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(5*a*d) - ((5*A + (7*I)*B)*Tan
[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(5*a*d) - ((25*A + (23*I)*B)*(a + I
*a*Tan[c + d*x])^(3/2))/(15*a^2*d)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}dx = \frac{(iA-B)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{\int \tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}\left(3a(iA-B)+\frac{1}{2}a\right.}{a^2}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+7iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5ad} - \frac{2\int t}{}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+7iB)\tan^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{5ad} - \frac{(25A}{}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{4(5A+7iB)\sqrt{a+ia\tan(c+dx)}}{5ad} - \frac{(5A+7iB)\tan^2(}{}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{4(5A+7iB)\sqrt{a+ia\tan(c+dx)}}{5ad} - \frac{(5A+7iB)\tan^2(}{}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{(iA-B)\tan^3(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{4(5A+7iB)\sqrt{a}}{5a}$$

Mathematica [A] time = 3.33997, size = 176, normalized size = 0.86

$$\frac{(A+B\tan(c+dx))\left((A-iB)\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)+\frac{1}{30}\sec^2(c+dx)(5(23A+37iB)\cos(c+dx)+(25A+59i\right.}{2d\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],
x]
```

```
[Out] (((A - I*B)*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))] + (Sec[c
 + d*x]^2*(5*(23*A + (37*I)*B)*Cos[c + d*x] + (25*A + (59*I)*B)*Cos[3*(c +
d*x)] + (4*I)*(5*A + (16*I)*B + (5*A + (22*I)*B)*Cos[2*(c + d*x)])*Sin[c +
d*x]))/30)*(A + B*Tan[c + d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqr
t[a + I*a*Tan[c + d*x]])
```

Maple [A] time = 0.064, size = 168, normalized size = 0.8

$$-2\,\frac{1}{a^3d}\left(-i/5B\left(a+ia\tan(dx+c)\right)^{5/2}+2/3\,iB\left(a+ia\tan(dx+c)\right)^{3/2}a+1/3\,A\left(a+ia\tan(dx+c)\right)^{3/2}a-2\,iB\sqrt{a+ia\,\mathrm{ta}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] -2/d/a^3*(-1/5*I*B*(a+I*a*tan(d*x+c))^(5/2)+2/3*I*B*(a+I*a*tan(d*x+c))^(3/2
)*a+1/3*A*(a+I*a*tan(d*x+c))^(3/2)*a-2*I*B*(a+I*a*tan(d*x+c))^(1/2)*a^2-a^2
*A*(a+I*a*tan(d*x+c))^(1/2)-1/2*a^3*(A+I*B)/(a+I*a*tan(d*x+c))^(1/2)-1/4*a^
(5/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2))
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.09766, size = 1266, normalized size = 6.18

$$2\sqrt{2}\Big((35\,A + 103i\,B)e^{(6i\,dx+6i\,c)} + 5\,(25\,A + 41i\,B)e^{(4i\,dx+4i\,c)} + 15\,(7\,A + 11i\,B)e^{(2i\,dx+2i\,c)} + 15\,A + 15i\,B\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="fricas")
```

```
[Out] 1/60*(2*sqrt(2)*((35*A + 103*I*B)*e^(6*I*d*x + 6*I*c) + 5*(25*A + 41*I*B)*e
^(4*I*d*x + 4*I*c) + 15*(7*A + 11*I*B)*e^(2*I*d*x + 2*I*c) + 15*A + 15*I*B)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 15*(a*d*e^(6*I*d*x + 6
*I*c) + 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((2*A^2 -
4*I*A*B - 2*B^2)/(a*d^2))*log((I*a*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2)
)*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*s
```

```
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B
)) - 15*(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d
*x + 2*I*c))*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*log((-I*a*d*sqrt((2*A^
2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2
*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c
))*e^(-I*d*x - I*c)/(I*A + B)))/(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x
 + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^3(c + dx)}{\sqrt{a(i\tan(c + dx) + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**3/sqrt(a*(I*tan(c + d*x) + 1)),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^3}{\sqrt{i\,a\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^3/sqrt(I*a*tan(d*x + c) + a), x
)
```

3.91 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=159

$$\frac{(-5B+3iA)(a+ia\tan(c+dx))^{3/2}}{3a^2d}+\frac{(-B+iA)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}-\frac{4(-B+iA)\sqrt{a+ia\tan(c+dx)}}{ad}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+i}}{}\right.}{\sqrt{2}\sqrt{a}d}$$

```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*
Sqrt[a]*d) + ((I*A - B)*Tan[c + d*x]^2)/(d*Sqrt[a + I*a*Tan[c + d*x]]) - (4
*(I*A - B)*Sqrt[a + I*a*Tan[c + d*x]])/(a*d) + (((3*I)*A - 5*B)*(a + I*a*Ta
n[c + d*x])^(3/2))/(3*a^2*d)
```

Rubi [A] time = 0.334669, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3595, 3592, 3527, 3480, 206}

$$\frac{(-5B+3iA)(a+ia\tan(c+dx))^{3/2}}{3a^2d}+\frac{(-B+iA)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}-\frac{4(-B+iA)\sqrt{a+ia\tan(c+dx)}}{ad}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+i}}{}\right.}{\sqrt{2}\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```



```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*
Sqrt[a]*d) + ((I*A - B)*Tan[c + d*x]^2)/(d*Sqrt[a + I*a*Tan[c + d*x]]) - (4
*(I*A - B)*Sqrt[a + I*a*Tan[c + d*x]])/(a*d) + (((3*I)*A - 5*B)*(a + I*a*Ta
n[c + d*x])^(3/2))/(3*a^2*d)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{(iA-B)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{\int \tan(c+dx)\sqrt{a+ia\tan(c+dx)}\left(2a(iA-B)+\frac{1}{2}a(\right.}{a^2}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(3iA-5B)(a+ia\tan(c+dx))^{3/2}}{3a^2d} - \int \sqrt{a+ia\tan(c$$

$$= \frac{(iA-B)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{4(iA-B)\sqrt{a+ia\tan(c+dx)}}{ad} + \frac{(3iA-5B)(a+ia\,\mathrm{ta}}{3a^2d}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{4(iA-B)\sqrt{a+ia\tan(c+dx)}}{ad} + \frac{(3iA-5B)(a+ia\,\mathrm{ta}}{3a^2d}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{(iA-B)\tan^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{4(iA-B)\sqrt{a+i}}{ad}$$

Mathematica [A] time = 2.33153, size = 147, normalized size = 0.92

$$\frac{(A+B\tan(c+dx))\left((B+iA)\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)+\frac{1}{3}\sec(c+dx)((6A+2iB)\sin(2(c+dx))+(5B-9iA)\cos(2\right.}{2d\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],
x]
```

```
[Out] (((I*A + B)*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))] + (Sec[c
 + d*x]*(9*((-I)*A + B) + ((-9*I)*A + 5*B)*Cos[2*(c + d*x)] + (6*A + (2*I)*
B)*Sin[2*(c + d*x)]))/3)*(A + B*Tan[c + d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin
[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [A] time = 0.061, size = 127, normalized size = 0.8

$$\frac{-2i}{a^2d}\left(-\frac{i}{3}B\left(a+ia\tan\left(dx+c\right)\right)^{\frac{3}{2}}+iBa\sqrt{a+ia\tan\left(dx+c\right)}+A\sqrt{a+ia\tan\left(dx+c\right)}a+\frac{a^2\left(A+iB\right)}{2}\frac{1}{\sqrt{a+ia\tan\left(dx+c\right)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] -2*I/d/a^2*(-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)+I*B*a*(a+I*a*tan(d*x+c))^(1/2
)+A*(a+I*a*tan(d*x+c))^(1/2)*a+1/2*a^2*(A+I*B)/(a+I*a*tan(d*x+c))^(1/2)-1/4
*a^(3/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/
2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.03114, size = 1089, normalized size = 6.85

$$\sqrt{2}\Big((-30i\,A+14\,B)e^{(4i\,dx+4i\,c)}+(-36i\,A+36\,B)e^{(2i\,dx+2i\,c)}-6i\,A+6\,B\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}+3\,\Big(ade^{(4i\,dx+4i\,c)}+ade^{(2i\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="fricas")
```

```
[Out] 1/12*(sqrt(2)*((-30*I*A + 14*B)*e^(4*I*d*x + 4*I*c) + (-36*I*A + 36*B)*e^(2
*I*d*x + 2*I*c) - 6*I*A + 6*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
 I*c) + 3*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt(-(2*A^2
- 4*I*A*B - 2*B^2)/(a*d^2))*log((a*d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2
))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A +
B)) - 3*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt(-(2*A^2 -
4*I*A*B - 2*B^2)/(a*d^2))*log(-(a*d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2)
)*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B
)))/(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))\tan^2(c+dx)}{\sqrt{a\,(i\tan(c+dx)+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**2/sqrt(a*(I*tan(c + d*x) + 1)),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^2}{\sqrt{i\,a\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/sqrt(I*a*tan(d*x + c) + a), x
)
```

3.92 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=109

$$-\frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{2iB\sqrt{a+ia\tan(c+dx)}}{ad}$$

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2
]*Sqrt[a]*d)) - (A + I*B)/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((2*I)*B*Sqrt[a
+ I*a*Tan[c + d*x]])/(a*d)
```

Rubi [A] time = 0.14114, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3592, 3526, 3480, 206}

$$-\frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{2iB\sqrt{a+ia\tan(c+dx)}}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2
]*Sqrt[a]*d)) - (A + I*B)/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((2*I)*B*Sqrt[a
+ I*a*Tan[c + d*x]])/(a*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = -\frac{2iB\sqrt{a+ia\tan(c+dx)}}{ad} + \int \frac{-B+A\tan(c+dx)}{\sqrt{a+ia\tan(c+dx)}}\,dx$$
$$= -\frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} - \frac{2iB\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{(iA+B)\int \sqrt{a+ia\tan(c+}}{2a}$$
$$= -\frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} - \frac{2iB\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{2a-x^2}\,dx,\right.}{d}$$
$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} - \frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} - \frac{2iB\sqrt{a+ia\tan(c-}}{ad}$$

Mathematica [A] time = 1.37876, size = 140, normalized size = 1.28

$$-\frac{e^{-2i(c+dx)}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\left((A-iB)e^{i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)+A\left(1+e^{2i(c+dx)}\right)+iB\left(1+5e^{2i(c+dx)}\right)\right)}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] -((Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(A*(1 + E^((2*I)
*(c + d*x))) + I*B*(1 + 5*E^((2*I)*(c + d*x))) + (A - I*B)*E^(I*(c + d*x))*
```

```
Sqrt[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))]))/(Sqrt[2]*a*d*E^((2
*I)*(c + d*x))))
```

Maple [A] time = 0.054, size = 88, normalized size = 0.8

$$2\,\frac{1}{ad}\left(-iB\sqrt{a+ia\tan\left(dx+c\right)}-1/2\,\frac{a\left(A+iB\right)}{\sqrt{a+ia\tan\left(dx+c\right)}}-1/4\,\sqrt{a}\left(A-iB\right)\sqrt{2}\mathrm{Artanh}\left(1/2\,\frac{\sqrt{a+ia\tan\left(dx+c\right)}\sqrt{2}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] 2/d/a*(-I*B*(a+I*a*tan(d*x+c))^(1/2)-1/2*a*(A+I*B)/(a+I*a*tan(d*x+c))^(1/2)
-1/4*a^(1/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a
^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.00163, size = 913, normalized size = 8.38

$$-\frac{\left(ad\sqrt{\frac{2\,A^2-4i\,AB-2\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}\log\left(\frac{\left(i\,ad\sqrt{\frac{2\,A^2-4i\,AB-2\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)-ad\sqrt{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] -1/4*(a*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((
I*a*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)
*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - a*d*sqrt((2*A^2 - 4*I*A*B
- 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((-I*a*d*sqrt((2*A^2 - 4*I*A*B - 2
*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c)
 + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x -
I*c)/(I*A + B)) + 2*sqrt(2)*((A + 5*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\tan{(c + dx)}}{\sqrt{a(i\tan{(c + dx)} + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)/sqrt(a*(I*tan(c + d*x) + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan{(dx + c)} + A)\tan{(dx + c)}}{\sqrt{i\,a\tan{(dx + c)} + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/sqrt(I*a*tan(d*x + c) + a), x)
```

3.93 $\int \frac{A+B\tan(c+dx)}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=82

$$\frac{-B+iA}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}$$

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2
]*Sqrt[a]*d)) + (I*A - B)/(d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.073144, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {3526, 3480, 206}

$$\frac{-B+iA}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2
]*Sqrt[a]*d)) + (I*A - B)/(d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+B\tan(c+dx)}{\sqrt{a+ia\tan(c+dx)}}\,dx &= \frac{iA-B}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\int\sqrt{a+ia\tan(c+dx)}\,dx}{2a}\\ &= \frac{iA-B}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(iA+B)\,\mathrm{Subst}\left(\int\frac{1}{2a-x^2}\,dx,x,\sqrt{a+ia\tan(c+dx)}\right)}{d}\\ &= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}+\frac{iA-B}{d\sqrt{a+ia\tan(c+dx)}}\end{aligned}$$

Mathematica [A] time = 0.973927, size = 129, normalized size = 1.57

$$\frac{ie^{-2i(c+dx)}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\left((A+iB)\left(1+e^{2i(c+dx)}\right)-(A-iB)e^{i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)\right)}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] (I*Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*((A + I*B)*(1 +
E^((2*I)*(c + d*x))) - (A - I*B)*E^(I*(c + d*x))*Sqrt[1 + E^((2*I)*(c + d*x
))]*ArcSinh[E^(I*(c + d*x))]))/(Sqrt[2]*a*d*E^((2*I)*(c + d*x)))
```

Maple [A] time = 0.056, size = 71, normalized size = 0.9

$$\frac{2\,i}{d}\left(-\left(-\frac{A}{2}-\frac{i}{2}B\right)\frac{1}{\sqrt{a+ia\tan\left(dx+c\right)}}-\frac{\sqrt{2}}{2}\left(-\frac{i}{2}B+\frac{A}{2}\right)\mathrm{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{a+ia\tan\left(dx+c\right)}\frac{1}{\sqrt{a}}\right)\frac{1}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] 2*I/d*(-(-1/2*A-1/2*I*B)/(a+I*a*tan(d*x+c))^(1/2)-1/2*(-1/2*I*B+1/2*A)*2^(1
/2)/a^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.92976, size = 918, normalized size = 11.2

$$-\frac{\left(ad\sqrt{-\frac{2A^2-4iAB-2B^2}{ad^2}}e^{(2idx+2ic)}\log\left(\frac{\left(ad\sqrt{-\frac{2A^2-4iAB-2B^2}{ad^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}e^{(idx+ic)}\right)e^{(-idx-ic)}}{iA+B}\right)-ad\sqrt{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4*(a*d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(
(a*d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)
*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - a*d*sqrt(-(2*A^2 - 4*I*A*B
 - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(-(a*d*sqrt(-(2*A^2 - 4*I*A*B - 2
*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c)
 + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x -
I*c)/(I*A + B)) - sqrt(2)*((2*I*A - 2*B)*e^(2*I*d*x + 2*I*c) + 2*I*A - 2*B)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a
*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A+B\tan(c+dx)}{\sqrt{a(i\tan(c+dx)+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/sqrt(a*(I*tan(c + d*x) + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{ia\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/sqrt(I*a*tan(d*x + c) + a), x)
```

3.94 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=114

$$\frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

```
[Out] (-2*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + ((A - I*B)
*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*Sqrt[a]*d)
 + (A + I*B)/(d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.347744, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3596, 3600, 3480, 206, 3599, 63, 208}

$$\frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] (-2*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + ((A - I*B)
*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*Sqrt[a]*d)
 + (A + I*B)/(d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}dx = \frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} + \frac{\int \cot(c+dx)\sqrt{a+ia\tan(c+dx)}\left(aA-\frac{1}{2}a(iA-B)\text{ta}\right.}{a^2}$$

$$= \frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} + \frac{A\int \cot(c+dx)(a-ia\tan(c+dx))\sqrt{a+ia\tan(c+d}}{a^2}$$

$$= \frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} + \frac{A\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+iax}}dx, x, \tan(c+dx)\right)}{d} + \frac{(A-iB)\,\text{Su}}{}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{A+iB}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(2iA)\,\text{Subst}\left(\int \frac{1}{i-}\right.}{}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{A+}{d\sqrt{a+ia\,\text{ta}}}$$

Mathematica [A] time = 2.31708, size = 208, normalized size = 1.82

$$\frac{\sqrt{\sec(c+dx)}\left((A+iB)\sqrt{1+e^{2i(c+dx)}}+(A-iB)e^{i(c+dx)}\sinh^{-1}\left(e^{i(c+dx)}\right)-2\sqrt{2}Ae^{i(c+dx)}\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)\right)}{2d\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] (((A + I*B)*Sqrt[1 + E^((2*I)*(c + d*x))] + (A - I*B)*E^(I*(c + d*x))*ArcSi
nh[E^(I*(c + d*x))] - 2*Sqrt[2]*A*E^(I*(c + d*x))*ArcTanh[(Sqrt[2]*E^(I*(c
+ d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])*Sqrt[Sec[c + d*x]])/(2*d*Sqrt[E^(I
*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^
((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))])
```

Maple [B] time = 0.488, size = 948, normalized size = 8.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] -1/4/d/a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(I*A*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*
x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-I*B*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-
sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+2*I*A*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*ln(-(-(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+2*I*A*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x
+c)+A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/2*2^(1/2)*(I
*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*
2^(1/2)-I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(
d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/
2)+B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*
cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2
^(1/2)+2*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+2*A*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2))-2*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)+A*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin
(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+2*A*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*I*B*co
s(d*x+c)-4*A*cos(d*x+c))/(I*sin(d*x+c)+cos(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.7198, size = 1543, normalized size = 13.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] 1/4*(a*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((I
*a*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*
((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))
*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((2*A^2 - 4*I*A
*B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((-I*a*d*sqrt((2*A^2 - 4*I*A*B
- 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I
*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x
 - I*c)/(4*I*A + 4*B)) - 2*a*d*sqrt(A^2/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(-8
8/507*(2*sqrt(2)*(A*e^(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*e^(I*d*x + I*c) + (3*a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt(A^2/(a*d^2)))/
(A*e^(2*I*d*x + 2*I*c) - A)) + 2*a*d*sqrt(A^2/(a*d^2))*e^(2*I*d*x + 2*I*c)*
log(-88/507*(2*sqrt(2)*(A*e^(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c) - (3*a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt(A^2/(a*d
^2)))/(A*e^(2*I*d*x + 2*I*c) - A)) + 2*sqrt(2)*((A + I*B)*e^(2*I*d*x + 2*I*
c) + A + I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-2*I*d*
x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\cot{(c + dx)}}{\sqrt{a(i\tan{(c + dx)} + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)/sqrt(a*(I*tan(c + d*x) + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan{(dx + c)} + A)\cot{(dx + c)}}{\sqrt{i\,a\tan{(dx + c)} + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)/sqrt(I*a*tan(d*x + c) + a), x)
```

3.95 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=167

$$\frac{(-2B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{(2A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{ad}+$$

```
[Out] ((I*A - 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + ((I
*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*Sqr
t[a]*d) + ((A + I*B)*Cot[c + d*x])/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((2*A +
 I*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(a*d)
```

Rubi [A] time = 0.567088, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(-2B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{(2A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{ad}+$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```



```
[Out] ((I*A - 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + ((I
*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt[2]*Sqr
t[a]*d) + ((A + I*B)*Cot[c + d*x])/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((2*A +
 I*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(a*d)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{(A+iB)\cot(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{\int \cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}\left(a(2A+iB)-\frac{3}{2}a(\right.}{a^2}$$

$$= \frac{(A+iB)\cot(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(2A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{ad} + \frac{\int\cot(c}{}$$

$$= \frac{(A+iB)\cot(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(2A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{(iA-2B}{}$$

$$= \frac{(A+iB)\cot(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(2A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{(iA-2B}{}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{(A+iB)\cot(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(2A+iB)\cot(c+}{}$$

$$= \frac{(iA-2B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{(A+}{d\sqrt{a}}$$

Mathematica [A] time = 3.96218, size = 224, normalized size = 1.34

$$\frac{(A\cot(c+dx)+B)\left(2(B-2iA)\sin(c+dx)+\frac{\left(-1+e^{2i(c+dx)}\right)\sqrt{\sec(c+dx)}\left((A-iB)\sinh^{-1}\left(e^{i(c+dx)}\right)+\sqrt{2}(A+2iB)\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)\right)}{\sqrt{2}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}}-2A\right.}{2d\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c+dx))}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],
x]
```

```
[Out] ((B + A*Cot[c + d*x])*(-2*A*Cos[c + d*x] + ((-1 + E^((2*I)*(c + d*x)))*((A
- I*B)*ArcSinh[E^(I*(c + d*x))] + Sqrt[2]*(A + (2*I)*B)*ArcTanh[(Sqrt[2]*E^
(I*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])*Sqrt[Sec[c + d*x]])/(Sqrt[2]
*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x
))]) + 2*((-2*I)*A + B)*Sin[c + d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin[c + d*x
])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.575, size = 2727, normalized size = 16.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] -1/4/d/a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(I*A*cos(d*x+c)^3*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(
d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-8*I*A*cos(
d*x+c)+8*I*A*cos(d*x+c)^3+2*I*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-I*A*cos(d*
x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-
I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-I*B*
sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d
*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2
)+I*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-A*c
os(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1
/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2))*2^(1/2)+I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(
1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2))*2^(1/2)-2*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-B*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-2*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1
)/sin(d*x+c))+I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2))-I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-I*A*cos(d*x+c)^3*(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2))+2*I*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+2*I*B*cos(
d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x
```

```
+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-I*A*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+B*cos(d*x+c)^3*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d
*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+B*cos(d*x+c)^2*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))
/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+I*A*cos(d*x+c)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2))-B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)
*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
))*2^(1/2)+A*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(
1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2))*2^(1/2)-I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-2*I
*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-A*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+
c)+2*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-4*A*cos(d*x+c)^
2*sin(d*x+c)-A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2*B*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+A*cos
(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2))-2*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+c
os(d*x+c)-1)/sin(d*x+c))+I*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+A*cos(d*x+c)^3*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+
cos(d*x+c)-1)/sin(d*x+c))+2*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+A*cos(d*x+c)^2*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin
(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+2*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-A*cos(d*x+c)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-2*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*B*cos(d*x
+c)-4*cos(d*x+c)^3*B)/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos(d*x+c))/(cos(d*x+c)+
1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.97838, size = 2034, normalized size = 12.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="fricas")
```

```
[Out] 1/4*(sqrt(2)*((-6*I*A + 2*B)*e^(4*I*d*x + 4*I*c) - 4*I*A*e^(2*I*d*x + 2*I*c
) + 2*I*A - 2*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (a*d*e
^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt(-(2*A^2 - 4*I*A*B - 2*B^
2)/(a*d^2))*log((a*d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x +
2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d
*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - (a*d*e
^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt(-(2*A^2 - 4*I*A*B - 2*B^
2)/(a*d^2))*log(-(a*d*sqrt(-(2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x +
 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) + (a*d*
e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt(-(A^2 + 4*I*A*B - 4*B^2
)/(a*d^2))*log((sqrt(2)*((176*I*A - 352*B)*e^(2*I*d*x + 2*I*c) + 176*I*A -
352*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 88*(3*a*d*e^(2*I
*d*x + 2*I*c) + a*d)*sqrt(-(A^2 + 4*I*A*B - 4*B^2)/(a*d^2)))/((-507*I*A + 1
014*B)*e^(2*I*d*x + 2*I*c) + 507*I*A - 1014*B)) - (a*d*e^(4*I*d*x + 4*I*c)
- a*d*e^(2*I*d*x + 2*I*c))*sqrt(-(A^2 + 4*I*A*B - 4*B^2)/(a*d^2))*log((sqrt
(2)*((176*I*A - 352*B)*e^(2*I*d*x + 2*I*c) + 176*I*A - 352*B)*sqrt(a/(e^(2*
I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 88*(3*a*d*e^(2*I*d*x + 2*I*c) + a*d)
*sqrt(-(A^2 + 4*I*A*B - 4*B^2)/(a*d^2)))/((-507*I*A + 1014*B)*e^(2*I*d*x +
2*I*c) + 507*I*A - 1014*B)))/(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*
I*c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\cot^2(c + dx)}{\sqrt{a(i\tan(c + dx) + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)**2/sqrt(a*(I*tan(c + d*x) + 1)),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\cot(dx + c)^2}{\sqrt{i\,a\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^2/sqrt(I*a*tan(d*x + c) + a), x
)
```

3.96 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=219

$$\frac{(11A+4iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{(3A+2iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{2ad}+$$

```
[Out] ((11*A + (4*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*Sqrt[a]*d
) - ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt
[2]*Sqrt[a]*d) + ((A + I*B)*Cot[c + d*x]^2)/(d*Sqrt[a + I*a*Tan[c + d*x]])
+ (((7*I)*A - 8*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a*d) - ((3*A
 + (2*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(2*a*d)
```

Rubi [A] time = 0.761527, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(11A+4iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d}-\frac{(3A+2iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{2ad}+$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```


```
[Out] ((11*A + (4*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*Sqrt[a]*d
) - ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(Sqrt
[2]*Sqrt[a]*d) + ((A + I*B)*Cot[c + d*x]^2)/(d*Sqrt[a + I*a*Tan[c + d*x]])
+ (((7*I)*A - 8*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a*d) - ((3*A
 + (2*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(2*a*d)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{(A+iB)\cot^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{\int \cot^3(c+dx)\sqrt{a+ia\tan(c+dx)}\left(a(3A+2iB)-\frac{5}{2}a(\right.}{a^2}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+2iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{2ad} + \frac{\int \cot^2(}{}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-8B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4ad} - \frac{(3A+2}{}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-8B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4ad} - \frac{(3A+2}{}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-8B)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4ad} - \frac{(3A+2}{}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{(A+iB)\cot^2(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-8B)\cot(c}{}$$

$$= \frac{(11A+4iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{2}\sqrt{a}d} + \frac{(A+}{d\sqrt{a}}$$

Mathematica [A] time = 4.20334, size = 363, normalized size = 1.66

$$\frac{(A+B\tan(c+dx))\left(4\cot(c+dx)\csc(c+dx)(i(A+4iB)\sin(2(c+dx))+(5A+8iB)\cos(2(c+dx))-9A-8iB)-\sqrt{1+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],
x]
```

```
[Out] ((-(Sqrt[1 + E^((2*I)*(c + d*x))]*(16*(A - I*B)*ArcSinh[E^(I*(c + d*x))] +
Sqrt[2]*(11*A + (4*I)*B)*(Log[(-1 + E^(I*(c + d*x)))^2] - Log[(1 + E^(I*(c
+ d*x)))^2] + Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(
c + d*x))] - 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])]
 - Log[3 + 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))]
+ 2*E^(I*(c + d*x))*(1 + Sqrt[2]*Sqrt[1 + E^((2*I)*(c + d*x))])])))) + 4*Cot
[c + d*x]*Csc[c + d*x]*(-9*A - (8*I)*B + (5*A + (8*I)*B)*Cos[2*(c + d*x)] +
 I*(A + (4*I)*B)*Sin[2*(c + d*x)]))*(A + B*Tan[c + d*x]))/(32*d*(A*Cos[c +
d*x] + B*Sin[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.494, size = 2751, normalized size = 12.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/16/d/a*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(11*A*cos(d*x+c)^2*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2))-4*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-4*I*A*c
os(d*x+c)^2*sin(d*x+c)-11*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)
*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*A*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+11*I*A*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2*sin
(d*x+c)+4*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2))*sin(d*x+c)+32*I*B*cos(d*x+c)-32*I*B*cos(d*x+c)^3-4*I*B
*cos(d*x+c)^3*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/
2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2))+28*A*cos(d*x+c)-20*A*cos(d*x+c)^3+16*B*cos(d*x+c)^2*sin(d*x+c)-11*A*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2))+4*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+11*A*cos(d*x+c)^3*(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2))-4*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+4*B*cos(d*x
+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
```

))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-11*I*A*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*
x+c)-1)/sin(d*x+c))-4*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d
*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-4*A*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x
+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+11*A*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin
(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-4*I*B*cos(d*x+c)^2*sin(d*x+c)*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-4*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x
+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-4*I*B*cos(d*x+c)^2*2^(1/2
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-s
in(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*I*B*cos(d*x+c
)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*
x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*B*cos
(d*x+c)^2*sin(d*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/
2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2))-4*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*
2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2))*2^(1/2)+4*I*B*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(
-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)
)+11*I*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+4*I*B*cos(d
x+c)^3(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2))+11*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*l
n(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+
c))+4*I*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2))-11*I*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c
)-1)/sin(d*x+c))-4*I*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arct
an(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*A*cos(d*x+c)^3*2^(1/2)*(-2*cos
(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c)
)/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*A*cos(d*x+c)^2*2^(1/2)
*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-si
n(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+4*I*B*2^(1/2)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d
*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-11*A*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c
)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c)^2*sin(d*x+c)-4*B*(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)
^2*sin(d*x+c)-11*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c))/(cos(d*x+c)-1)/(I*sin(d*x+c)+cos(

```
d*x+c))/(cos(d*x+c)+1)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.04929, size = 2369, normalized size = 10.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="fricas")
```

```
[Out] -1/16*(4*sqrt(2)*(3*(A + 2*I*B)*e^(6*I*d*x + 6*I*c) - 2*(3*A + I*B)*e^(4*I*
d*x + 4*I*c) - (7*A + 6*I*B)*e^(2*I*d*x + 2*I*c) + 2*A + 2*I*B)*sqrt(a/(e^(
2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 4*(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d
*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((2*A^2 - 4*I*A*B - 2*B
^2)/(a*d^2))*log((I*a*d*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*e^(2*I*d*x
+ 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 4*(a
*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c
))*sqrt((2*A^2 - 4*I*A*B - 2*B^2)/(a*d^2))*log((-I*a*d*sqrt((2*A^2 - 4*I*A*
B - 2*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2
*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d
*x - I*c)/(4*I*A + 4*B)) - (a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*
I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((121*A^2 + 88*I*A*B - 16*B^2)/(a*d^2))
*log(1/4*(4*sqrt(2)*((1936*I*A - 704*B)*e^(2*I*d*x + 2*I*c) + 1936*I*A - 70
4*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (1056*I*a*d*e^(2*I
*d*x + 2*I*c) + 352*I*a*d)*sqrt((121*A^2 + 88*I*A*B - 16*B^2)/(a*d^2)))/((-
5577*I*A + 2028*B)*e^(2*I*d*x + 2*I*c) + 5577*I*A - 2028*B)) + (a*d*e^(6*I*
d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((1
```

```
21*A^2 + 88*I*A*B - 16*B^2)/(a*d^2))*log(1/4*(4*sqrt(2)*((1936*I*A - 704*B)
*e^(2*I*d*x + 2*I*c) + 1936*I*A - 704*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
e^(I*d*x + I*c) + (-1056*I*a*d*e^(2*I*d*x + 2*I*c) - 352*I*a*d)*sqrt((121*A
^2 + 88*I*A*B - 16*B^2)/(a*d^2)))/((-5577*I*A + 2028*B)*e^(2*I*d*x + 2*I*c)
 + 5577*I*A - 2028*B)))/(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c
) + a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^3}{\sqrt{i\,a\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^3/sqrt(I*a*tan(d*x + c) + a), x
)
```

3.97 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=209

$$\frac{(11A+21iB)(a+ia\tan(c+dx))^{3/2}}{6a^3d}-\frac{2(3A+5iB)\sqrt{a+ia\tan(c+dx)}}{a^2d}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{(-B+iA}{3d(a+ia}$$

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[2
]*a^(3/2)*d) + ((I*A - B)*Tan[c + d*x]^3)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)
) + ((3*A + (5*I)*B)*Tan[c + d*x]^2)/(2*a*d*Sqrt[a + I*a*Tan[c + d*x]]) - (
2*(3*A + (5*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(a^2*d) + ((11*A + (21*I)*B)*
(a + I*a*Tan[c + d*x])^(3/2))/(6*a^3*d)
```

Rubi [A] time = 0.535262, antiderivative size = 209, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3595, 3592, 3527, 3480, 206}

$$\frac{(11A+21iB)(a+ia\tan(c+dx))^{3/2}}{6a^3d}-\frac{2(3A+5iB)\sqrt{a+ia\tan(c+dx)}}{a^2d}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{(-B+iA}{3d(a+ia}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[2
]*a^(3/2)*d) + ((I*A - B)*Tan[c + d*x]^3)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)
) + ((3*A + (5*I)*B)*Tan[c + d*x]^2)/(2*a*d*Sqrt[a + I*a*Tan[c + d*x]]) - (
2*(3*A + (5*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(a^2*d) + ((11*A + (21*I)*B)*
(a + I*a*Tan[c + d*x])^(3/2))/(6*a^3*d)
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(iA-B)\tan^3(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} - \frac{\int \frac{\tan^2(c+dx)\left(3a(iA-B)+\frac{3}{2}a(A+3iB)\tan(c+dx)\right)}{\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(3A+5iB)\tan^2(c+dx)}{2ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \tan(c+dx)\sqrt{a+ia}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(3A+5iB)\tan^2(c+dx)}{2ad\sqrt{a+ia\tan(c+dx)}} + \frac{(11A+21iB)(a+ia\,\mathrm{t}}{6a^3d}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(3A+5iB)\tan^2(c+dx)}{2ad\sqrt{a+ia\tan(c+dx)}} - \frac{2(3A+5iB)\sqrt{a+ia\,\mathrm{t}}}{a^2d}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(3A+5iB)\tan^2(c+dx)}{2ad\sqrt{a+ia\tan(c+dx)}} - \frac{2(3A+5iB)\sqrt{a+ia\,\mathrm{t}}}{a^2d}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{(iA-B)\tan^3(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(3A+5iB)\,\mathrm{ta}}{2ad\sqrt{a+ia\,\mathrm{t}}}$$

Mathematica [A] time = 4.13008, size = 176, normalized size = 0.84

$$\frac{i\sec^3(c+dx)(21(3A+5iB)\cos(c+dx)+(37A+51iB)\cos(3(c+dx))+2i\sin(c+dx)((39A+53iB)\cos(2(c+dx))+3}{24ad(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2
),x]
```

```
[Out] (((-24*I)*(A - I*B)*E^((3*I)*(c + d*x))*ArcSinh[E^(I*(c + d*x))])/(1 + E^((
2*I)*(c + d*x)))^(3/2) + I*Sec[c + d*x]^3*(21*(3*A + (5*I)*B)*Cos[c + d*x]
+ (37*A + (51*I)*B)*Cos[3*(c + d*x)] + (2*I)*(39*A + (61*I)*B + (39*A + (53
*I)*B)*Cos[2*(c + d*x)])*Sin[c + d*x]))/(24*a*d*(-I + Tan[c + d*x])*Sqrt[a
+ I*a*Tan[c + d*x]])
```

Maple [A] time = 0.032, size = 153, normalized size = 0.7

$$-2\,\frac{1}{a^3d}\left(-i/3B\left(a+ia\tan(dx+c)\right)^{3/2}+2\,iBa\sqrt{a+ia\tan(dx+c)}+A\sqrt{a+ia\tan(dx+c)}a+1/4\,\frac{a^2\left(5\,A+7\,iB\right)}{\sqrt{a+ia\tan(dx+c)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] -2/d/a^3*(-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)+2*I*B*a*(a+I*a*tan(d*x+c))^(1/2
)+A*(a+I*a*tan(d*x+c))^(1/2)*a+1/4*a^2*(5*A+7*I*B)/(a+I*a*tan(d*x+c))^(1/2)
-1/6*a^3*(A+I*B)/(a+I*a*tan(d*x+c))^(3/2)-1/8*a^(3/2)*(A-I*B)*2^(1/2)*arcta
nh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.13936, size = 1210, normalized size = 5.79

$$-\frac{\sqrt{2}\left(2\,(19\,A+26i\,B)e^{(6i\,dx+6i\,c)}+3\,(17\,A+29i\,B)e^{(4i\,dx+4i\,c)}+6\,(2\,A+3i\,B)e^{(2i\,dx+2i\,c)}-A-i\,B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}-3\,\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="fricas")
```

```
[Out] -1/12*(sqrt(2)*(2*(19*A + 26*I*B)*e^(6*I*d*x + 6*I*c) + 3*(17*A + 29*I*B)*e
^(4*I*d*x + 4*I*c) + 6*(2*A + 3*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt(a/
(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 3*sqrt(1/2)*(a^2*d*e^(6*I*d*x
+ 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))
*log((2*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x
+ 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) + 3*sqrt(1
```

```
/2)*(a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((A^2 - 2*I
*A*B - B^2)/(a^3*d^2))*log((-2*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)
/(a^3*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) +
I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c
)/(I*A + B)))/(a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^3}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^3/(I*a*tan(d*x + c) + a)^(3/2),
 x)
```

3.98 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=167

$$\frac{(-7B+iA)\sqrt{a+ia\tan(c+dx)}}{3a^2d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{(-B+iA)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{-11B+5iA}{6ad\sqrt{a+ia\tan(c+dx)}}$$

```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[2
]*a^(3/2)*d) + ((I*A - B)*Tan[c + d*x]^2)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)
) + ((5*I)*A - 11*B)/(6*a*d*Sqrt[a + I*a*Tan[c + d*x]]) + ((I*A - 7*B)*Sqrt
[a + I*a*Tan[c + d*x]])/(3*a^2*d)
```

Rubi [A] time = 0.353451, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3595, 3592, 3526, 3480, 206}

$$\frac{(-7B+iA)\sqrt{a+ia\tan(c+dx)}}{3a^2d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{(-B+iA)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{-11B+5iA}{6ad\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[2
]*a^(3/2)*d) + ((I*A - B)*Tan[c + d*x]^2)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)
) + ((5*I)*A - 11*B)/(6*a*d*Sqrt[a + I*a*Tan[c + d*x]]) + ((I*A - 7*B)*Sqrt
[a + I*a*Tan[c + d*x]])/(3*a^2*d)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}dx = \frac{(iA-B)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} - \frac{\int \frac{\tan(c+dx)\left(2a(iA-B)+\frac{1}{2}a(A+7iB)\tan(c+dx)\right)}{\sqrt{a+ia\tan(c+dx)}}dx}{3a^2}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(iA-7B)\sqrt{a+ia\tan(c+dx)}}{3a^2d} - \frac{\int \frac{-\frac{1}{2}a(A+7iB)+2a(iA-}{\sqrt{a+ia\tan(}}}{3a^2}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{5iA-11B}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{(iA-7B)\sqrt{a+ia\tan(c}}{3a^2d}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{5iA-11B}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{(iA-7B)\sqrt{a+ia\tan(c}}{3a^2d}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{(iA-B)\tan^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{5iA-11}{6ad\sqrt{a+ia\tan}}$$

Mathematica [A] time = 2.7572, size = 167, normalized size = 1.

$$\frac{3(A-iB)e^{3i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)+A\left(7e^{2i(c+dx)}+8e^{4i(c+dx)}-1\right)+iB\left(13e^{2i(c+dx)}+38e^{4i(c+dx)}-1\right)}{3ad\left(1+e^{2i(c+dx)}\right)^2(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2
),x]
```

```
[Out] (A*(-1 + 7*E^((2*I)*(c + d*x)) + 8*E^((4*I)*(c + d*x))) + I*B*(-1 + 13*E^((
2*I)*(c + d*x)) + 38*E^((4*I)*(c + d*x))) + 3*(A - I*B)*E^((3*I)*(c + d*x))
*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcSinh[E^(I*(c + d*x))])/(3*a*d*(1 + E^((2*
I)*(c + d*x)))^2*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [A] time = 0.032, size = 116, normalized size = 0.7

$$\frac{-2i}{a^2d}\left(-iB\sqrt{a+ia\tan(dx+c)} - \frac{a(3A+5iB)}{4}\frac{1}{\sqrt{a+ia\tan(dx+c)}} + \frac{a^2(A+iB)}{6}(a+ia\tan(dx+c))^{-\frac{3}{2}} - \frac{(A-iB)\sqrt{2}}{8}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] -2*I/d/a^2*(-I*B*(a+I*a*tan(d*x+c))^(1/2)-1/4*a*(3*A+5*I*B)/(a+I*a*tan(d*x+
c))^(1/2)+1/6*a^2*(A+I*B)/(a+I*a*tan(d*x+c))^(3/2)-1/8*a^(1/2)*(A-I*B)*2^(1
/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.9881, size = 1031, normalized size = 6.17

$$\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{-\frac{A^2-2i\,AB-B^2}{a^3d^2}}e^{(4i\,dx+4i\,c)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^2d\sqrt{-\frac{A^2-2i\,AB-B^2}{a^3d^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="fricas")
```

```
[Out] 1/12*(3*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x +
 4*I*c)*log((2*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*
I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - 3*
sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*
log(-(2*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x +
 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) + sqrt(2)*(
(8*I*A - 38*B)*e^(4*I*d*x + 4*I*c) + (7*I*A - 13*B)*e^(2*I*d*x + 2*I*c) - I
*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*
```

```
I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^2}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/(I*a*tan(d*x + c) + a)^(3/2),
 x)
```

3.99 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=119

$$-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{A+3iB}{2ad\sqrt{a+ia\tan(c+dx)}}$$

```
[Out] -((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[
2]*a^(3/2)*d) - (A + I*B)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + (A + (3*I)*B
)/(2*a*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.185539, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3590, 3526, 3480, 206}

$$-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{A+3iB}{2ad\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```

```
[Out] -((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[
2]*a^(3/2)*d) - (A + I*B)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + (A + (3*I)*B
)/(2*a*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = -\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} - \frac{i\int \frac{a(A+iB)+2aB\tan(c+dx)}{\sqrt{a+ia\tan(c+dx)}}\,dx}{2a^2}$$

$$= -\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{A+3iB}{2ad\sqrt{a+ia\tan(c+dx)}} - \frac{(iA+B)\int \sqrt{a+ia\tan(}}{4a^2}$$

$$= -\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{A+3iB}{2ad\sqrt{a+ia\tan(c+dx)}} - \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{2a-x^2}\right.}{}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} - \frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{A+3i}{2ad\sqrt{a+ia\tan}}$$

Mathematica [A] time = 2.34392, size = 145, normalized size = 1.22

$$\frac{\sqrt{1+e^{2i(c+dx)}}\left(B\left(-1+8e^{2i(c+dx)}\right)-iA\left(-1+2e^{2i(c+dx)}\right)\right)+3(B+iA)e^{3i(c+dx)}\sinh^{-1}\left(e^{i(c+dx)}\right)}{3ad\left(1+e^{2i(c+dx)}\right)^{3/2}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),
x]
```

```
[Out] (Sqrt[1 + E^((2*I)*(c + d*x))]*((-I)*A*(-1 + 2*E^((2*I)*(c + d*x))) + B*(-1
 + 8*E^((2*I)*(c + d*x)))) + 3*(I*A + B)*E^((3*I)*(c + d*x))*ArcSinh[E^(I*(
```

```
c + d*x))])/(3*a*d*(1 + E^((2*I)*(c + d*x)))^(3/2)*(-I + Tan[c + d*x])*Sqrt
[a + I*a*Tan[c + d*x]])
```

Maple [A] time = 0.024, size = 96, normalized size = 0.8

$$2\frac{1}{ad}\left(-\frac{-A/4-3/4\,iB}{\sqrt{a+ia\tan(dx+c)}}-1/6\,\frac{a\,(A+iB)}{(a+ia\tan(dx+c))^{3/2}}-1/2\,\frac{(A/4-i/4B)\sqrt{2}}{\sqrt{a}}\mathrm{Artanh}\left(1/2\,\frac{\sqrt{a+ia\tan(dx+c)}\sqrt{2}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 2/d/a*(-(-1/4*A-3/4*I*B)/(a+I*a*tan(d*x+c))^(1/2)-1/6*a*(A+I*B)/(a+I*a*tan(
d*x+c))^(3/2)-1/2*(1/4*A-1/4*I*B)*2^(1/2)/a^(1/2)*arctanh(1/2*(a+I*a*tan(d*
x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.02055, size = 1027, normalized size = 8.63

$$-\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{A^2-2i\,AB-B^2}{a^3d^2}}e^{(4i\,dx+4i\,c)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{A^2-2i\,AB-B^2}{a^3d^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)-\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm
="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x +
 4*I*c)*log((2*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2
*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/
(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - 3
*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*
log((-2*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x
+ 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - sqrt(2)*
(2*(A + 4*I*B)*e^(4*I*d*x + 4*I*c) + (A + 7*I*B)*e^(2*I*d*x + 2*I*c) - A -
I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c
)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/(I*a*tan(d*x + c) + a)^(3/2), x
)
```

3.100 $\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=121

$$-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{-B+iA}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{B+iA}{2ad\sqrt{a+ia\tan(c+dx)}}$$

```
[Out] -((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[
2]*a^(3/2)*d) + (I*A - B)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + (I*A + B)/(2
*a*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.101753, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3526, 3479, 3480, 206}

$$-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{-B+iA}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{B+iA}{2ad\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(3/2),x]
```

```
[Out] -((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[
2]*a^(3/2)*d) + (I*A - B)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + (I*A + B)/(2
*a*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{3/2}}\,dx &= \frac{iA-B}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(A-iB)\int \frac{1}{\sqrt{a+ia\tan(c+dx)}}\,dx}{2a}\\
&= \frac{iA-B}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{iA+B}{2ad\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\int \sqrt{a+ia\tan(c+dx)}\,dx}{4a^2}\\
&= \frac{iA-B}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{iA+B}{2ad\sqrt{a+ia\tan(c+dx)}}-\frac{(iA+B)\,\text{Subst}\left(\int \frac{1}{2a-x^2}\,dx,x,\sqrt{a\cdots}\right.}{2ad}\\
&= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}+\frac{iA-B}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{iA+B}{2ad\sqrt{a+ia\tan(c+dx)}}
\end{aligned}
$$

Mathematica [A] time = 2.1172, size = 143, normalized size = 1.18

$$
\frac{\sqrt{1+e^{2i(c+dx)}}\left(4Ae^{2i(c+dx)}+A-iB\left(-1+2e^{2i(c+dx)}\right)\right)-3(A-iB)e^{3i(c+dx)}\sinh^{-1}\left(e^{i(c+dx)}\right)}{3ad\left(1+e^{2i(c+dx)}\right)^{3/2}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(3/2),x]
```

```
[Out] (Sqrt[1 + E^((2*I)*(c + d*x))]*(A + 4*A*E^((2*I)*(c + d*x)) - I*B*(-1 + 2*E
^((2*I)*(c + d*x)))) - 3*(A - I*B)*E^((3*I)*(c + d*x))*ArcSinh[E^(I*(c + d*
x))])/(3*a*d*(1 + E^((2*I)*(c + d*x)))^(3/2)*(-I + Tan[c + d*x])*Sqrt[a + I
*a*Tan[c + d*x]])
```

Maple [A] time = 0.021, size = 96, normalized size = 0.8

$$\frac{2i}{d}\left(-\frac{1}{3}\left(-\frac{A}{2}-\frac{i}{2}B\right)(a+ia\tan(dx+c))^{-\frac{3}{2}}-\frac{-A+iB}{4a}\frac{1}{\sqrt{a+ia\tan(dx+c)}}-\frac{(A-iB)\sqrt{2}}{8}\text{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{a+ia\tan(dx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 2*I/d*(-1/3*(-1/2*A-1/2*I*B)/(a+I*a*tan(d*x+c))^(3/2)-1/4/a*(-A+I*B)/(a+I*a
*tan(d*x+c))^(1/2)-1/8*(A-I*B)/a^(3/2)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c
))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.98117, size = 1027, normalized size = 8.49

$$-\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{-\frac{A^2-2iAB-B^2}{a^3d^2}}e^{(4idx+4ic)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^2d\sqrt{-\frac{A^2-2iAB-B^2}{a^3d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}e^{(idx+ic)}\right)e^{(-idx-ic)}}{iA+B}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x
+ 4*I*c)*log((2*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2
*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/
(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - 3
```

```
*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)
*log(-(2*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x
+ 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - sqrt(2)*
((4*I*A + 2*B)*e^(4*I*d*x + 4*I*c) + (5*I*A + B)*e^(2*I*d*x + 2*I*c) + I*A
- B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c
)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(I*a*tan(d*x + c) + a)^(3/2), x)
```

3.101 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=156

$$\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{3A+iB}{2ad\sqrt{a+ia\tan(c+dx)}}$$

```
[Out] (-2*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + ((A - I*B)
*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[2]*a^(3/2)*
d) + (A + I*B)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + (3*A + I*B)/(2*a*d*Sqrt
[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.514128, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3596, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{3A+iB}{2ad\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```


```
[Out] (-2*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + ((A - I*B)
*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[2]*a^(3/2)*
d) + (A + I*B)/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + (3*A + I*B)/(2*a*d*Sqrt
[a + I*a*Tan[c + d*x]])
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\cot(c+dx)\left(3aA-\frac{3}{2}a(iA-B)\tan(c+dx)\right)}{\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{3A+iB}{2ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \cot(c+dx)\sqrt{a+ia\,\mathrm{ta}}}{}$$

$$= \frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{3A+iB}{2ad\sqrt{a+ia\tan(c+dx)}} + \frac{A\int \cot(c+dx)(a-ia\,\mathrm{t}}{}$$

$$= \frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{3A+iB}{2ad\sqrt{a+ia\tan(c+dx)}} + \frac{A\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+iax}}\,dx,\right.}{ad}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{A+iB}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{3A+i}{2ad\sqrt{a+ia\tan}}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{A}{3d(a+ia\,\mathrm{t}}$$

Mathematica [A] time = 3.86922, size = 192, normalized size = 1.23

$$\frac{-\frac{12i(A-iB)e^{3i(c+dx)}\sinh^{-1}\left(e^{i(c+dx)}\right)}{\left(1+e^{2i(c+dx)}\right)^{3/2}} + 18A\tan(c+dx) + \frac{48i\sqrt{2}Ae^{3i(c+dx)}\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)}{\left(1+e^{2i(c+dx)}\right)^{3/2}} - 22iA + 6iB\tan(c+dx) + 10B}{12ad(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),
x]
```

```
[Out] ((-22*I)*A + 10*B - ((12*I)*(A - I*B)*E^((3*I)*(c + d*x))*ArcSinh[E^(I*(c +
 d*x))])/(1 + E^((2*I)*(c + d*x)))^(3/2) + ((48*I)*Sqrt[2]*A*E^((3*I)*(c +
d*x))*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])/(1
+ E^((2*I)*(c + d*x)))^(3/2) + 18*A*Tan[c + d*x] + (6*I)*B*Tan[c + d*x])/(1
2*a*d*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.369, size = 1026, normalized size = 6.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/24/d/a^2*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(16*I*B*cos(d*x+c
)^4-12*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-12*I*A*cos(d*x+c)*(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+4*I*B*cos(d*x+c)^2-16*I*A*cos(d*x+c)^
3*sin(d*x+c)+3*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1
/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))*2^(1/2)-3*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*ar
ctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos
(d*x+c)+1))^(1/2))*2^(1/2)+16*A*cos(d*x+c)^4-36*I*A*cos(d*x+c)*sin(d*x+c)+3
*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*co
s(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(
1/2)+16*B*cos(d*x+c)^3*sin(d*x+c)+12*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+3*I*B*2^(1/2)*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin
(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-3*A*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(
d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-12*A*(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
))-12*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)+3*I*B*2^(1/2)*
cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d
*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+28*A*c
os(d*x+c)^2-12*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2))+12*B*cos(d*x+c)*sin(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.83075, size = 1694, normalized size = 10.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm
="fricas")
```

```
[Out] 1/12*(3*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x +
4*I*c)*log((2*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*
I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B))
- 3*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*
c)*log((-2*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d
*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(
2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 6
*a^2*d*sqrt(A^2/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(-88/507*(2*sqrt(2)*(A*e^
(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) +
(3*a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt(A^2/(a^3*d^2)))/(A*e^(2*I*d*x +
2*I*c) - A)) + 6*a^2*d*sqrt(A^2/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(-88/507*
(2*sqrt(2)*(A*e^(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^
(I*d*x + I*c) - (3*a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt(A^2/(a^3*d^2)))/
(A*e^(2*I*d*x + 2*I*c) - A)) + sqrt(2)*(2*(5*A + 2*I*B)*e^(4*I*d*x + 4*I*c)
 + (11*A + 5*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c
) + 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)/(I*a*tan(d*x + c) + a)^(3/2), x
)
```

3.102 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=217

$$\frac{(-2B+3iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{(7A+3iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{2a^2d}$$

```
[Out] (((3*I)*A - 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) +
 ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[
2]*a^(3/2)*d) + ((A + I*B)*Cot[c + d*x])/(3*d*(a + I*a*Tan[c + d*x])^(3/2))
 + ((13*A + (7*I)*B)*Cot[c + d*x])/(6*a*d*Sqrt[a + I*a*Tan[c + d*x]]) - ((7
*A + (3*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(2*a^2*d)
```

Rubi [A] time = 0.80406, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(-2B+3iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{(7A+3iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{2a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```


```
[Out] (((3*I)*A - 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) +
 ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*Sqrt[
2]*a^(3/2)*d) + ((A + I*B)*Cot[c + d*x])/(3*d*(a + I*a*Tan[c + d*x])^(3/2))
 + ((13*A + (7*I)*B)*Cot[c + d*x])/(6*a*d*Sqrt[a + I*a*Tan[c + d*x]]) - ((7
*A + (3*I)*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(2*a^2*d)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(A+iB)\cot(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\cot^2(c+dx)\left(a(4A+iB)-\frac{5}{2}a(iA-B)\tan(c+dx)\right)}{\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{(A+iB)\cot(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(13A+7iB)\cot(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \cot^2(c+dx)\sqrt{a+ia}\ldots}{\ldots}$$

$$= \frac{(A+iB)\cot(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(13A+7iB)\cot(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+3iB)\cot(c+dx\ldots}{2a^2\ldots}$$

$$= \frac{(A+iB)\cot(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(13A+7iB)\cot(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+3iB)\cot(c+dx\ldots}{2a^2\ldots}$$

$$= \frac{(A+iB)\cot(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(13A+7iB)\cot(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+3iB)\cot(c+dx\ldots}{2a^2\ldots}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{(A+iB)\cot(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(13A+7iB)\,\mathrm{c}\ldots}{6ad\sqrt{a+ia\,\mathrm{ta}\ldots}}$$

$$= \frac{(3iA-2B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{(\ldots}{3d(\ldots}$$

Mathematica [A] time = 4.7885, size = 259, normalized size = 1.19

$$\frac{\sqrt{\sec(c+dx)}(A+B\tan(c+dx))\left(\sqrt{2}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{3/2}\left(1+e^{2i(c+dx)}\right)^{3/2}\left((B+iA)\sinh^{-1}\left(e^{i(c+dx)}\right)+2\sqrt{2}(-2B+3iA)\tanh\ldots\right.\right.}{4d(a+ia\tan(c+dx))^{3/2}(A\cos(c+dx)+B\sin(c\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2
),x]
```

```
[Out] (Sqrt[Sec[c + d*x]]*(Sqrt[2]*(E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^(3
/2)*(1 + E^((2*I)*(c + d*x)))^(3/2)*((I*A + B)*ArcSinh[E^(I*(c + d*x))] + 2
*Sqrt[2]*((3*I)*A - 2*B)*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((2*I
)*(c + d*x))]]) - (Csc[c + d*x]*(-3*(5*A + (3*I)*B) + 9*(3*A + I*B)*Cos[2*(
c + d*x)] + ((29*I)*A - 11*B)*Sin[2*(c + d*x)]))/(3*Sqrt[Sec[c + d*x]]))*(A
 + B*Tan[c + d*x]))/(4*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c +
 d*x])^(3/2))
```

Maple [B] time = 0.432, size = 2818, normalized size = 13.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] -1/24/d/a^2*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(3*A*cos(d*x+c)^
2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos
(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1
/2)-16*B*cos(d*x+c)^6-84*A*cos(d*x+c)*sin(d*x+c)+16*I*A*cos(d*x+c)^6+36*I*A
*cos(d*x+c)^4-52*I*A*cos(d*x+c)^2+16*A*cos(d*x+c)^5*sin(d*x+c)+44*A*cos(d*x
+c)^3*sin(d*x+c)-3*I*A*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(
1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2))-18*I*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arct
an(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+12*I*B*cos(d*x+c)^3*(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x
+c)+cos(d*x+c)-1)/sin(d*x+c))+12*I*B*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-18*I*A*cos(d*x+c)^
2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+12*I*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+18
*I*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2))-12*I*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/si
n(d*x+c))+18*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-3*B*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(
d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+3*B*cos(d*
x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c
```

)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+3*
B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*c
os(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^
(1/2)-3*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2
)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2))*2^(1/2)-3*A*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*
2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2))*2^(1/2)+18*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-12*B*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-
1)/sin(d*x+c))*sin(d*x+c)-18*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-12
B(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2))-18*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+12*B*cos(d*x+c)^2*sin(d*x
+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+18*I*A*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-12*I*B*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*s
in(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+16*I*B*cos(d*x+c)^5*sin(d*x+c)-36*I*B*c
os(d*x+c)*sin(d*x+c)+20*I*B*cos(d*x+c)^3*sin(d*x+c)+18*A*cos(d*x+c)^3*(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+12*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+18*A*cos(d*
x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+12*B*cos(d*x+c)^2*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))
-18*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-12*B*cos(d*x+c)*
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2))-18*I*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d
*x+c))-12*I*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+3*I*A*cos(d*x+c)^2*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/
sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+3*I*B*sin(d*x+c)*2
^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c
)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+3*I*A*cos(
d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x
+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-
3*I*A*cos(d*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^
(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2))-3*I*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*
arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2))*2^(1/2)-12*cos(d*x+c)^4*B+28*B*cos(d*x+c)^2)/(-1+cos(d

```
*x+c)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.13325, size = 2230, normalized size = 10.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="fricas")
```

```
[Out] 1/12*(sqrt(2)*((-28*I*A + 10*B)*e^(6*I*d*x + 6*I*c) + (-13*I*A + B)*e^(4*I*
d*x + 4*I*c) + (16*I*A - 10*B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt(a/(e^(2*
I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*sqrt(1/2)*(a^2*d*e^(6*I*d*x + 6*I*
c) - a^2*d*e^(4*I*d*x + 4*I*c))*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*log(
(2*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*
c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x +
 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1/2
)*(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c))*sqrt(-(A^2 - 2*I*
A*B - B^2)/(a^3*d^2))*log(-(2*sqrt(1/2)*a^2*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(
a^3*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*
A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/
(4*I*A + 4*B)) + 3*(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c))*
sqrt(-(9*A^2 + 12*I*A*B - 4*B^2)/(a^3*d^2))*log((sqrt(2)*((528*I*A - 352*B)
*e^(2*I*d*x + 2*I*c) + 528*I*A - 352*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e
^(I*d*x + I*c) + 88*(3*a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt(-(9*A^2 + 12
*I*A*B - 4*B^2)/(a^3*d^2)))/((-1521*I*A + 1014*B)*e^(2*I*d*x + 2*I*c) + 152
1*I*A - 1014*B)) - 3*(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c)
)*sqrt(-(9*A^2 + 12*I*A*B - 4*B^2)/(a^3*d^2))*log((sqrt(2)*((528*I*A - 352*
```

```
B)*e^(2*I*d*x + 2*I*c) + 528*I*A - 352*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))
*e^(I*d*x + I*c) - 88*(3*a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt(-(9*A^2 +
12*I*A*B - 4*B^2)/(a^3*d^2)))/((-1521*I*A + 1014*B)*e^(2*I*d*x + 2*I*c) + 1
521*I*A - 1014*B)))/(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^2}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^2/(I*a*tan(d*x + c) + a)^(3/2),
 x)
```

3.103 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=268

$$\frac{(23A+12iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{(22A+13iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+d}}{6a^2d}$$

```
[Out] ((23*A + (12*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*a^(3/2)*
d) - ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*S
qrt[2]*a^(3/2)*d) + ((A + I*B)*Cot[c + d*x]^2)/(3*d*(a + I*a*Tan[c + d*x])^
(3/2)) + ((17*A + (11*I)*B)*Cot[c + d*x]^2)/(6*a*d*Sqrt[a + I*a*Tan[c + d*x
]]) + (7*((3*I)*A - 2*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a^2*d)
 - ((22*A + (13*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(6*a^2*d)
```

Rubi [A] time = 0.982629, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(23A+12iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d}-\frac{(22A+13iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+d}}{6a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((23*A + (12*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*a^(3/2)*
d) - ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(2*S
qrt[2]*a^(3/2)*d) + ((A + I*B)*Cot[c + d*x]^2)/(3*d*(a + I*a*Tan[c + d*x])^
(3/2)) + ((17*A + (11*I)*B)*Cot[c + d*x]^2)/(6*a*d*Sqrt[a + I*a*Tan[c + d*x
]]) + (7*((3*I)*A - 2*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a^2*d)
 - ((22*A + (13*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(6*a^2*d)
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
```

```
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\cot^3(c+dx)\left(a(5A+2iB)-\frac{7}{2}a(iA-B)\tan(c+dx)\right)}{\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(17A+11iB)\cot^2(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \cot^3(c+dx)\sqrt{a+i\ldots}}{\ldots}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(17A+11iB)\cot^2(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(22A+13iB)\cot^2(c+\ldots}{6\ldots}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(17A+11iB)\cot^2(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{7(3iA-2B)\cot(c+d\ldots}{4a\ldots}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(17A+11iB)\cot^2(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{7(3iA-2B)\cot(c+d\ldots}{4a\ldots}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(17A+11iB)\cot^2(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{7(3iA-2B)\cot(c+d\ldots}{4a\ldots}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{(A+iB)\cot^2(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(17A+11iB)\ldots}{6ad\sqrt{a+ia\,\mathrm{t}\ldots}}$$

$$= \frac{(23A+12iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}d} + \frac{(\ldots}{3d\ldots}$$

Mathematica [A] time = 5.40464, size = 283, normalized size = 1.06

$$\frac{\sqrt{\sec(c+dx)}(A+B\tan(c+dx))\left(\sqrt{2}\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{3/2}\left(1+e^{2i(c+dx)}\right)^{3/2}\left(\sqrt{2}(23A+12iB)\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)-2(A-iB)\right.}{8d(a+ia\tan(c+dx))^{3/2}(A\cos(c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2
),x]
```

```
[Out] (Sqrt[Sec[c + d*x]]*(Sqrt[2]*(E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^(3
/2)*(1 + E^((2*I)*(c + d*x)))^(3/2)*(-2*(A - I*B)*ArcSinh[E^(I*(c + d*x))]
+ Sqrt[2]*(23*A + (12*I)*B)*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[1 + E^((
2*I)*(c + d*x))]]) + (Csc[c + d*x]^2*(-((50*A + (29*I)*B)*Cos[c + d*x]) + (
38*A + (29*I)*B)*Cos[3*(c + d*x)] + 6*((-9*I)*A + 5*B + ((12*I)*A - 9*B)*Co
s[2*(c + d*x)])*Sin[c + d*x]))/(3*Sqrt[Sec[c + d*x]]))*(A + B*Tan[c + d*x])
)/(8*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^(3/2))
```

Maple [B] time = 0.415, size = 2818, normalized size = 10.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/48/d/a^2*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(69*I*A*cos(d*x+c
)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+36*I*B*cos(d*x+c)^3*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-
69*I*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-36*I*B*cos(d*x+
c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2))+69*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+3
6*I*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2))+69*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arc
tan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-36*I*B*sin(d*x+c)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+6*I*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d
```

*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+69*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-36*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-69*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-6*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-36*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+6*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-69*I*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-6*I*B*cos(d*x+c)^2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-6*I*B*cos(d*x+c)^3*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+6*I*B*cos(d*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+176*A*cos(d*x+c)^2-120*A*cos(d*x+c)^4-32*A*cos(d*x+c)^6-32*I*B*cos(d*x+c)^6-72*I*B*cos(d*x+c)^4+104*I*B*cos(d*x+c)^2-32*B*cos(d*x+c)^5*sin(d*x+c)+168*B*cos(d*x+c)*sin(d*x+c)-88*B*cos(d*x+c)^3*sin(d*x+c)-69*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+36*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+69*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-36*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+36*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-6*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-6*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-69*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*sin(d*x+c)-6*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+6*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+36*I*B*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+6*A*cos(d*x+c)^3*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+6*A*cos(d*x+c)^2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))

```
^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2))+69*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(
-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*
cos(d*x+c)^2*sin(d*x+c)+36*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2*sin(d*x+c)+32*I*A*cos(d*
x+c)^5*sin(d*x+c)+136*I*A*sin(d*x+c)*cos(d*x+c)^3-69*I*A*(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+co
s(d*x+c)-1)/sin(d*x+c))-36*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(
1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-252*I*A*sin(d*x+c)*cos(d*x+c))/(-1+
cos(d*x+c)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.22973, size = 2570, normalized size = 9.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="fricas")
```

```
[Out] -1/48*(4*sqrt(2)*((37*A + 28*I*B)*e^(8*I*d*x + 8*I*c) - 3*(11*A + 5*I*B)*e^
(6*I*d*x + 6*I*c) - (50*A + 29*I*B)*e^(4*I*d*x + 4*I*c) + 3*(7*A + 5*I*B)*e
^(2*I*d*x + 2*I*c) + A + I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
I*c) + 12*sqrt(1/2)*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c
) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*log((2
*I*sqrt(1/2)*a^2*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*c
) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 12*sqrt(1/2
)*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d
```

```
*x + 4*I*c))*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*log((-2*I*sqrt(1/2)*a^2*
d*sqrt((A^2 - 2*I*A*B - B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A
 + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I
*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*(a^2*d*e^(8*I*d*x + 8*I*c)
 - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((529*A^2 +
 552*I*A*B - 144*B^2)/(a^3*d^2))*log(1/4*(4*sqrt(2)*((4048*I*A - 2112*B)*e^
(2*I*d*x + 2*I*c) + 4048*I*A - 2112*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^
(I*d*x + I*c) + (1056*I*a^2*d*e^(2*I*d*x + 2*I*c) + 352*I*a^2*d)*sqrt((529*
A^2 + 552*I*A*B - 144*B^2)/(a^3*d^2)))/((-11661*I*A + 6084*B)*e^(2*I*d*x +
2*I*c) + 11661*I*A - 6084*B)) + 3*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6
*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((529*A^2 + 552*I*A*B - 14
4*B^2)/(a^3*d^2))*log(1/4*(4*sqrt(2)*((4048*I*A - 2112*B)*e^(2*I*d*x + 2*I*
c) + 4048*I*A - 2112*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) +
 (-1056*I*a^2*d*e^(2*I*d*x + 2*I*c) - 352*I*a^2*d)*sqrt((529*A^2 + 552*I*A*
B - 144*B^2)/(a^3*d^2)))/((-11661*I*A + 6084*B)*e^(2*I*d*x + 2*I*c) + 11661
*I*A - 6084*B)))/(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) +
 a^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^3}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^3/(I*a*tan(d*x + c) + a)^(3/2),
 x)
```

3.104 $\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=255

$$-\frac{(-89B+39iA)\tan^2(c+dx)}{20a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(-361B+151iA)(a+ia\tan(c+dx))^{3/2}}{60a^4d}+\frac{(-89B+39iA)\sqrt{a+ia\tan(c+dx)}}{5a^3d}-\frac{(B+iA}{}$$

```
[Out] -((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^4)/(5*d*(a + I*a*Tan[c + d*x])^(5/2
)) + ((11*A + (21*I)*B)*Tan[c + d*x]^3)/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2
)) - (((39*I)*A - 89*B)*Tan[c + d*x]^2)/(20*a^2*d*Sqrt[a + I*a*Tan[c + d*x]
]) + (((39*I)*A - 89*B)*Sqrt[a + I*a*Tan[c + d*x]])/(5*a^3*d) - (((151*I)*A
 - 361*B)*(a + I*a*Tan[c + d*x])^(3/2))/(60*a^4*d)
```

Rubi [A] time = 0.779281, antiderivative size = 255, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3595, 3592, 3527, 3480, 206}

$$-\frac{(-89B+39iA)\tan^2(c+dx)}{20a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(-361B+151iA)(a+ia\tan(c+dx))^{3/2}}{60a^4d}+\frac{(-89B+39iA)\sqrt{a+ia\tan(c+dx)}}{5a^3d}-\frac{(B+iA}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] -((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^4)/(5*d*(a + I*a*Tan[c + d*x])^(5/2
)) + ((11*A + (21*I)*B)*Tan[c + d*x]^3)/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2
)) - (((39*I)*A - 89*B)*Tan[c + d*x]^2)/(20*a^2*d*Sqrt[a + I*a*Tan[c + d*x]
]) + (((39*I)*A - 89*B)*Sqrt[a + I*a*Tan[c + d*x]])/(5*a^3*d) - (((151*I)*A
 - 361*B)*(a + I*a*Tan[c + d*x])^(3/2))/(60*a^4*d)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
```

```
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{\int \frac{\tan^3(c+dx)\left(4a(iA-B)+\frac{1}{2}a(3A+13iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(11A+21iB)\tan^3(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\tan^2(c+dx)\left(-\frac{3}{2}a^2(11A\cdots\right.}{\sqrt{a\cdots}}}{\cdots}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(11A+21iB)\tan^3(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(39iA-89B)\tan^2(c\cdots}{20a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(11A+21iB)\tan^3(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(39iA-89B)\tan^2(c\cdots}{20a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(11A+21iB)\tan^3(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(39iA-89B)\tan^2(c\cdots}{20a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(11A+21iB)\tan^3(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(39iA-89B)\tan^2(c\cdots}{20a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(iA-B)\tan^4(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(11A+21iB)\cdots}{30ad(a+ia\,\mathrm{ta}\cdots}$$

Mathematica [A] time = 5.30489, size = 191, normalized size = 0.75

$$\frac{\frac{120(B+iA)e^{5i(c+dx)}\sinh^{-1}\left(e^{i(c+dx)}\right)}{\left(1+e^{2i(c+dx)}\right)^{5/2}} + \sec^4(c+dx)((747B-317iA)\cos(2(c+dx)) + (493B-233iA)\cos(4(c+dx)) + 340A\sin(2\cdots}{120a^2d(\tan(c+dx)-i)^2\sqrt{a+ia\,\mathrm{ta}\cdots}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
),x]
```

```
[Out] ((120*(I*A + B)*E^((5*I)*(c + d*x))*ArcSinh[E^(I*(c + d*x))])/(1 + E^((2*I)
*(c + d*x)))^(5/2) + Sec[c + d*x]^4*((-84*I)*A + 174*B + ((-317*I)*A + 747*
B)*Cos[2*(c + d*x)] + ((-233*I)*A + 493*B)*Cos[4*(c + d*x)] + 340*A*Sin[2*(
c + d*x)] + (780*I)*B*Sin[2*(c + d*x)] + 230*A*Sin[4*(c + d*x)] + (490*I)*B
*Sin[4*(c + d*x)]))/(120*a^2*d*(-I + Tan[c + d*x])^2*Sqrt[a + I*a*Tan[c + d
*x]])
```

Maple [A] time = 0.033, size = 181, normalized size = 0.7

$$\frac{2i}{a^4d}\left(-\frac{i}{3}B\,(a+ia\tan(dx+c))^{\frac{3}{2}}+3\,iBa\sqrt{a+ia\tan(dx+c)}+A\sqrt{a+ia\tan(dx+c)}a+\frac{a^2\,(31\,iB+17\,A)}{8}\frac{1}{\sqrt{a+ia\tan}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 2*I/d/a^4*(-1/3*I*B*(a+I*a*tan(d*x+c))^(3/2)+3*I*B*a*(a+I*a*tan(d*x+c))^(1/
2)+A*(a+I*a*tan(d*x+c))^(1/2)*a+1/8*a^2*(31*I*B+17*A)/(a+I*a*tan(d*x+c))^(1
/2)-1/12*a^3*(9*I*B+7*A)/(a+I*a*tan(d*x+c))^(3/2)+1/10*a^4*(A+I*B)/(a+I*a*t
an(d*x+c))^(5/2)-1/16*a^(3/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c)
)^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.16433, size = 1274, normalized size = 5.

$$\frac{\sqrt{2}\left((463i\,A-983\,B)e^{(8i\,dx+8i\,c)}+(657i\,A-1527\,B)e^{(6i\,dx+6i\,c)}+(168i\,A-348\,B)e^{(4i\,dx+4i\,c)}+(-23i\,A+33\,B)e^{(2i\,dx+2i\,c)}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] 1/120*(sqrt(2)*((463*I*A - 983*B)*e^(8*I*d*x + 8*I*c) + (657*I*A - 1527*B)*
e^(6*I*d*x + 6*I*c) + (168*I*A - 348*B)*e^(4*I*d*x + 4*I*c) + (-23*I*A + 33
*B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^
(I*d*x + I*c) - 15*sqrt(1/2)*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x
+ 6*I*c))*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*log((2*sqrt(1/2)*a^3*d*sqr
t(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B
)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
 + I*c))*e^(-I*d*x - I*c)/(I*A + B)) + 15*sqrt(1/2)*(a^3*d*e^(8*I*d*x + 8*I
*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*log
(-(2*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*x + 2*
I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)))/(a^3*d*e^(8*I
*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^4}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^4/(I*a*tan(d*x + c) + a)^(5/2),
 x)
```

3.105 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=211

$$\frac{(13A+83iB)\sqrt{a+ia\tan(c+dx)}}{30a^3d}+\frac{41A+151iB}{60a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{(-B+iA)\tan^3(c}{5d(a+ia\tan(c+}$$

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[2
]*a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^3)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)
) + ((7*A + (17*I)*B)*Tan[c + d*x]^2)/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2))
 + (41*A + (151*I)*B)/(60*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) + ((13*A + (83*
I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(30*a^3*d)
```

Rubi [A] time = 0.568629, antiderivative size = 211, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3595, 3592, 3526, 3480, 206}

$$\frac{(13A+83iB)\sqrt{a+ia\tan(c+dx)}}{30a^3d}+\frac{41A+151iB}{60a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{(-B+iA)\tan^3(c}{5d(a+ia\tan(c+}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[2
]*a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^3)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)
) + ((7*A + (17*I)*B)*Tan[c + d*x]^2)/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2))
 + (41*A + (151*I)*B)/(60*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) + ((13*A + (83*
I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(30*a^3*d)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(iA-B)\tan^3(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{\int \frac{\tan^2(c+dx)\left(3a(iA-B)+\frac{1}{2}a(A+11iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(7A+17iB)\tan^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\tan(c+dx)\left(-a^2(7A+1\right.}{\sqrt{a}}}{}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(7A+17iB)\tan^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(13A+83iB)\sqrt{a+}}{30a^3}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(7A+17iB)\tan^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{41A+151iB}{60a^2d\sqrt{a+ia\tan(}}$$

$$= \frac{(iA-B)\tan^3(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(7A+17iB)\tan^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{41A+151iB}{60a^2d\sqrt{a+ia\tan(}}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(iA-B)\tan^3(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(7A+17iB)}{30ad(a+ia\tan}$$

Mathematica [A] time = 4.2232, size = 193, normalized size = 0.91

$$-\frac{15(A-iB)e^{5i(c+dx)}\sqrt{1+e^{2i(c+dx)}}\sinh^{-1}\left(e^{i(c+dx)}\right)+A\left(-16e^{2i(c+dx)}+64e^{4i(c+dx)}+83e^{6i(c+dx)}+3\right)+iB\left(-26e^{2i(c+dx)}+1\right.}{15a^2d\left(1+e^{2i(c+dx)}\right)^3(\tan(c+dx)-i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
),x]
```

```
[Out] -(A*(3 - 16*E^((2*I)*(c + d*x)) + 64*E^((4*I)*(c + d*x)) + 83*E^((6*I)*(c +
 d*x))) + I*B*(3 - 26*E^((2*I)*(c + d*x)) + 194*E^((4*I)*(c + d*x)) + 463*E
^((6*I)*(c + d*x))) + 15*(A - I*B)*E^((5*I)*(c + d*x))*Sqrt[1 + E^((2*I)*(c
 + d*x))]*ArcSinh[E^(I*(c + d*x))])/(15*a^2*d*(1 + E^((2*I)*(c + d*x)))^3*(
-I + Tan[c + d*x])^2*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [A] time = 0.03, size = 142, normalized size = 0.7

$$-2\frac{1}{a^3d}\left(-iB\sqrt{a+ia\tan(dx+c)}-1/8\frac{a(7A+17iB)}{\sqrt{a+ia\tan(dx+c)}}+1/12\frac{a^2(5A+7iB)}{(a+ia\tan(dx+c))^{3/2}}-1/10\frac{a^3(A+iB)}{(a+ia\tan(dx+c))^{5/2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] -2/d/a^3*(-I*B*(a+I*a*tan(d*x+c))^(1/2)-1/8*a*(7*A+17*I*B)/(a+I*a*tan(d*x+c
))^(1/2)+1/12*a^2*(5*A+7*I*B)/(a+I*a*tan(d*x+c))^(3/2)-1/10*a^3*(A+I*B)/(a+
I*a*tan(d*x+c))^(5/2)-1/16*a^(1/2)*(A-I*B)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d
*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.05867, size = 1100, normalized size = 5.21

$$\frac{\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(6i\,dx+6i\,c)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)-1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x
+ 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(
2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a
/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) -
15*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c
)*log((-2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*
x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2
```

```
*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) + sqrt(2
)*((83*A + 463*I*B)*e^(6*I*d*x + 6*I*c) + 2*(32*A + 97*I*B)*e^(4*I*d*x + 4*
I*c) - 2*(8*A + 13*I*B)*e^(2*I*d*x + 2*I*c) + 3*A + 3*I*B)*sqrt(a/(e^(2*I*d
*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^3}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^3/(I*a*tan(d*x + c) + a)^(5/2),
 x)
```

3.106 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=167

$$-\frac{-31B+iA}{20a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{(-B+iA)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{-13B+3iA}{30ad(a+ia\tan(c+dx))^{3/2}}$$

```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[2
]*a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^2)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)
) + ((3*I)*A - 13*B)/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2)) - (I*A - 31*B)/(
20*a^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.39508, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3595, 3590, 3526, 3480, 206}

$$-\frac{-31B+iA}{20a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{(-B+iA)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{-13B+3iA}{30ad(a+ia\tan(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[2
]*a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^2)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)
) + ((3*I)*A - 13*B)/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2)) - (I*A - 31*B)/(
20*a^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(iA-B)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{\int \frac{\tan(c+dx)\left(2a(iA-B)-\frac{1}{2}a(A-9iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}dx}{5a^2}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3iA-13B}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{i\int \frac{\frac{1}{2}a^2(3iA-13B)-a^2(A-}{\sqrt{a+ia\tan(c}}}{10a^4}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3iA-13B}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{iA-31B}{20a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA-B)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3iA-13B}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{iA-31B}{20a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(iA-B)\tan^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3iA-}{30ad(a+ia\tan}$$

Mathematica [A] time = 3.15901, size = 176, normalized size = 1.05

$$\frac{e^{-6i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\sec^2(c+dx)\left(\sqrt{1+e^{2i(c+dx)}}\left(B\left(-19e^{2i(c+dx)}+83e^{4i(c+dx)}+3\right)-3iA\left(-3e^{2i(c+dx)}+e^{4i(c+dx)}+1\right)\right)\right.}{240a^2d\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
),x]
```

```
[Out] ((1 + E^((2*I)*(c + d*x)))^(3/2)*(Sqrt[1 + E^((2*I)*(c + d*x))]*((-3*I)*A*(
1 - 3*E^((2*I)*(c + d*x)) + E^((4*I)*(c + d*x))) + B*(3 - 19*E^((2*I)*(c +
d*x)) + 83*E^((4*I)*(c + d*x)))) + 15*(I*A + B)*E^((5*I)*(c + d*x))*ArcSinh
[E^(I*(c + d*x))])*Sec[c + d*x]^2)/(240*a^2*d*E^((6*I)*(c + d*x))*Sqrt[a +
I*a*Tan[c + d*x]])
```

Maple [A] time = 0.031, size = 124, normalized size = 0.7

$$\frac{-2i}{a^2d}\left(-\left(-\frac{7i}{8}B-\frac{A}{8}\right)\frac{1}{\sqrt{a+ia\tan(dx+c)}}-\frac{a(3A+5iB)}{12}(a+ia\tan(dx+c))^{-\frac{3}{2}}+\frac{a^2(A+iB)}{10}(a+ia\tan(dx+c))^{-\frac{5}{2}}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] -2*I/d/a^2*(-(-7/8*I*B-1/8*A)/(a+I*a*tan(d*x+c))^(1/2)-1/12*a*(3*A+5*I*B)/(
a+I*a*tan(d*x+c))^(3/2)+1/10*a^2*(A+I*B)/(a+I*a*tan(d*x+c))^(5/2)-1/2*(1/8*
A-1/8*I*B)*2^(1/2)/a^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(
1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.02363, size = 1092, normalized size = 6.54

$$\frac{\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{-\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(6i\,dx+6i\,c)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^3d\sqrt{-\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x
 + 6*I*c)*log((2*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(
2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a
/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) -
15*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*
c)*log(-(2*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*
x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) + sqrt(2
)*((-3*I*A + 83*B)*e^(6*I*d*x + 6*I*c) + (6*I*A + 64*B)*e^(4*I*d*x + 4*I*c)
```

```
 + (6*I*A - 16*B)*e^(2*I*d*x + 2*I*c) - 3*I*A + 3*B)*sqrt(a/(e^(2*I*d*x + 2
*I*c) + 1))*e^(I*d*x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^2}{(ia\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/(I*a*tan(d*x + c) + a)^(5/2),
 x)
```

3.107 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=153

$$\frac{A-iB}{4a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{A+3iB}{6ad(a+ia\tan(c+dx))^{3/2}}-\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}}$$

```
[Out] -((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) - (A + I*B)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + (A + (3*I)*B
)/(6*a*d*(a + I*a*Tan[c + d*x])^(3/2)) + (A - I*B)/(4*a^2*d*Sqrt[a + I*a*Ta
n[c + d*x]])
```

Rubi [A] time = 0.228204, antiderivative size = 153, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3590, 3526, 3479, 3480, 206}

$$\frac{A-iB}{4a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{A+3iB}{6ad(a+ia\tan(c+dx))^{3/2}}-\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] -((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) - (A + I*B)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + (A + (3*I)*B
)/(6*a*d*(a + I*a*Tan[c + d*x])^(3/2)) + (A - I*B)/(4*a^2*d*Sqrt[a + I*a*Ta
n[c + d*x]])
```


Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = -\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{i\int \frac{a(A+iB)+2aB\tan(c+dx)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{2a^2}$$

$$= -\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad(a+ia\tan(c+dx))^{3/2}} - \frac{(iA+B)\int \frac{1}{\sqrt{a+ia\tan(c-}}}{4a^2}$$

$$= -\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{A-iB}{4a^2d\sqrt{a+ia\tan(c+}}$$

$$= -\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{A-iB}{4a^2d\sqrt{a+ia\tan(c+}}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} - \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{A+3}{6ad(a+ia\tan}$$

Mathematica [A] time = 2.74036, size = 176, normalized size = 1.15

$$\frac{e^{-6i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\sec^2(c+dx)\left(\sqrt{1+e^{2i(c+dx)}}\left(A\left(-e^{2i(c+dx)}+17e^{4i(c+dx)}-3\right)-3iB\left(-3e^{2i(c+dx)}+e^{4i(c+dx)}+1\right)\right)-\right.}{240a^2d\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```

```
[Out] ((1 + E^((2*I)*(c + d*x)))^(3/2)*(Sqrt[1 + E^((2*I)*(c + d*x))]*((-3*I)*B*(
1 - 3*E^((2*I)*(c + d*x)) + E^((4*I)*(c + d*x))) + A*(-3 - E^((2*I)*(c + d*
x)) + 17*E^((4*I)*(c + d*x)))) - 15*(A - I*B)*E^((5*I)*(c + d*x))*ArcSinh[E
^(I*(c + d*x))])*Sec[c + d*x]^2)/(240*a^2*d*E^((6*I)*(c + d*x))*Sqrt[a + I*
a*Tan[c + d*x]])
```

Maple [A] time = 0.023, size = 121, normalized size = 0.8

$$2\,\frac{1}{ad}\left(-1/3\,\frac{-A/4-3/4\,iB}{(a+ia\tan(dx+c))^{3/2}}-1/10\,\frac{a\,(A+iB)}{(a+ia\tan(dx+c))^{5/2}}-1/8\,\frac{-A+iB}{a\sqrt{a+ia\tan(dx+c)}}-1/16\,\frac{(A-iB)\sqrt{2}}{a^{3/2}}\mathrm{Artanh}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 2/d/a*(-1/3*(-1/4*A-3/4*I*B)/(a+I*a*tan(d*x+c))^(3/2)-1/10*a*(A+I*B)/(a+I*a
*tan(d*x+c))^(5/2)-1/8/a*(-A+I*B)/(a+I*a*tan(d*x+c))^(1/2)-1/16*(A-I*B)/a^(
3/2)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.05337, size = 1095, normalized size = 7.16

$$-\frac{\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(6i\,dx+6i\,c)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)-\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] -1/120*(15*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x
 + 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^
(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(
a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) -
 15*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*
c)*log((-2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d
*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(
2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - sqrt(
2)*((17*A - 3*I*B)*e^(6*I*d*x + 6*I*c) + 2*(8*A + 3*I*B)*e^(4*I*d*x + 4*I*c
) - 2*(2*A - 3*I*B)*e^(2*I*d*x + 2*I*c) - 3*A - 3*I*B)*sqrt(a/(e^(2*I*d*x +
 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)}{(ia\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/(I*a*tan(d*x + c) + a)^(5/2), x
)
```

3.108 $\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=155

$$\frac{B+iA}{4a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{-B+iA}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{B+iA}{6ad(a+ia\tan(c+dx))^{3/2}}$$

```
[Out] -((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) + (I*A - B)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + (I*A + B)/(6
*a*d*(a + I*a*Tan[c + d*x])^(3/2)) + (I*A + B)/(4*a^2*d*Sqrt[a + I*a*Tan[c
+ d*x]])
```

Rubi [A] time = 0.129972, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3526, 3479, 3480, 206}

$$\frac{B+iA}{4a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{-B+iA}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{B+iA}{6ad(a+ia\tan(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(5/2),x]
```

```
[Out] -((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) + (I*A - B)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + (I*A + B)/(6
*a*d*(a + I*a*Tan[c + d*x])^(3/2)) + (I*A + B)/(4*a^2*d*Sqrt[a + I*a*Tan[c
+ d*x]])
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
```

```
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{iA-B}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{(A-iB)\int\frac{1}{(a+ia\tan(c+dx))^{3/2}}\,dx}{2a}$$

$$= \frac{iA-B}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{iA+B}{6ad(a+ia\tan(c+dx))^{3/2}}+\frac{(A-iB)\int\frac{1}{\sqrt{a+ia\tan(c+dx)}}\,dx}{4a^2}$$

$$= \frac{iA-B}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{iA+B}{6ad(a+ia\tan(c+dx))^{3/2}}+\frac{iA+B}{4a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(A}{}$$

$$= \frac{iA-B}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{iA+B}{6ad(a+ia\tan(c+dx))^{3/2}}+\frac{iA+B}{4a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{(iA}{}$$

$$= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}+\frac{iA-B}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{iA+B}{6ad(a+ia\tan(c+dx)}$$

Mathematica [A] time = 2.46152, size = 176, normalized size = 1.14

$$-\frac{e^{-6i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\sec^2(c+dx)\left(\sqrt{1+e^{2i(c+dx)}}\left(B\left(e^{2i(c+dx)}-17e^{4i(c+dx)}+3\right)-iA\left(11e^{2i(c+dx)}+23e^{4i(c+dx)}+3\right)\right)\right.}{240a^2d\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(5/2),x]
```

```
[Out] -((1 + E^((2*I)*(c + d*x)))^(3/2)*(Sqrt[1 + E^((2*I)*(c + d*x))]*(B*(3 + E^
((2*I)*(c + d*x)) - 17*E^((4*I)*(c + d*x))) - I*A*(3 + 11*E^((2*I)*(c + d*x
)) + 23*E^((4*I)*(c + d*x)))) + 15*(I*A + B)*E^((5*I)*(c + d*x))*ArcSinh[E^
(I*(c + d*x))])*Sec[c + d*x]^2)/(240*a^2*d*E^((6*I)*(c + d*x))*Sqrt[a + I*a
*Tan[c + d*x]])
```

Maple [A] time = 0.023, size = 123, normalized size = 0.8

$$\frac{2\,i}{d}\left(-\frac{1}{5}\left(-\frac{A}{2}-\frac{i}{2}B\right)(a+ia\tan(dx+c))^{-\frac{5}{2}}-\frac{-A+iB}{12\,a}(a+ia\tan(dx+c))^{-\frac{3}{2}}-\frac{-A+iB}{8\,a^2}\frac{1}{\sqrt{a+ia\tan(dx+c)}}-\frac{(A-iB)}{16}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 2*I/d*(-1/5*(-1/2*A-1/2*I*B)/(a+I*a*tan(d*x+c))^(5/2)-1/12/a*(-A+I*B)/(a+I*
a*tan(d*x+c))^(3/2)-1/8/a^2*(-A+I*B)/(a+I*a*tan(d*x+c))^(1/2)-1/16*(A-I*B)/
a^(5/2)*2^(1/2)*arctanh(1/2*(a+I*a*tan(d*x+c))^(1/2)*2^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.98948, size = 1095, normalized size = 7.06

$$-\frac{\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{-\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(6i\,dx+6i\,c)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^3d\sqrt{-\frac{A^2-2i\,AB-B^2}{a^5d^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-i\,c)}}{i\,A+B}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] -1/120*(15*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*
x + 6*I*c)*log((2*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^
(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(
a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) -
 15*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I
*c)*log(-(2*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d
*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(
2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(I*A + B)) - sqrt(
2)*((23*I*A + 17*B)*e^(6*I*d*x + 6*I*c) + (34*I*A + 16*B)*e^(4*I*d*x + 4*I*
c) + (14*I*A - 4*B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*d*x +
 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(I*a*tan(d*x + c) + a)^(5/2), x)
```

3.109 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=192

$$\frac{7A+iB}{4a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}}+$$

```
[Out] (-2*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) + ((A - I*B)
*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[2]*a^(5/2)*
d) + (A + I*B)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + (3*A + I*B)/(6*a*d*(a +
 I*a*Tan[c + d*x])^(3/2)) + (7*A + I*B)/(4*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]
)
```

Rubi [A] time = 0.676441, antiderivative size = 192, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3596, 3600, 3480, 206, 3599, 63, 208}

$$\frac{7A+iB}{4a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] (-2*A*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) + ((A - I*B)
*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[2]*a^(5/2)*
d) + (A + I*B)/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + (3*A + I*B)/(6*a*d*(a +
 I*a*Tan[c + d*x])^(3/2)) + (7*A + I*B)/(4*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]
)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\cot(c+dx)\left(5aA-\frac{5}{2}a(iA-B)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3A+iB}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\cot(c+dx)\left(15a^2A-\frac{15}{4}a^2(3i\cdots\right.}{\sqrt{a+ia\tan(c+\cdots}}}{15a^4}$$

$$= \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3A+iB}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{7A+iB}{4a^2d\sqrt{a+ia\tan(c+d\cdots}}$$

$$= \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3A+iB}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{7A+iB}{4a^2d\sqrt{a+ia\tan(c+d\cdots}}$$

$$= \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3A+iB}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{7A+iB}{4a^2d\sqrt{a+ia\tan(c+d\cdots}}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{A+iB}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{3A+iB}{6ad(a+ia\tan(c\cdots}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{A+\cdots}{5d(a+ia\tan\cdots}$$

Mathematica [A] time = 4.17522, size = 233, normalized size = 1.21

$$\frac{e^{-6i(c+dx)}\left(1+e^{2i(c+dx)}\right)^{3/2}\sec^2(c+dx)\left(\sqrt{1+e^{2i(c+dx)}}\left(3A\left(7e^{2i(c+dx)}+41e^{4i(c+dx)}+1\right)+iB\left(11e^{2i(c+dx)}+23e^{4i(c+dx)}+3\right)\right)+\cdots\right.}{240a^2d\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```

```
[Out] ((1 + E^((2*I)*(c + d*x)))^(3/2)*(Sqrt[1 + E^((2*I)*(c + d*x))]*(I*B*(3 + 1
1*E^((2*I)*(c + d*x)) + 23*E^((4*I)*(c + d*x))) + 3*A*(1 + 7*E^((2*I)*(c +
d*x)) + 41*E^((4*I)*(c + d*x)))) + 15*(A - I*B)*E^((5*I)*(c + d*x))*ArcSinh
[E^(I*(c + d*x))] - 120*Sqrt[2]*A*E^((5*I)*(c + d*x))*ArcTanh[(Sqrt[2]*E^(I
*(c + d*x)))/Sqrt[1 + E^((2*I)*(c + d*x))]])*Sec[c + d*x]^2)/(240*a^2*d*E^(
(6*I)*(c + d*x))*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.388, size = 1084, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 1/240/d/a^3*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(-64*I*B*cos(d*x
+c)^4-120*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+192*A*cos(d*x+c)^6+
192*B*cos(d*x+c)^5*sin(d*x+c)-120*I*A*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)
-1)/sin(d*x+c))+20*I*B*cos(d*x+c)^2-192*I*A*cos(d*x+c)^3*sin(d*x+c)-192*I*A
*cos(d*x+c)^5*sin(d*x+c)+15*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*
x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+
c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+192*I*B*cos(d*x+c)^6-15*A*(-2*cos(d*x+c)/
(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x
+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+96*A*cos(d*x+
c)^4-420*I*A*cos(d*x+c)*sin(d*x+c)+15*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*
cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+32*B*cos(d*x+c)^3*sin(d*x+c)+120*
I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))*sin(d*x+c)+15*I*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2))-15*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*
2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2))*2^(1/2)-120*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arc
tan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-120*A*(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c
)-1)/sin(d*x+c))*sin(d*x+c)+15*I*B*2^(1/2)*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d
*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+300*A*cos(d*x+c)^2-120*A*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+60*B
*cos(d*x+c)*sin(d*x+c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.96029, size = 1764, normalized size = 9.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x
+ 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(
2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a
/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)
) - 15*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(6*I*d*x + 6
*I*c)*log((-2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*
I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B))
- 60*a^3*d*sqrt(A^2/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(-88/507*(2*sqrt(2)*(
A*e^(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c
) + (3*a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt(A^2/(a^5*d^2)))/(A*e^(2*I*d*
x + 2*I*c) - A)) + 60*a^3*d*sqrt(A^2/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(-88
/507*(2*sqrt(2)*(A*e^(2*I*d*x + 2*I*c) + A)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c) - (3*a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt(A^2/(a^5*d^
2)))/(A*e^(2*I*d*x + 2*I*c) - A)) + sqrt(2)*((123*A + 23*I*B)*e^(6*I*d*x +
6*I*c) + 2*(72*A + 17*I*B)*e^(4*I*d*x + 4*I*c) + 2*(12*A + 7*I*B)*e^(2*I*d*
x + 2*I*c) + 3*A + 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
)*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)}{(ia\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)/(I*a*tan(d*x + c) + a)^(5/2), x
)
```

3.110 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=259

$$\frac{(-2B+5iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}-\frac{7(3A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4a^3d}+$$

```
[Out] (((5*I)*A - 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) +
 ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) + ((A + I*B)*Cot[c + d*x])/(5*d*(a + I*a*Tan[c + d*x])^(5/2))
 + ((19*A + (9*I)*B)*Cot[c + d*x])/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2)) +
((41*A + (15*I)*B)*Cot[c + d*x])/(12*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) - (7
*(3*A + I*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a^3*d)
```

Rubi [A] time = 1.04848, antiderivative size = 259, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(-2B+5iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}-\frac{7(3A+iB)\cot(c+dx)\sqrt{a+ia\tan(c+dx)}}{4a^3d}+$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] (((5*I)*A - 2*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) +
 ((I*A + B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*Sqrt[
2]*a^(5/2)*d) + ((A + I*B)*Cot[c + d*x])/(5*d*(a + I*a*Tan[c + d*x])^(5/2))
 + ((19*A + (9*I)*B)*Cot[c + d*x])/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2)) +
((41*A + (15*I)*B)*Cot[c + d*x])/(12*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) - (7
*(3*A + I*B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a^3*d)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
```

```
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\cot^2(c+dx)\left(a(6A+iB)-\frac{7}{2}a(iA-B)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(19A+9iB)\cot(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\cot^2(c+dx)\left(\frac{5}{2}a^2(11A+3\right.}{\sqrt{a+i}}$$

$$= \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(19A+9iB)\cot(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(41A+15iB)\cot(c}{12a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(19A+9iB)\cot(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(41A+15iB)\cot(c}{12a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(19A+9iB)\cot(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(41A+15iB)\cot(c}{12a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(19A+9iB)\cot(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(41A+15iB)\cot(c}{12a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(A+iB)\cot(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(19A+9iB)\,\mathrm{c}}{30ad(a+ia\tan}$$

$$= \frac{(5iA-2B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(A}{5d(a}$$

Mathematica [A] time = 7.76742, size = 287, normalized size = 1.11

$$\frac{\sec^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))\left(\sqrt{2}e^{2i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\left((B+iA)\sinh^{-1}\left(e^{i(c+dx)}\right)+4\sqrt{2}(-2B+5iA)\tan\right.\right.}{8d(a+ia\tan(c+dx))^{5/2}(A\cos(c+dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
),x]
```

```
[Out] (Sec[c + d*x]^(3/2)*(Sqrt[2]*E^((2*I)*(c + d*x))*Sqrt[E^(I*(c + d*x))/(1 +
E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))]*((I*A + B)*ArcSinh[E^(I
*(c + d*x))] + 4*Sqrt[2]*((5*I)*A - 2*B)*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/
Sqrt[1 + E^((2*I)*(c + d*x))]]) + (-40*(-17*A - (6*I)*B + (20*A + (6*I)*B)*
Cos[2*(c + d*x)])*Csc[c + d*x] + 14*((-13*I)*A + 3*B + 2*((-29*I)*A + 9*B)*
Cos[2*(c + d*x)])*Sec[c + d*x])/(15*Sec[c + d*x]^(3/2)))*(A + B*Tan[c + d*x
]))/(8*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^(5/2))
```

Maple [B] time = 0.473, size = 2858, normalized size = 11.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 1/240/d/a^3*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(-15*A*cos(d*x+c
)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*c
os(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^
(1/2)-96*B*cos(d*x+c)^6+1260*A*cos(d*x+c)*sin(d*x+c)+15*I*B*cos(d*x+c)^2*si
n(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x
+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-
160*A*cos(d*x+c)^5*sin(d*x+c)-668*A*cos(d*x+c)^3*sin(d*x+c)+15*B*(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/s
in(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-15*B*cos(d*x+c)^3*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(
d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-15*B*cos(d
*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+
c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+1
5*B*cos(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*c
```

os(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^
(1/2)+15*A*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/
2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1
/2))*2^(1/2)-300*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*
x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+120*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/
sin(d*x+c))*sin(d*x+c)+300*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2
*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+120*
B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+300*A*cos(d*x+c)^2*sin(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-120*B*cos(d*x+c)^2*sin(d*
x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-192*A*cos(d*x+c)^7*sin(d*x+c
)-192*I*A*cos(d*x+c)^8-64*I*A*cos(d*x+c)^6-564*I*A*cos(d*x+c)^4+820*I*A*cos
(d*x+c)^2-300*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2))+120*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(
-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)
)-192*I*B*cos(d*x+c)^7*sin(d*x+c)-228*I*B*cos(d*x+c)^3*sin(d*x+c)+420*I*B*c
os(d*x+c)*sin(d*x+c)+192*B*cos(d*x+c)^8-300*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+
cos(d*x+c)-1)/sin(d*x+c))-120*B*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-300*A*cos(d*x+c)^2*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-120*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+300*A*c
os(d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+120*B*cos(d*x+c)*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
))+204*cos(d*x+c)^4*B-300*B*cos(d*x+c)^2+300*I*A*cos(d*x+c)^2*sin(d*x+c)*(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/
2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+120*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2*sin(d
*x+c)-15*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos
(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(
d*x+c)*2^(1/2)-15*I*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arc
tan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2))*2^(1/2)-15*I*A*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+15*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^
(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x
+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)*2^(1/2)+15*I*A*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-
2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-300*I*A*(-2*cos(d*x+c)/(cos(d*x
+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x
+c)-1)/sin(d*x+c))*sin(d*x+c)-120*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*

```
arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)-300*I*A*cos(d*x+c
)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))+120*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c)+300
*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2))*cos(d*x+c)^3-120*I*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(
-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c)
)*cos(d*x+c)^3+300*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2-120*I*B*(-2*cos(d*x+c)/(cos(d*
x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*
x+c)-1)/sin(d*x+c))*cos(d*x+c)^2)/(-1+cos(d*x+c)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.28482, size = 2310, normalized size = 8.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] 1/120*(sqrt(2)*((-403*I*A + 123*B)*e^(8*I*d*x + 8*I*c) + (-151*I*A + 21*B)*
e^(6*I*d*x + 6*I*c) + (280*I*A - 120*B)*e^(4*I*d*x + 4*I*c) + (31*I*A - 21*
B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(
I*d*x + I*c) + 15*sqrt(1/2)*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x +
 6*I*c))*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*log((2*sqrt(1/2)*a^3*d*sqrt
(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)
*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqrt(1/2)*(a^3*d*e^(8*I*d*x +
```

```
8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*
log(-(2*sqrt(1/2)*a^3*d*sqrt(-(A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*x +
 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) + 30*(a
^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))*sqrt(-(25*A^2 + 20*I*
A*B - 4*B^2)/(a^5*d^2))*log((sqrt(2)*((880*I*A - 352*B)*e^(2*I*d*x + 2*I*c)
 + 880*I*A - 352*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 88*
(3*a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt(-(25*A^2 + 20*I*A*B - 4*B^2)/(a^
5*d^2)))/((-2535*I*A + 1014*B)*e^(2*I*d*x + 2*I*c) + 2535*I*A - 1014*B)) -
30*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))*sqrt(-(25*A^2 +
20*I*A*B - 4*B^2)/(a^5*d^2))*log((sqrt(2)*((880*I*A - 352*B)*e^(2*I*d*x + 2
*I*c) + 880*I*A - 352*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
- 88*(3*a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt(-(25*A^2 + 20*I*A*B - 4*B^2
)/(a^5*d^2)))/((-2535*I*A + 1014*B)*e^(2*I*d*x + 2*I*c) + 2535*I*A - 1014*B
)))/(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^2}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^2/(I*a*tan(d*x + c) + a)^(5/2),
 x)
```

3.111 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=312

$$\frac{(43A+20iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}-\frac{(85A+41iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{12a^3d}$$

```
[Out] ((43*A + (20*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*a^(5/2)*
d) - ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*S
qrt[2]*a^(5/2)*d) + ((A + I*B)*Cot[c + d*x]^2)/(5*d*(a + I*a*Tan[c + d*x])^
(5/2)) + ((23*A + (13*I)*B)*Cot[c + d*x]^2)/(30*a*d*(a + I*a*Tan[c + d*x])^
(3/2)) + ((337*A + (167*I)*B)*Cot[c + d*x]^2)/(60*a^2*d*Sqrt[a + I*a*Tan[c
+ d*x]]) + (21*((2*I)*A - B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a^
3*d) - ((85*A + (41*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(12*a^
3*d)
```

Rubi [A] time = 1.23671, antiderivative size = 312, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3598, 3600, 3480, 206, 3599, 63, 208}

$$\frac{(43A+20iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d}-\frac{(85A+41iB)\cot^2(c+dx)\sqrt{a+ia\tan(c+dx)}}{12a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```



```
[Out] ((43*A + (20*I)*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/Sqrt[a]])/(4*a^(5/2)*
d) - ((A - I*B)*ArcTanh[Sqrt[a + I*a*Tan[c + d*x]]/(Sqrt[2]*Sqrt[a])])/(4*S
qrt[2]*a^(5/2)*d) + ((A + I*B)*Cot[c + d*x]^2)/(5*d*(a + I*a*Tan[c + d*x])^
(5/2)) + ((23*A + (13*I)*B)*Cot[c + d*x]^2)/(30*a*d*(a + I*a*Tan[c + d*x])^
(3/2)) + ((337*A + (167*I)*B)*Cot[c + d*x]^2)/(60*a^2*d*Sqrt[a + I*a*Tan[c
+ d*x]]) + (21*((2*I)*A - B)*Cot[c + d*x]*Sqrt[a + I*a*Tan[c + d*x]])/(4*a^
3*d) - ((85*A + (41*I)*B)*Cot[c + d*x]^2*Sqrt[a + I*a*Tan[c + d*x]])/(12*a^
3*d)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
```

```
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\cot^3(c+dx)\left(a(7A+2iB)-\frac{9}{2}a(iA-B)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)\cot^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\cot^3(c+dx)\left(a^2(44A+19i\right.}{\sqrt{a+}}}{}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)\cot^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(337A+167iB)\cot^2}{60a^2d\sqrt{a+ia\tan(}}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)\cot^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(337A+167iB)\cot^2}{60a^2d\sqrt{a+ia\tan(}}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)\cot^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(337A+167iB)\cot^2}{60a^2d\sqrt{a+ia\tan(}}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)\cot^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(337A+167iB)\cot^2}{60a^2d\sqrt{a+ia\tan(}}$$

$$= \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)\cot^2(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(337A+167iB)\cot^2}{60a^2d\sqrt{a+ia\tan(}}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(A+iB)\cot^2(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(23A+13iB)}{30ad(a+ia\,\mathrm{ta}}$$

$$= \frac{(43A+20iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{2}\sqrt{a}}\right)}{4\sqrt{2}a^{5/2}d} + \frac{(}{5d}$$

Mathematica [A] time = 9.09369, size = 317, normalized size = 1.02

$$\frac{\sec^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))\left(\sqrt{2}e^{2i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{1+e^{2i(c+dx)}}\left(\sqrt{2}(43A+20iB)\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{1+e^{2i(c+dx)}}}\right)-(A-iB)\,\mathrm{si}\right.\right.}{8d(a+ia\tan(c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
),x]
```

```
[Out] (Sec[c + d*x]^(3/2)*(Sqrt[2]*E^((2*I)*(c + d*x))*Sqrt[E^(I*(c + d*x))/(1 +
E^((2*I)*(c + d*x)))]*Sqrt[1 + E^((2*I)*(c + d*x))]*(-((A - I*B)*ArcSinh[E^
```

```
(I*(c + d*x))]) + Sqrt[2]*(43*A + (20*I)*B)*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)
))/Sqrt[1 + E^((2*I)*(c + d*x))]]) + (Csc[c + d*x]^2*(212*A + (112*I)*B - 1
5*(44*A + (21*I)*B)*Cos[2*(c + d*x)] + (388*A + (203*I)*B)*Cos[4*(c + d*x)]
 - (695*I)*A*Sin[2*(c + d*x)] + 340*B*Sin[2*(c + d*x)] + (385*I)*A*Sin[4*(c
 + d*x)] - 200*B*Sin[4*(c + d*x)]))/(15*Sqrt[Sec[c + d*x]]))*(A + B*Tan[c +
 d*x]))/(8*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^(5/2)
)
```

Maple [B] time = 0.484, size = 2876, normalized size = 9.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 1/240/d/a^3*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(645*A*cos(d*x+c
)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))-300*B*cos(d*x+c)^2*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-6
45*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*cos(d*x+c)*arctan(1/(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2))-15*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1
/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c
)+1))^(1/2))*2^(1/2)+15*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)
*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2))*2^(1/2)-300*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ar
ctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*sin(d*x+c)+15*I*B*2^(1/2)*cos(
d*x+c)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c
)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-192*B*cos(
d*x+c)^7*sin(d*x+c)-192*I*B*cos(d*x+c)^8-64*I*B*cos(d*x+c)^6-564*I*B*cos(d*
x+c)^4+820*I*B*cos(d*x+c)^2+1700*A*cos(d*x+c)^2-1164*A*cos(d*x+c)^4-224*A*c
os(d*x+c)^6-160*B*cos(d*x+c)^5*sin(d*x+c)+1260*B*cos(d*x+c)*sin(d*x+c)-668*
B*cos(d*x+c)^3*sin(d*x+c)-645*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan
(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+300*B*(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1
)/sin(d*x+c))-15*I*A*cos(d*x+c)^2*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+
c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2)*2^(1/2)+645*A*cos(d*x+c)^3*(-2*cos(d*x+c)/(cos(
d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-300*B*cos(d
*x+c)^3*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+
c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))+300*B*cos(d*x+c)*(-2*cos(
d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin
```

```
(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))-15*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)
*cos(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)-645*A*(-2*cos(d*x+c)/(cos(d*x+c)+1
))^(1/2)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1
)/sin(d*x+c))*sin(d*x+c)-15*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(
d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))-192*A*cos(d*x+c)^8+15*B*(-2*co
s(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-
I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*2^(1/2)+15*I
*B*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)*(I*cos(d
*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))+15*A*c
os(d*x+c)^3*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/2*2^(1/2)
*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
))+15*A*cos(d*x+c)^2*2^(1/2)*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/
2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)
+1))^(1/2))+645*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*ln(-(-(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*cos(d*x+c)^2*si
n(d*x+c)+300*B*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2))*cos(d*x+c)^2*sin(d*x+c)-645*I*A*ln(-(-(-2*cos(d*x+c
)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-2*cos(d*x+c)
/(cos(d*x+c)+1))^(1/2)-300*I*B*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2
))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)+192*I*A*cos(d*x+c)^7*sin(d*x+c)+320
*I*A*cos(d*x+c)^5*sin(d*x+c)+1348*I*A*sin(d*x+c)*cos(d*x+c)^3-2520*I*A*sin(
d*x+c)*cos(d*x+c)+300*I*B*cos(d*x+c)^3*arctan(1/(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)+645*I*A*cos(d*x+c)^2*ln(-(-
(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(
-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)+300*I*B*cos(d*x+c)^2*arctan(1/(-2*cos(d
*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)-645*I*A*c
os(d*x+c)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-
1)/sin(d*x+c))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)-300*I*B*cos(d*x+c)*arct
an(1/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(
1/2)+645*I*A*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*arctan(1/(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2))*sin(d*x+c)-300*I*B*sin(d*x+c)*ln(-(-(-2*cos(d*x+c)/(c
os(d*x+c)+1))^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-2*cos(d*x+c)/(co
s(d*x+c)+1))^(1/2)+645*I*A*cos(d*x+c)^3*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1)
)^(1/2)*sin(d*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-2*cos(d*x+c)/(cos(d*x+c)+1))
^(1/2)-15*I*B*cos(d*x+c)^3*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-sin(d*x+c))/s
in(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+
1))^(1/2)*2^(1/2)-15*I*B*cos(d*x+c)^2*arctan(1/2*2^(1/2)*(I*cos(d*x+c)-I-si
n(d*x+c))/sin(d*x+c)/(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(
cos(d*x+c)+1))^(1/2)*2^(1/2)-645*I*A*cos(d*x+c)^2*sin(d*x+c)*arctan(1/(-2*c
os(d*x+c)/(cos(d*x+c)+1))^(1/2))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)+300*I
*B*cos(d*x+c)^2*sin(d*x+c)*ln(-(-(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2)*sin(d
*x+c)+cos(d*x+c)-1)/sin(d*x+c))*(-2*cos(d*x+c)/(cos(d*x+c)+1))^(1/2))/(-1+c
os(d*x+c)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.494, size = 2677, normalized size = 8.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] -1/240*(2*sqrt(2)*((773*A + 403*I*B)*e^(10*I*d*x + 10*I*c) - 6*(97*A + 42*I
*B)*e^(8*I*d*x + 8*I*c) - (931*A + 431*I*B)*e^(6*I*d*x + 6*I*c) + 3*(153*A
+ 83*I*B)*e^(4*I*d*x + 4*I*c) + 2*(19*A + 14*I*B)*e^(2*I*d*x + 2*I*c) + 3*A
 + 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 30*sqrt(1/2)*
(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d
*x + 6*I*c))*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*log((2*I*sqrt(1/2)*a^3*d
*sqrt((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A
+ B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*
d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 30*sqrt(1/2)*(a^3*d*e^(10*I*d
*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqr
t((A^2 - 2*I*A*B - B^2)/(a^5*d^2))*log((-2*I*sqrt(1/2)*a^3*d*sqrt((A^2 - 2*
I*A*B - B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x
 + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(
-I*d*x - I*c)/(4*I*A + 4*B)) - 15*(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^
(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((1849*A^2 + 1720*I*A*B
- 400*B^2)/(a^5*d^2))*log(1/4*(4*sqrt(2)*((7568*I*A - 3520*B)*e^(2*I*d*x +
2*I*c) + 7568*I*A - 3520*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*
c) + (1056*I*a^3*d*e^(2*I*d*x + 2*I*c) + 352*I*a^3*d)*sqrt((1849*A^2 + 1720
*I*A*B - 400*B^2)/(a^5*d^2)))/((-21801*I*A + 10140*B)*e^(2*I*d*x + 2*I*c) +
```

```
 21801*I*A - 10140*B)) + 15*(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d
*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((1849*A^2 + 1720*I*A*B - 400*
B^2)/(a^5*d^2))*log(1/4*(4*sqrt(2)*((7568*I*A - 3520*B)*e^(2*I*d*x + 2*I*c)
 + 7568*I*A - 3520*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (
-1056*I*a^3*d*e^(2*I*d*x + 2*I*c) - 352*I*a^3*d)*sqrt((1849*A^2 + 1720*I*A*
B - 400*B^2)/(a^5*d^2)))/((-21801*I*A + 10140*B)*e^(2*I*d*x + 2*I*c) + 2180
1*I*A - 10140*B)))/(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*
c) + a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^3}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^3/(I*a*tan(d*x + c) + a)^(5/2),
 x)
```

3.112 $\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=130

$$\frac{2a(B+iA)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{2a(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d}-\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a(B+iA)\sqrt{\tan}}{d}$$

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*
(I*A + B)*Sqrt[Tan[c + d*x]])/d + (2*a*(A - I*B)*Tan[c + d*x]^(3/2))/(3*d)
+ (2*a*(I*A + B)*Tan[c + d*x]^(5/2))/(5*d) + (((2*I)/7)*a*B*Tan[c + d*x]^(7
/2))/d
```

Rubi [A] time = 0.198178, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3592, 3528, 3533, 205}

$$\frac{2a(B+iA)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{2a(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d}-\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a(B+iA)\sqrt{\tan}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*
(I*A + B)*Sqrt[Tan[c + d*x]])/d + (2*a*(A - I*B)*Tan[c + d*x]^(3/2))/(3*d)
+ (2*a*(I*A + B)*Tan[c + d*x]^(5/2))/(5*d) + (((2*I)/7)*a*B*Tan[c + d*x]^(7
/2))/d
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
```

```
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{\frac{7}{2}}(c+dx)}{7d} + \int \tan^{\frac{5}{2}}(c+dx)(a(A-iB)+a(iA+B$$

$$= \frac{2a(iA+B)\tan^{\frac{5}{2}}(c+dx)}{5d} + \frac{2iaB\tan^{\frac{7}{2}}(c+dx)}{7d} + \int \tan^{\frac{3}{2}}(c$$

$$= \frac{2a(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2a(iA+B)\tan^{\frac{5}{2}}(c+dx)}{5d} + \frac{2ia$$

$$= -\frac{2a(iA+B)\sqrt{\tan(c+dx)}}{d} + \frac{2a(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2a$$

$$= -\frac{2a(iA+B)\sqrt{\tan(c+dx)}}{d} + \frac{2a(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2a$$

$$= -\frac{2\sqrt[4]{-1}a(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{2a(iA+B$$

Mathematica [B] time = 4.27937, size = 280, normalized size = 2.15

$$\frac{\cos^2(c+dx)(\cos(dx)-i\sin(dx))(a+ia\tan(c+dx))(A+B\tan(c+dx))\left(\frac{2e^{-ic}(B+iA)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}} - \frac{1}{105}\right.}{d(A}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]^2*(Cos[d*x] - I*Sin[d*x])*(a + I*a*Tan[c + d*x])*(A + B*Tan[c
 + d*x])*((2*(I*A + B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)
*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*
x)))]])/(E^(I*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]
) - (Cos[c]*Sec[c + d*x]^2*(I + Tan[c])*Sqrt[Tan[c + d*x]]*(84*(A - I*B) +
5*((7*I)*A + 4*B)*Tan[c + d*x] + Cos[2*(c + d*x)]*(126*(A - I*B) + 5*((7*I)
*A + 10*B)*Tan[c + d*x]))/105))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.015, size = 537, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4*I/d*a*A*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c)))*2^(1/2)-2/3*I/d*a*B*tan(d*x+c)^(3/2)+2/5/d*a*B*tan(d*x
+c)^(5/2)+2/7*I*a*B*tan(d*x+c)^(7/2)/d+2/3/d*a*A*tan(d*x+c)^(3/2)+2/5*I/d*a
*A*tan(d*x+c)^(5/2)-2/d*a*B*tan(d*x+c)^(1/2)+1/2*I/d*a*B*arctan(-1+2^(1/2)*
tan(d*x+c)^(1/2))*2^(1/2)+1/4*I/d*a*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2*I/d*a*B*arctan(1
+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1
/2))*2^(1/2)+1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*
B*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c)))*2^(1/2)+1/2*I/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-
2*I/d*a*A*tan(d*x+c)^(1/2)+1/2*I/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2
^(1/2)-1/4/d*a*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(
d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/
2))*2^(1/2)-1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [B] time = 1.77148, size = 275, normalized size = 2.12

$$-\frac{-120i\,Ba\tan\left(dx+c\right)^{\frac{7}{2}}+168\left(-i\,A-B\right)a\tan\left(dx+c\right)^{\frac{5}{2}}-8\left(35\,A-35i\,B\right)a\tan\left(dx+c\right)^{\frac{3}{2}}+840\left(i\,A+B\right)a\sqrt{\tan\left(dx+\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/420*(-120*I*B*a*tan(d*x + c)^(7/2) + 168*(-I*A - B)*a*tan(d*x + c)^(5/2)
 - 8*(35*A - 35*I*B)*a*tan(d*x + c)^(3/2) + 840*(I*A + B)*a*sqrt(tan(d*x +
c)) - 105*(2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt
(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*lo
g(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A + (I
 - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a)/d
```

Fricas [B] time = 2.31532, size = 1326, normalized size = 10.2

$$105\left(de^{(6i\,dx+6i\,c)}+3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\log\left(\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)}{d^2}}\right.}{(i\,A+B)a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/420*(105*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*
x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*
a*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B -
 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 105*(d*e^(6*I*d*x + 6*I*c) + 3*
d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B
- 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*x
+ 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*
a)) + ((-1288*I*A - 1408*B)*a*e^(6*I*d*x + 6*I*c) + (-2632*I*A - 2272*B)*a*
e^(4*I*d*x + 4*I*c) + (-2072*I*A - 2432*B)*a*e^(2*I*d*x + 2*I*c) + (-728*I*
A - 608*B)*a)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))
/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c)
 + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.26835, size = 193, normalized size = 1.48

$$\frac{(i-1)\sqrt{2}(4Aa-4iBa)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{4d}-\frac{-30iBad^6\tan(dx+c)^{\frac{7}{2}}-42iAad^6\tan(dx+c)^{\frac{5}{2}}-4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] (1/4*I - 1/4)*sqrt(2)*(4*A*a - 4*I*B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(
tan(d*x + c)))/d - 1/105*(-30*I*B*a*d^6*tan(d*x + c)^(7/2) - 42*I*A*a*d^6*t
an(d*x + c)^(5/2) - 42*B*a*d^6*tan(d*x + c)^(5/2) - 70*A*a*d^6*tan(d*x + c)
^(3/2) + 70*I*B*a*d^6*tan(d*x + c)^(3/2) + 210*I*A*a*d^6*sqrt(tan(d*x + c))
 + 210*B*a*d^6*sqrt(tan(d*x + c)))/d^7
```

3.113 $\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=105

$$\frac{2a(B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a(A-iB)\sqrt{\tan(c+dx)}}{d}+\frac{2iaB\tan^{\frac{5}{2}}(c+dx)}{5d}$$

```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (2*a*(
A - I*B)*Sqrt[Tan[c + d*x]])/d + (2*a*(I*A + B)*Tan[c + d*x]^(3/2))/(3*d) +
 (((2*I)/5)*a*B*Tan[c + d*x]^(5/2))/d
```

Rubi [A] time = 0.165715, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3592, 3528, 3533, 205}

$$\frac{2a(B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a(A-iB)\sqrt{\tan(c+dx)}}{d}+\frac{2iaB\tan^{\frac{5}{2}}(c+dx)}{5d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```



```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (2*a*(
A - I*B)*Sqrt[Tan[c + d*x]])/d + (2*a*(I*A + B)*Tan[c + d*x]^(3/2))/(3*d) +
 (((2*I)/5)*a*B*Tan[c + d*x]^(5/2))/d
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
```

```
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{\frac{5}{2}}(c+dx)}{5d} + \int \tan^{\frac{3}{2}}(c+dx)(a(A-iB)+a(iA+$$

$$= \frac{2a(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2iaB\tan^{\frac{5}{2}}(c+dx)}{5d} + \int \sqrt{\tan}$$

$$= \frac{2a(A-iB)\sqrt{\tan(c+dx)}}{d} + \frac{2a(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2i}{}$$

$$= \frac{2a(A-iB)\sqrt{\tan(c+dx)}}{d} + \frac{2a(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2i}{}$$

$$= \frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} + \frac{2a(A-iB}{}$$

Mathematica [B] time = 2.66962, size = 266, normalized size = 2.53

$$\frac{\cos^2(c+dx)(\cos(dx)-i\sin(dx))(a+ia\tan(c+dx))(A+B\tan(c+dx))\left(\frac{2e^{-ic}(B+iA)\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} + \frac{1}{15}(\right.}{d(A\cos(c+dx)+}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]^2*(Cos[d*x] - I*Sin[d*x])*((2*(I*A + B)*Sqrt[(-1 + E^((2*I)*(
c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)
))/(1 + E^((2*I)*(c + d*x)))]])/(E^(I*c)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x
))))/(1 + E^((2*I)*(c + d*x)))]) + (Sec[c + d*x]^2*(Cos[c] - I*Sin[c])*(3*(
5*A - (4*I)*B) + 3*(5*A - (6*I)*B)*Cos[2*(c + d*x)] + 5*(I*A + B)*Sin[2*(c
+ d*x)])*Sqrt[Tan[c + d*x]])/15)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]
))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.012, size = 506, normalized size = 4.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4*I/d*a*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))+1/2*I/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2)
)*2^(1/2)+2/3/d*a*B*tan(d*x+c)^(3/2)+2/3*I/d*a*A*tan(d*x+c)^(3/2)+2/d*a*A*t
an(d*x+c)^(1/2)+1/2*I/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2*I/
d*a*B*tan(d*x+c)^(1/2)-1/2*I/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1
/2)-1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*A*2^(1/2)
*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan
(d*x+c)))-1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+2/5*I*a*B*ta
n(d*x+c)^(5/2)/d-1/4*I/d*a*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/2*I/d*a*A*2^(1/2)*arctan(1+
2^(1/2)*tan(d*x+c)^(1/2))-1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(
1/2)-1/4/d*a*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2)
)*2^(1/2)
```

Maxima [B] time = 1.76801, size = 254, normalized size = 2.42

$$-\frac{-24i\,Ba\tan\left(dx+c\right)^{\frac{5}{2}}+40\left(-i\,A-B\right)a\tan\left(dx+c\right)^{\frac{3}{2}}-8\left(15\,A-15i\,B\right)a\sqrt{\tan\left(dx+c\right)}-15\left(2\,\sqrt{2}\left(-\left(i+1\right)\,A+\left(i-1\right)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/60*(-24*I*B*a*tan(d*x + c)^(5/2) + 40*(-I*A - B)*a*tan(d*x + c)^(3/2) -
8*(15*A - 15*I*B)*a*sqrt(tan(d*x + c)) - 15*(2*sqrt(2)*(-(I + 1)*A + (I - 1
)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I
+ 1)*A + (I - 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) +
 sqrt(2)*((I - 1)*A + (I + 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x +
 c) + 1) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c))
+ tan(d*x + c) + 1))*a)/d
```

Fricas [B] time = 2.00713, size = 1160, normalized size = 11.05

$$-\frac{15\left(de^{(4i\,dx+4i\,c)}+2\,de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\log\left(\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{-i\,e^{(2i\,dx}}{e^{(2i\,dx+}}}\right.}{(i\,A+B)a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/60*(15*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-4*I*
A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (I
*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*sq
rt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2
*I*c)/((I*A + B)*a)) - 15*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c)
+ d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*e^(2*I*d
*x + 2*I*c) + (-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-4*I*A^2 - 8*A*B + 4*I
*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))
)*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 8*((20*A - 23*I*B)*a*e^(4*I*d*x + 4
*I*c) + 6*(5*A - 4*I*B)*a*e^(2*I*d*x + 2*I*c) + (10*A - 13*I*B)*a)*sqrt((-I
*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(4*I*d*x + 4*I*c
) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.21819, size = 151, normalized size = 1.44

$$\frac{(i-1)\sqrt{2}(iAa+Ba)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d}-\frac{-6iBad^4\tan(dx+c)^{\frac{5}{2}}-10iAad^4\tan(dx+c)^{\frac{3}{2}}-10Bad}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] (I - 1)*sqrt(2)*(I*A*a + B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x +
c)))/d - 1/15*(-6*I*B*a*d^4*tan(d*x + c)^(5/2) - 10*I*A*a*d^4*tan(d*x + c)^
(3/2) - 10*B*a*d^4*tan(d*x + c)^(3/2) - 30*A*a*d^4*sqrt(tan(d*x + c)) + 30*
I*B*a*d^4*sqrt(tan(d*x + c)))/d^5
```

3.114 $\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=80

$$\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a(B+iA)\sqrt{\tan(c+dx)}}{d}+\frac{2iaB\tan^{\frac{3}{2}}(c+dx)}{3d}$$

```
[Out] (2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (2*a*(
I*A + B)*Sqrt[Tan[c + d*x]])/d + (((2*I)/3)*a*B*Tan[c + d*x]^(3/2))/d
```

Rubi [A] time = 0.120946, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3592, 3528, 3533, 205}

$$\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a(B+iA)\sqrt{\tan(c+dx)}}{d}+\frac{2iaB\tan^{\frac{3}{2}}(c+dx)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (2*a*(
I*A + B)*Sqrt[Tan[c + d*x]])/d + (((2*I)/3)*a*B*Tan[c + d*x]^(3/2))/d
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{\frac{3}{2}}(c+dx)}{3d} + \int \sqrt{\tan(c+dx)}(a(A-iB)+a(iA+$$

$$= \frac{2a(iA+B)\sqrt{\tan(c+dx)}}{d} + \frac{2iaB\tan^{\frac{3}{2}}(c+dx)}{3d} + \int \frac{-a(iA$$

$$= \frac{2a(iA+B)\sqrt{\tan(c+dx)}}{d} + \frac{2iaB\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{\left(2a^2(iA\right.}{}$$

$$= \frac{2\sqrt[4]{-1}a(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} + \frac{2a(iA+B)}{}$$

Mathematica [A] time = 1.80183, size = 112, normalized size = 1.4

$$\frac{2a\sqrt{\tan(c+dx)}\left(\sqrt{i\tan(c+dx)}(3iA+iB\tan(c+dx)+3B)+(-3B-3iA)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)\right)}{3d\sqrt{i\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*a*Sqrt[Tan[c + d*x]]*(((-3*I)*A - 3*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c +
d*x)))/(1 + E^((2*I)*(c + d*x)))]] + Sqrt[I*Tan[c + d*x]]*((3*I)*A + 3*B +
I*B*Tan[c + d*x])))/(3*d*Sqrt[I*Tan[c + d*x]])
```

Maple [B] time = 0.011, size = 475, normalized size = 5.9

$$\frac{\frac{2i}{3}aB}{d}(\tan(dx+c))^{\frac{3}{2}}+\frac{2iaA}{d}\sqrt{\tan(dx+c)}+2\frac{aB\sqrt{\tan(dx+c)}}{d}-\frac{\frac{i}{2}aA\sqrt{2}}{d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{\frac{i}{4}aA\sqrt{2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/3*I*a*B*tan(d*x+c)^(3/2)/d+2*I/d*a*A*tan(d*x+c)^(1/2)+2/d*a*B*tan(d*x+c)^
(1/2)-1/2*I/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4*I/d*a*A*2
^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))-1/2*I/d*a*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2/
d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*B*ln((1+2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2
)-1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4*I/d*a*B*ln((1-2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
*2^(1/2)-1/2*I/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2*I/d*a*
B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+1/4/d*a*A*ln((1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2
/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a*A*arctan(1+2^(1/
2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [B] time = 1.86613, size = 230, normalized size = 2.88

$$-\frac{-8iBa\tan(dx+c)^{\frac{3}{2}}+24(-iA-B)a\sqrt{\tan(dx+c)}+3\left(2\sqrt{2}((i-1)A+(i+1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/12*(-8*I*B*a*tan(d*x + c)^(3/2) + 24*(-I*A - B)*a*sqrt(tan(d*x + c)) + 3
*(2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(ta
n(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt
(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(sqrt(2)
*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*
log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a)/d
```

Fricas [B] time = 1.83584, size = 977, normalized size = 12.21

$$-\frac{3\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\log\left(\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}\right)e^{(-2i\,dx-2i\,c)}}{(i\,A+B)a}\right)-3\,(\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/12*(3*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d
^2)*log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) + d)*sq
rt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 3*(d*e^(2*
I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log((2*(A - I
*B)*a*e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A
*B - 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) + 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - ((24*I*A + 32*B)*a*e^(2*I*d
*x + 2*I*c) + (24*I*A + 16*B)*a)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) + 1)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int A\sqrt{\tan(c+dx)}\,dx+\int B\tan^{\frac{3}{2}}(c+dx)\,dx+\int iA\tan^{\frac{3}{2}}(c+dx)\,dx+\int iB\tan^{\frac{5}{2}}(c+dx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(Integral(A*sqrt(tan(c + d*x)), x) + Integral(B*tan(c + d*x)**(3/2), x) +
 Integral(I*A*tan(c + d*x)**(3/2), x) + Integral(I*B*tan(c + d*x)**(5/2), x
))
```

Giac [A] time = 1.20468, size = 112, normalized size = 1.4

$$-\frac{(i-1)\sqrt{2}(4\,Aa-4i\,Ba)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,d}-\frac{-2i\,Bad^{2}\tan\left(dx+c\right)^{\frac{3}{2}}-6i\,Aad^{2}\sqrt{\tan\left(dx+c\right)}-6}{3\,d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] -(1/4*I - 1/4)*sqrt(2)*(4*A*a - 4*I*B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt
(tan(d*x + c)))/d - 1/3*(-2*I*B*a*d^2*tan(d*x + c)^(3/2) - 6*I*A*a*d^2*sqrt
(tan(d*x + c)) - 6*B*a*d^2*sqrt(tan(d*x + c)))/d^3
```

3.115 $\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=55

$$\frac{2iaB\sqrt{\tan(c+dx)}}{d}-\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}$$

```
[Out] (-2*(-1)^(1/4)*a*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + ((2*I
)*a*B*Sqrt[Tan[c + d*x]])/d
```

Rubi [A] time = 0.0903108, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {3592, 3533, 205}

$$\frac{2iaB\sqrt{\tan(c+dx)}}{d}-\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```

```
[Out] (-2*(-1)^(1/4)*a*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + ((2*I
)*a*B*Sqrt[Tan[c + d*x]])/d
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{2iaB\sqrt{\tan(c+dx)}}{d}+\int \frac{a(A-iB)+a(iA+B)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx$$

$$= \frac{2iaB\sqrt{\tan(c+dx)}}{d}+\frac{\left(2a^2(A-iB)^2\right)\operatorname{Subst}\left(\int \frac{1}{a(A-iB)-a(iA+B)x^2}\,dx,x,\sqrt{\ldots}\right.}{d}$$

$$= -\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2iaB\sqrt{\tan(c+dx)}}{d}$$

Mathematica [A] time = 1.52984, size = 92, normalized size = 1.67

$$\frac{2a\sqrt{\tan(c+dx)}\left((A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)+iB\sqrt{i\tan(c+dx)}\right)}{d\sqrt{i\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
x]
```

```
[Out] (2*a*((A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c +
d*x)))]] + I*B*Sqrt[I*Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/(d*Sqrt[I*Tan[c +
d*x]])
```

Maple [B] time = 0.012, size = 444, normalized size = 8.1

$$\frac{2\,iaB}{d}\sqrt{\tan(dx+c)}-\frac{\frac{i}{2}aB\sqrt{2}}{d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{\frac{i}{2}aB\sqrt{2}}{d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{\frac{i}{4}aB\sqrt{2}}{d}\ln\left(\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 2*I*a*B*tan(d*x+c)^(1/2)/d-1/2*I/d*a*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^
(1/2))-1/2*I/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4*I/d*a*B*
2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c)))+1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d
*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*A*2^(1/2)*ln((1+2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
+1/4*I/d*a*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2*I/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2)
)*2^(1/2)+1/2*I/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*B
*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))+1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/
d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [B] time = 1.80595, size = 204, normalized size = 3.71

$$-\frac{-8i\,Ba\sqrt{\tan\left(dx+c\right)} + \left(2\,\sqrt{2}\left(-\left(i+1\right)\,A + \left(i-1\right)\,B\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2} + 2\,\sqrt{\tan\left(dx+c\right)}\right)\right) + 2\,\sqrt{2}\left(-\left(i+1\right)\,A + \left(i-1\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] -1/4*(-8*I*B*a*sqrt(tan(d*x + c)) + (2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arc
tan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A +
 (I - 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)
*((I - 1)*A + (I + 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)
 - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*
x + c) + 1))*a)/d
```

Fricas [B] time = 1.75417, size = 811, normalized size = 14.75

$$\frac{8i\,Ba\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}} + \sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}d\log\left(\frac{\left(2\left(A-i\,B\right)ae^{(2i\,dx+2i\,c)}+\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}\right)e^{(-2i\,dx-2i\,c)}}{(i\,A+B)a}\right.}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] 1/4*(8*I*B*a*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)) +
 sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*d*log((2*(A - I*B)*a*e^(2*I*d*x
 + 2*I*c) + (I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^
2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e
^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/
d^2)*d*log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (-I*d*e^(2*I*d*x + 2*I*c) -
 I*d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int \frac{A}{\sqrt{\tan(c+dx)}}\,dx + \int B\sqrt{\tan(c+dx)}\,dx + \int iA\sqrt{\tan(c+dx)}\,dx + \int iB\tan^{\frac{3}{2}}(c+dx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] a*(Integral(A/sqrt(tan(c + d*x)), x) + Integral(B*sqrt(tan(c + d*x)), x) +
Integral(I*A*sqrt(tan(c + d*x)), x) + Integral(I*B*tan(c + d*x)**(3/2), x))
```

Giac [A] time = 1.24972, size = 63, normalized size = 1.15

$$\frac{(i-1)\sqrt{2}(-iAa-Ba)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d}+\frac{2iBa\sqrt{\tan(dx+c)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] (I - 1)*sqrt(2)*(-I*A*a - B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x +
 c)))/d + 2*I*B*a*sqrt(tan(d*x + c))/d
```

3.116 $\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=53

$$-\frac{2aA}{d\sqrt{\tan(c+dx)}}-\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}$$

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*
A)/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.0929169, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {3591, 3533, 205}

$$-\frac{2aA}{d\sqrt{\tan(c+dx)}}-\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*
A)/(d*Sqrt[Tan[c + d*x]])
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA}{d\sqrt{\tan(c+dx)}} + \int \frac{a(iA+B)-a(A-iB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx$$

$$= -\frac{2aA}{d\sqrt{\tan(c+dx)}} + \frac{\left(2a^2(iA+B)^2\right)\text{Subst}\left(\int \frac{1}{a(iA+B)+a(A-iB)x^2}\,dx, x, \sqrt{\text{t}$$

$$= -\frac{2\sqrt[4]{-1}a(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{2aA}{d\sqrt{\tan(c+dx)}}$$

Mathematica [A] time = 2.35872, size = 76, normalized size = 1.43

$$\frac{2a\left(-A+(A-iB)\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)\right)}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
x]
```

```
[Out] (2*a*(-A + (A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]]*Sqrt[I*Tan[c + d*x]]))/(d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.013, size = 443, normalized size = 8.4

$$-2\,\frac{Aa}{d\sqrt{\tan(dx+c)}} + \frac{\frac{i}{2}aA\sqrt{2}}{d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right) + \frac{\frac{i}{2}aA\sqrt{2}}{d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right) + \frac{\frac{i}{4}aA\sqrt{2}}{d}\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] -2*a*A/d/tan(d*x+c)^(1/2)+1/2*I/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^
(1/2)+1/2*I/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4*I/d*a*A*l
n((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*2^(1/2)+1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*
a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*B*ln((1+2^(1/2)*tan
(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+
1/4*I/d*a*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2*I/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))
*2^(1/2)+1/2*I/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*A*
ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c)))*2^(1/2)-1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d
*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [B] time = 1.86702, size = 204, normalized size = 3.85

$$\left(2\sqrt{2}((i-1)\ A+(i+1)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)+2\sqrt{2}((i-1)\ A+(i+1)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorithm
="maxima")
```

```
[Out] 1/4*((2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqr
t(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(2)*(
sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(sqr
t(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A + (I - 1)
*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a - 8*A*a/sqrt(tan
(d*x + c)))/d
```

Fricas [B] time = 1.80218, size = 944, normalized size = 17.81

$$\left(de^{(2i\,dx+2i\,c)}-d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\log\left(\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}\right)e^{(-2i\,dx-2i\,c)}}{(i\,A+B)a}\right)-\left(de^{(2i\,d\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorithm
="fricas")
```

```
[Out] 1/4*((d*e^(2*I*d*x + 2*I*c) - d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*
log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((
4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2
*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - (d*e^(2*I*d*x
+ 2*I*c) - d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*
e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B - 4
*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) + (-8*I*A*a*e^(2*I*d*x + 2*I*c) - 8
*I*A*a)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^
(2*I*d*x + 2*I*c) - d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int \frac{A}{\tan^{\frac{3}{2}}(c+dx)}\,dx + \int \frac{B}{\sqrt{\tan(c+dx)}}\,dx + \int \frac{iA}{\sqrt{\tan(c+dx)}}\,dx + \int iB\sqrt{\tan(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] a*(Integral(A/tan(c + d*x)**(3/2), x) + Integral(B/sqrt(tan(c + d*x)), x) +
 Integral(I*A/sqrt(tan(c + d*x)), x) + Integral(I*B*sqrt(tan(c + d*x)), x))
```

Giac [A] time = 1.22885, size = 63, normalized size = 1.19

$$\frac{(i+1)\sqrt{2}(4i\,Aa+4\,Ba)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{4\,d}-\frac{2\,Aa}{d\sqrt{\tan(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorithm
="giac")
```

```
[Out] (1/4*I + 1/4)*sqrt(2)*(4*I*A*a + 4*B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(
tan(d*x + c)))/d - 2*A*a/(d*sqrt(tan(d*x + c)))
```

3.117 $\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=78

$$\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a(B+iA)}{d\sqrt{\tan(c+dx)}}-\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*A
)/(3*d*Tan[c + d*x]^(3/2)) - (2*a*(I*A + B))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.126943, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3591, 3529, 3533, 205}

$$\frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a(B+iA)}{d\sqrt{\tan(c+dx)}}-\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```

```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*A
)/(3*d*Tan[c + d*x]^(3/2)) - (2*a*(I*A + B))/(d*Sqrt[Tan[c + d*x]])
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
```

```
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} + \int \frac{a(iA+B)-a(A-iB)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$
$$= -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2a(iA+B)}{d\sqrt{\tan(c+dx)}} + \int \frac{-a(A-iB)-a(iA+B)\tan(}{\sqrt{\tan(c+dx)}}$$
$$= -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2a(iA+B)}{d\sqrt{\tan(c+dx)}} + \frac{\left(2a^2(A-iB)^2\right)\text{Subst}\left(\int \frac{}{-a(A-i}\right.}{}$$
$$= \frac{2\sqrt[4]{-1}a(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2}{d\sqrt{}}$$

Mathematica [A] time = 1.87451, size = 94, normalized size = 1.21

$$-\frac{2a\left(-3i(A-iB)\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)+A\cot(c+dx)+3iA+3B\right)}{3d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),
x]
```

```
[Out] (-2*a*((3*I)*A + 3*B + A*Cot[c + d*x] - (3*I)*(A - I*B)*ArcTanh[Sqrt[(-1 +
E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]]))/(3*
```

```
d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.015, size = 474, normalized size = 6.1

$$-\frac{2\,Aa}{3\,d}\left(\tan\left(dx+c\right)\right)^{-\frac{3}{2}}-\frac{2\,iaA}{d}\frac{1}{\sqrt{\tan\left(dx+c\right)}}-2\,\frac{aB}{d\sqrt{\tan\left(dx+c\right)}}+\frac{\frac{i}{2}aB\sqrt{2}}{d}\arctan\left(-1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)+\frac{\frac{i}{4}aB\sqrt{2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -2/3*a*A/d/tan(d*x+c)^(3/2)-2*I/d*a/tan(d*x+c)^(1/2)*A-2/d*a/tan(d*x+c)^(1/
2)*B+1/2*I/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4*I/d*a*B*2^
(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))+1/2*I/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d
*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*A*2^(1/2)*ln((1+2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
-1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4*I/d*a*A*2^(1/2)*l
n((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))-1/2*I/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2*I/d*a*A
*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/4/d*a*B*2^(1/2)*ln((1-2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/2/
d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a*B*arctan(1+2^(1/2
)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [B] time = 1.80105, size = 231, normalized size = 2.96

$$\frac{3\left(2\,\sqrt{2}(-(i+1)\;A+(i-1)\;B)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)+2\,\sqrt{2}(-(i+1)\;A+(i-1)\;B)\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="maxima")
```

```
[Out] 1/12*(3*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2
*sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*sqrt
(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)*log
```

```
(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A + (I +
 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a + 8*(3*(-I*A
- B)*a*tan(d*x + c) - A*a)/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.90797, size = 1135, normalized size = 14.55

$$-\frac{3\left(de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\log\left(\left(\frac{2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{-i\,e^{(2i\,dx+2}}{e^{(2i\,dx+2i}}}}{(i\,A+B)a}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="fricas")
```

```
[Out] -1/12*(3*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-4*I*A
^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (I*
d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*
I*c)/((I*A + B)*a)) - 3*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) +
d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*e^(2*I*d*x
 + 2*I*c) + (-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B
^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*
e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 8*((4*A - 3*I*B)*a*e^(4*I*d*x + 4*I*c
) + 2*A*a*e^(2*I*d*x + 2*I*c) - (2*A - 3*I*B)*a)*sqrt((-I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x
 + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int\frac{A}{\tan^{\frac{5}{2}}(c+dx)}\,dx+\int\frac{B}{\tan^{\frac{3}{2}}(c+dx)}\,dx+\int\frac{iA}{\tan^{\frac{3}{2}}(c+dx)}\,dx+\int\frac{iB}{\sqrt{\tan(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] a*(Integral(A/tan(c + d*x)**(5/2), x) + Integral(B/tan(c + d*x)**(3/2), x)
+ Integral(I*A/tan(c + d*x)**(3/2), x) + Integral(I*B/sqrt(tan(c + d*x)), x
))
```

Giac [A] time = 1.27302, size = 95, normalized size = 1.22

$$-\frac{(i-1)\sqrt{2}(-iAa-Ba)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{d}-\frac{6i\,Aa\tan\left(dx+c\right)+6\,Ba\tan\left(dx+c\right)+2\,Aa}{3\,d\tan\left(dx+c\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="giac")
```

```
[Out] -(I - 1)*sqrt(2)*(-I*A*a - B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
+ c)))/d - 1/3*(6*I*A*a*tan(d*x + c) + 6*B*a*tan(d*x + c) + 2*A*a)/(d*tan(d
*x + c)^(3/2))
```

3.118 $\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=103

$$\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a(B+iA)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{2a(A-iB)}{d\sqrt{\tan(c+dx)}}-\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)}$$

```
[Out] (2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*A
)/(5*d*Tan[c + d*x]^(5/2)) - (2*a*(I*A + B))/(3*d*Tan[c + d*x]^(3/2)) + (2*
a*(A - I*B))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.154533, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3591, 3529, 3533, 205}

$$\frac{2\sqrt[4]{-1}a(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a(B+iA)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{2a(A-iB)}{d\sqrt{\tan(c+dx)}}-\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] (2*(-1)^(1/4)*a*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a*A
)/(5*d*Tan[c + d*x]^(5/2)) - (2*a*(I*A + B))/(3*d*Tan[c + d*x]^(3/2)) + (2*
a*(A - I*B))/(d*Sqrt[Tan[c + d*x]])
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
```

```
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} + \int \frac{a(iA+B)-a(A-iB)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)}\,dx$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(iA+B)}{3d\tan^{\frac{3}{2}}(c+dx)} + \int \frac{-a(A-iB)-a(iA+B)\tan(}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(iA+B)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a(A-iB)}{d\sqrt{\tan(c+dx)}} + \int \frac{-a(iA+B}{}$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(iA+B)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a(A-iB)}{d\sqrt{\tan(c+dx)}} + \frac{\left(2a^2(iA+B)^2\right.}{}$$

$$= \frac{2\sqrt[4]{-1}a(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a}{3d\,\mathrm{ta}}$$

Mathematica [B] time = 3.77974, size = 265, normalized size = 2.57

$$\frac{\cos^2(c+dx)(\cos(dx)-i\sin(dx))(a+ia\tan(c+dx))(A+B\tan(c+dx))\left(-\frac{2ie^{-ic}(A-iB)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}} - \right.}{d(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),
x]
```

```
[Out] (Cos[c + d*x]^2*(Cos[d*x] - I*Sin[d*x])*(((-2*I)*(A - I*B)*Sqrt[((-I)*(-1 +
 E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*
I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]])/(E^(I*c)*Sqrt[(-1 + E^((2*I)*(c
 + d*x)))/(1 + E^((2*I)*(c + d*x)))]) - (Csc[c + d*x]^2*(Cos[c] - I*Sin[c])
*(-12*A + (15*I)*B + 3*(6*A - (5*I)*B)*Cos[2*(c + d*x)] + 5*(I*A + B)*Sin[2
*(c + d*x)]))/(15*Sqrt[Tan[c + d*x]]))*(a + I*a*Tan[c + d*x])*(A + B*Tan[c
+ d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.014, size = 505, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -2/5*a*A/d/tan(d*x+c)^(5/2)-1/4*I/d*a*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+2*a*A/d/tan(d*x+c)
^(1/2)-1/4*I/d*a*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/3/d*a/tan(d*x+c)^(3/2)*B-1/2*I/d*a*B*
arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2*I/d*a/tan(d*x+c)^(1/2)*B-1/2*
I/d*a*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/4/d*a*B*ln((1+2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/
2)-1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a*B*arctan(-1
+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/3*I/d*a/tan(d*x+c)^(3/2)*A-1/2*I/d*a*A
*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2*I/d*a*A*2^(1/2)*arctan(1+2
^(1/2)*tan(d*x+c)^(1/2))+1/4/d*a*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2/d*a*A*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*2^(1/2)
```

Maxima [B] time = 1.89448, size = 254, normalized size = 2.47

$$-\frac{15\left(2\sqrt{2}((i-1)\ A+(i+1)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)+2\sqrt{2}((i-1)\ A+(i+1)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="maxima")
```

```
[Out] -1/60*(15*(2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt
(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*lo
g(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A + (I
 - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a - 8*((15*A
- 15*I*B)*a*tan(d*x + c)^2 + 5*(-I*A - B)*a*tan(d*x + c) - 3*A*a)/tan(d*x +
 c)^(5/2))/d
```

Fricas [B] time = 2.03859, size = 1305, normalized size = 12.67

$$-\frac{15\left(de^{(6i\,dx+6i\,c)} - 3\,de^{(4i\,dx+4i\,c)} + 3\,de^{(2i\,dx+2i\,c)} - d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\log\left(\left(\frac{2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)}{d^2}}}{(i\,A+B)a}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="fricas")
```

```
[Out] -1/60*(15*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x
 + 2*I*c) - d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a
*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B -
4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 15*(d*e^(6*I*d*x + 6*I*c) - 3*d*
e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*sqrt((4*I*A^2 + 8*A*B -
4*I*B^2)*a^2/d^2)*log((2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*x +
2*I*c) + d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqrt((-I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)
) - ((184*I*A + 160*B)*a*e^(6*I*d*x + 6*I*c) + (-8*I*A - 80*B)*a*e^(4*I*d*x
 + 4*I*c) + (-88*I*A - 160*B)*a*e^(2*I*d*x + 2*I*c) + (104*I*A + 80*B)*a)*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(6*I*d*x
+ 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.24627, size = 127, normalized size = 1.23

$$\frac{(i+1)\sqrt{2}(-4i\,Aa-4\,Ba)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,d}+\frac{30\,Aa\tan\left(dx+c\right)^{2}-30i\,Ba\tan\left(dx+c\right)^{2}-10i\,Aa}{15\,d\tan\left(dx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="giac")
```

```
[Out] (1/4*I + 1/4)*sqrt(2)*(-4*I*A*a - 4*B*a)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt
(tan(d*x + c)))/d + 1/15*(30*A*a*tan(d*x + c)^2 - 30*I*B*a*tan(d*x + c)^2 -
 10*I*A*a*tan(d*x + c) - 10*B*a*tan(d*x + c) - 6*A*a)/(d*tan(d*x + c)^(5/2)
)
```

3.119 $\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=183

$$-\frac{2a^2(9A-11iB)\tan^{\frac{7}{2}}(c+dx)}{63d}+\frac{4a^2(B+iA)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{4a^2(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d}-\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/}\right.}{d}$$

```
[Out] (-4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (4*
a^2*(I*A + B)*Sqrt[Tan[c + d*x]])/d + (4*a^2*(A - I*B)*Tan[c + d*x]^(3/2))/
(3*d) + (4*a^2*(I*A + B)*Tan[c + d*x]^(5/2))/(5*d) - (2*a^2*(9*A - (11*I)*B
)*Tan[c + d*x]^(7/2))/(63*d) + (((2*I)/9)*B*Tan[c + d*x]^(7/2)*(a^2 + I*a^2
*Tan[c + d*x]))/d
```

Rubi [A] time = 0.3568, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3594, 3592, 3528, 3533, 205}

$$-\frac{2a^2(9A-11iB)\tan^{\frac{7}{2}}(c+dx)}{63d}+\frac{4a^2(B+iA)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{4a^2(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d}-\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (4*
a^2*(I*A + B)*Sqrt[Tan[c + d*x]])/d + (4*a^2*(A - I*B)*Tan[c + d*x]^(3/2))/
(3*d) + (4*a^2*(I*A + B)*Tan[c + d*x]^(5/2))/(5*d) - (2*a^2*(9*A - (11*I)*B
)*Tan[c + d*x]^(7/2))/(63*d) + (((2*I)/9)*B*Tan[c + d*x]^(7/2)*(a^2 + I*a^2
*Tan[c + d*x]))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{2iB\tan^{\frac{7}{2}}(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{9d} + \frac{2}{9}\int \tan^{\frac{5}{2}}(c+$$

$$= -\frac{2a^2(9A-11iB)\tan^{\frac{7}{2}}(c+dx)}{63d} + \frac{2iB\tan^{\frac{7}{2}}(c+dx)\left(a^2+i\right.}{9d}$$

$$= \frac{4a^2(iA+B)\tan^{\frac{5}{2}}(c+dx)}{5d} - \frac{2a^2(9A-11iB)\tan^{\frac{7}{2}}(c+dx)}{63d}$$

$$= \frac{4a^2(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{4a^2(iA+B)\tan^{\frac{5}{2}}(c+dx)}{5d} -$$

$$= -\frac{4a^2(iA+B)\sqrt{\tan(c+dx)}}{d} + \frac{4a^2(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d} +$$

$$= -\frac{4a^2(iA+B)\sqrt{\tan(c+dx)}}{d} + \frac{4a^2(A-iB)\tan^{\frac{3}{2}}(c+dx)}{3d} +$$

$$= -\frac{4\sqrt[4]{-1}a^2(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{4a^2(iA$$

Mathematica [A] time = 6.12168, size = 315, normalized size = 1.72

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(\frac{4e^{-2ic}(B+iA)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}} - \frac{i(\cos(2c)-i\sin(2c))\sqrt{\tan(c+\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Cos[c + d*x]^3*((4*(I*A + B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E
^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]])/(E^((2*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(
c + d*x)))]) - (I/1260)*Sec[c + d*x]^4*(Cos[2*c] - I*Sin[2*c])*(21*(84*A -
(89*I)*B) + 140*(18*A - (17*I)*B)*Cos[2*(c + d*x)] + (756*A - (791*I)*B)*Co
s[4*(c + d*x)] + 30*((11*I)*A + 8*B)*Sin[2*(c + d*x)] + 15*((17*I)*A + 20*B
)*Sin[4*(c + d*x)])*Sqrt[Tan[c + d*x]])*(a + I*a*Tan[c + d*x])^2*(A + B*Tan
[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.015, size = 607, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2/9/d*a^2*B*tan(d*x+c)^(9/2)+1/2*I/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+
tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/7/d*a^2*A*ta
n(d*x+c)^(7/2)+I/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+4/5/d*a
^2*B*tan(d*x+c)^(5/2)+I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+
4/3/d*a^2*A*tan(d*x+c)^(3/2)+4/7*I/d*a^2*B*tan(d*x+c)^(7/2)-4/d*a^2*B*tan(d
*x+c)^(1/2)+4/5*I/d*a^2*A*tan(d*x+c)^(5/2)-4/3*I/d*a^2*B*tan(d*x+c)^(3/2)+1
/2*I/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))+1/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*2^(1/2)+1/2/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+1/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*ta
n(d*x+c)^(1/2))+I/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+I/d*a
^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-4*I/d*a^2*A*tan(d*x+c)^(1/
2)-1/2/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2
))*2^(1/2)-1/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))
```

Maxima [A] time = 1.84791, size = 316, normalized size = 1.73

$$-\frac{140\,Ba^2\tan\left(dx+c\right)^{\frac{9}{2}}+4\,(45\,A-90i\,B)a^2\tan\left(dx+c\right)^{\frac{7}{2}}+504\,(-i\,A-B)a^2\tan\left(dx+c\right)^{\frac{5}{2}}-4\,(210\,A-210i\,B)a^2\tan\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/630*(140*B*a^2*tan(d*x + c)^(9/2) + 4*(45*A - 90*I*B)*a^2*tan(d*x + c)^(
7/2) + 504*(-I*A - B)*a^2*tan(d*x + c)^(5/2) - 4*(210*A - 210*I*B)*a^2*tan(
d*x + c)^(3/2) + 2520*(I*A + B)*a^2*sqrt(tan(d*x + c)) - 315*(2*sqrt(2)*((I
 - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) +
 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(ta
```

```
n(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(sqrt(2)*sqrt(tan(d*x +
 c)) + tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(-sqrt(2)*sq
rt(tan(d*x + c)) + tan(d*x + c) + 1))*a^2)/d
```

Fricas [B] time = 2.65759, size = 1555, normalized size = 8.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/1260*(315*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(8*I*d*x + 8*
I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x +
 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((16*I*A^2 + 32
*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B
)*a^2)) - 315*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(8*I*d*x +
8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x
 + 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 +
32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2
*B)*a^2)) + ((-8088*I*A - 8728*B)*a^2*e^(8*I*d*x + 8*I*c) + (-22800*I*A - 2
0960*B)*a^2*e^(6*I*d*x + 6*I*c) + (-28224*I*A - 29904*B)*a^2*e^(4*I*d*x + 4
*I*c) + (-17520*I*A - 17120*B)*a^2*e^(2*I*d*x + 2*I*c) + (-4008*I*A - 3928*
B)*a^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^
(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d
*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.28495, size = 263, normalized size = 1.44

$$\frac{(i-1)\sqrt{2}\left(8Aa^2-8iBa^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4d}-\frac{70\,Ba^2d^8\tan\left(dx+c\right)^{\frac{9}{2}}+90\,Aa^2d^8\tan\left(dx+c\right)^{\frac{7}{2}}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] (1/4*I - 1/4)*sqrt(2)*(8*A*a^2 - 8*I*B*a^2)*arctan(-(1/2*I - 1/2)*sqrt(2)*s
qrt(tan(d*x + c)))/d - 1/315*(70*B*a^2*d^8*tan(d*x + c)^(9/2) + 90*A*a^2*d^
8*tan(d*x + c)^(7/2) - 180*I*B*a^2*d^8*tan(d*x + c)^(7/2) - 252*I*A*a^2*d^8
*tan(d*x + c)^(5/2) - 252*B*a^2*d^8*tan(d*x + c)^(5/2) - 420*A*a^2*d^8*tan(
d*x + c)^(3/2) + 420*I*B*a^2*d^8*tan(d*x + c)^(3/2) + 1260*I*A*a^2*d^8*sqrt
(tan(d*x + c)) + 1260*B*a^2*d^8*sqrt(tan(d*x + c)))/d^9
```

3.120 $\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=156

$$-\frac{2a^2(7A-9iB)\tan^{\frac{5}{2}}(c+dx)}{35d}+\frac{4a^2(B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(A-iB)}{}$$

```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (4*a
^2*(A - I*B)*Sqrt[Tan[c + d*x]])/d + (4*a^2*(I*A + B)*Tan[c + d*x]^(3/2))/(
3*d) - (2*a^2*(7*A - (9*I)*B)*Tan[c + d*x]^(5/2))/(35*d) + (((2*I)/7)*B*Tan
[c + d*x]^(5/2)*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rubi [A] time = 0.310372, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3594, 3592, 3528, 3533, 205}

$$-\frac{2a^2(7A-9iB)\tan^{\frac{5}{2}}(c+dx)}{35d}+\frac{4a^2(B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(A-iB)}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (4*a
^2*(A - I*B)*Sqrt[Tan[c + d*x]])/d + (4*a^2*(I*A + B)*Tan[c + d*x]^(3/2))/(
3*d) - (2*a^2*(7*A - (9*I)*B)*Tan[c + d*x]^(5/2))/(35*d) + (((2*I)/7)*B*Tan
[c + d*x]^(5/2)*(a^2 + I*a^2*Tan[c + d*x]))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{2iB\tan^{\frac{5}{2}}(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{7d} + \frac{2}{7}\int \tan^{\frac{3}{2}}(c+$$

$$= -\frac{2a^2(7A-9iB)\tan^{\frac{5}{2}}(c+dx)}{35d} + \frac{2iB\tan^{\frac{5}{2}}(c+dx)\left(a^2+ia\right.}{7d}$$

$$= \frac{4a^2(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{2a^2(7A-9iB)\tan^{\frac{5}{2}}(c+dx)}{35d}$$

$$= \frac{4a^2(A-iB)\sqrt{\tan(c+dx)}}{d} + \frac{4a^2(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} -$$

$$= \frac{4a^2(A-iB)\sqrt{\tan(c+dx)}}{d} + \frac{4a^2(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} -$$

$$= \frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} + \frac{4a^2(A-i}{}$$

Mathematica [A] time = 5.09396, size = 307, normalized size = 1.97

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(\frac{4e^{-2ic}(B+iA)\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} + \frac{1}{210}(\cos(2c)-i\sin(2c))\right.}{d(}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Cos[c + d*x]^3*((4*(I*A + B)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)
*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*
x)))]])/(E^((2*I)*c)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(
c + d*x)))]) + (Sec[c + d*x]^3*(Cos[2*c] - I*Sin[2*c])*(21*(29*A - (28*I)*B
)*Cos[c + d*x] + 21*(11*A - (12*I)*B)*Cos[3*(c + d*x)] + (70*I)*A*Sin[c + d
*x] + 25*B*Sin[c + d*x] + (70*I)*A*Sin[3*(c + d*x)] + 85*B*Sin[3*(c + d*x)]
)*Sqrt[Tan[c + d*x]])/210)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/(
d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.014, size = 574, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2/7/d*a^2*B*tan(d*x+c)^(7/2)-I/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))-2/5/d*a^2*A*tan(d*x+c)^(5/2)+I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))+4/3/d*a^2*B*tan(d*x+c)^(3/2)-4*I/d*a^2*B*tan(d*x+c)^(1/2)+4/
d*a^2*A*tan(d*x+c)^(1/2)-1/2*I/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+4/3*I/d*a^2*A*tan(d
*x+c)^(3/2)+4/5*I/d*a^2*B*tan(d*x+c)^(5/2)-1/d*a^2*A*arctan(-1+2^(1/2)*tan(
d*x+c)^(1/2))*2^(1/2)-1/2/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/d*a^2*A*2^(1/2)*arctan
(1+2^(1/2)*tan(d*x+c)^(1/2))+1/2*I/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)
^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+I/d*a^2*B*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-I/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+
c)^(1/2))*2^(1/2)-1/2/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1
+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/d*a^2*B*arctan(-1+2^(1/2)*
tan(d*x+c)^(1/2))*2^(1/2)-1/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/
2))
```

Maxima [A] time = 1.8194, size = 292, normalized size = 1.87

$$-\frac{60\,Ba^{2}\tan\left(dx+c\right)^{\frac{7}{2}}+4\left(21\,A-42i\,B\right)a^{2}\tan\left(dx+c\right)^{\frac{5}{2}}+280\left(-i\,A-B\right)a^{2}\tan\left(dx+c\right)^{\frac{3}{2}}-4\left(210\,A-210i\,B\right)a^{2}\sqrt{\tan}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/210*(60*B*a^2*tan(d*x + c)^(7/2) + 4*(21*A - 42*I*B)*a^2*tan(d*x + c)^(5
/2) + 280*(-I*A - B)*a^2*tan(d*x + c)^(3/2) - 4*(210*A - 210*I*B)*a^2*sqrt(
tan(d*x + c)) - 105*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*
(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arct
an(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I
 + 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I -
 1)*A + (I + 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^2
```

```
)/d
```

Fricas [B] time = 2.23859, size = 1382, normalized size = 8.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/420*(105*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(6*I*d*x + 6
*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((4*(A -
I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2
)*(I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 105*sqrt((
-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I
*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*
x + 2*I*c) + sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(-I*d*e^(2*I*d*x
 + 2*I*c) - I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 8*((301*A - 337*I*B)*a^2*e^
(6*I*d*x + 6*I*c) + (679*A - 613*I*B)*a^2*e^(4*I*d*x + 4*I*c) + (539*A - 56
3*I*B)*a^2*e^(2*I*d*x + 2*I*c) + (161*A - 167*I*B)*a^2)*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(
4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.28536, size = 216, normalized size = 1.38

$$\frac{(2i-2)\sqrt{2}\left(iAa^2+Ba^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{d}-\frac{30\,Ba^2d^6\tan\left(dx+c\right)^{\frac{7}{2}}+42\,Aa^2d^6\tan\left(dx+c\right)^{\frac{5}{2}}-8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] (2*I - 2)*sqrt(2)*(I*A*a^2 + B*a^2)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(
d*x + c)))/d - 1/105*(30*B*a^2*d^6*tan(d*x + c)^(7/2) + 42*A*a^2*d^6*tan(d*
x + c)^(5/2) - 84*I*B*a^2*d^6*tan(d*x + c)^(5/2) - 140*I*A*a^2*d^6*tan(d*x
+ c)^(3/2) - 140*B*a^2*d^6*tan(d*x + c)^(3/2) - 420*A*a^2*d^6*sqrt(tan(d*x
+ c)) + 420*I*B*a^2*d^6*sqrt(tan(d*x + c)))/d^7
```

3.121 $\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=129

$$-\frac{2a^2(5A-7iB)\tan^{\frac{3}{2}}(c+dx)}{15d}+\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(B+iA)\sqrt{\tan(c+dx)}}{d}+\frac{2iB\tan^{\frac{3}{2}}(c$$

```
[Out] (4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (4*a
^2*(I*A + B)*Sqrt[Tan[c + d*x]])/d - (2*a^2*(5*A - (7*I)*B)*Tan[c + d*x]^(3
/2))/(15*d) + (((2*I)/5)*B*Tan[c + d*x]^(3/2)*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rubi [A] time = 0.259341, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3594, 3592, 3528, 3533, 205}

$$-\frac{2a^2(5A-7iB)\tan^{\frac{3}{2}}(c+dx)}{15d}+\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(B+iA)\sqrt{\tan(c+dx)}}{d}+\frac{2iB\tan^{\frac{3}{2}}(c$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (4*a
^2*(I*A + B)*Sqrt[Tan[c + d*x]])/d - (2*a^2*(5*A - (7*I)*B)*Tan[c + d*x]^(3
/2))/(15*d) + (((2*I)/5)*B*Tan[c + d*x]^(3/2)*(a^2 + I*a^2*Tan[c + d*x]))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{2iB\tan^{\frac{3}{2}}(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{5d}+\frac{2}{5}\int \sqrt{\tan(c$$

$$= -\frac{2a^2(5A-7iB)\tan^{\frac{3}{2}}(c+dx)}{15d}+\frac{2iB\tan^{\frac{3}{2}}(c+dx)\left(a^2+\right.}{5d}$$

$$= \frac{4a^2(iA+B)\sqrt{\tan(c+dx)}}{d}-\frac{2a^2(5A-7iB)\tan^{\frac{3}{2}}(c+dx}{15d}$$

$$= \frac{4a^2(iA+B)\sqrt{\tan(c+dx)}}{d}-\frac{2a^2(5A-7iB)\tan^{\frac{3}{2}}(c+dx}{15d}$$

$$= \frac{4\sqrt[4]{-1}a^2(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(iA}{}$$

Mathematica [B] time = 4.99916, size = 272, normalized size = 2.11

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(\frac{1}{15}(\cos(2c)-i\sin(2c))\sqrt{\tan(c+dx)}\sec^2(c+dx)(-5(A-2iB)\sin(\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Cos[c + d*x]^3*(((-4*I)*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(
1 + E^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((
2*I)*(c + d*x)))]])/(E^((2*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2
*I)*(c + d*x)))]) + (Sec[c + d*x]^2*(Cos[2*c] - I*Sin[2*c])*((30*I)*A + 27*
B + ((30*I)*A + 33*B)*Cos[2*(c + d*x)] - 5*(A - (2*I)*B)*Sin[2*(c + d*x)])*
Sqrt[Tan[c + d*x]])/15)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/(d*(
Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.013, size = 537, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -2/5/d*a^2*B*tan(d*x+c)^(5/2)-I/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))-2/3/d*a^2*A*tan(d*x+c)^(3/2)-I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))+4/d*a^2*B*tan(d*x+c)^(1/2)-1/2*I/d*a^2*B*ln((1-2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+4/
3*I/d*a^2*B*tan(d*x+c)^(3/2)+4*I/d*a^2*A*tan(d*x+c)^(1/2)-1/d*a^2*B*arctan(
-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(
d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/d*a^2*B
*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2*I/d*a^2*A*2^(1/2)*ln((1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-
I/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-I/d*a^2*A*arctan(-1+2
^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)
+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/d*a^2*A*arc
tan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)
```

```
*tan(d*x+c)^(1/2))
```

Maxima [A] time = 1.83083, size = 265, normalized size = 2.05

$$-\frac{12\,Ba^2\tan\left(dx+c\right)^{\frac{5}{2}}+4\,(5\,A-10i\,B)a^2\tan\left(dx+c\right)^{\frac{3}{2}}+120\,(-i\,A-B)a^2\sqrt{\tan\left(dx+c\right)}+15\left(2\,\sqrt{2}((i-1)\,A+(i+1)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/30*(12*B*a^2*tan(d*x + c)^(5/2) + 4*(5*A - 10*I*B)*a^2*tan(d*x + c)^(3/2
) + 120*(-I*A - B)*a^2*sqrt(tan(d*x + c)) + 15*(2*sqrt(2)*((I - 1)*A + (I +
 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*((I
 - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))
- sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
 + c) + 1) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c
)) + tan(d*x + c) + 1))*a^2)/d
```

Fricas [B] time = 1.95193, size = 1193, normalized size = 9.25

$$-\frac{15\sqrt{\frac{\left(16i\,A^2+32\,AB-16i\,B^2\right)a^4}{d^2}}\left(de^{\left(4i\,dx+4i\,c\right)}+2\,de^{\left(2i\,dx+2i\,c\right)}+d\right)\log\left(\frac{\left(4\,(A-i\,B)a^2e^{\left(2i\,dx+2i\,c\right)}+\sqrt{\frac{\left(16i\,A^2+32\,AB-16i\,B^2\right)a^4}{d^2}}\left(de^{\left(2i\,dx+2i\,c\right)}+d\right)\sqrt{\frac{-i\,e^{(2i}}{e^{(2i\,d}}}\right.}{(2i\,A+2\,B)a^2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/60*(15*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(4*I*d*x + 4*I*
c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c)
+ sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x -
 2*I*c)/((2*I*A + 2*B)*a^2)) - 15*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d
^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((4*(A - I*B)*
```

```
a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e
^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - ((280*I*A + 344*B)*a
^2*e^(4*I*d*x + 4*I*c) + (480*I*A + 432*B)*a^2*e^(2*I*d*x + 2*I*c) + (200*I
*A + 184*B)*a^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.2419, size = 171, normalized size = 1.33

$$-\frac{(i-1)\sqrt{2}\left(8\,Aa^2-8i\,Ba^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,d}-\frac{6\,Ba^2d^4\tan\left(dx+c\right)^{\frac{5}{2}}+10\,Aa^2d^4\tan\left(dx+c\right)^{\frac{3}{2}}-2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] -(1/4*I - 1/4)*sqrt(2)*(8*A*a^2 - 8*I*B*a^2)*arctan(-(1/2*I - 1/2)*sqrt(2)*
sqrt(tan(d*x + c)))/d - 1/15*(6*B*a^2*d^4*tan(d*x + c)^(5/2) + 10*A*a^2*d^4
*tan(d*x + c)^(3/2) - 20*I*B*a^2*d^4*tan(d*x + c)^(3/2) - 60*I*A*a^2*d^4*sq
rt(tan(d*x + c)) - 60*B*a^2*d^4*sqrt(tan(d*x + c)))/d^5
```

3.122 $\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=104

$$-\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(3A-5iB)\sqrt{\tan(c+dx)}}{3d}+\frac{2iB\sqrt{\tan(c+dx)}\left(a^2+ia^2\tan(c+dx\right.}{3d}$$

```
[Out] (-4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*
a^2*(3*A - (5*I)*B)*Sqrt[Tan[c + d*x]])/(3*d) + (((2*I)/3)*B*Sqrt[Tan[c + d
*x]]*(a^2 + I*a^2*Tan[c + d*x]))/d
```

Rubi [A] time = 0.224437, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3594, 3592, 3533, 205}

$$-\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(3A-5iB)\sqrt{\tan(c+dx)}}{3d}+\frac{2iB\sqrt{\tan(c+dx)}\left(a^2+ia^2\tan(c+dx\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] (-4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*
a^2*(3*A - (5*I)*B)*Sqrt[Tan[c + d*x]])/(3*d) + (((2*I)/3)*B*Sqrt[Tan[c + d
*x]]*(a^2 + I*a^2*Tan[c + d*x]))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
```

```
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx &= \frac{2iB\sqrt{\tan(c+dx)}\left(a^2+ia^2\tan(c+dx)\right)}{3d}+\frac{2}{3}\int \frac{(a+ia\tan(c+dx))\left(\frac{1}{2}\right.}{} \\ &= -\frac{2a^2(3A-5iB)\sqrt{\tan(c+dx)}}{3d}+\frac{2iB\sqrt{\tan(c+dx)}\left(a^2+ia^2\tan(c+dx\right.}{3d} \\ &= -\frac{2a^2(3A-5iB)\sqrt{\tan(c+dx)}}{3d}+\frac{2iB\sqrt{\tan(c+dx)}\left(a^2+ia^2\tan(c+dx\right.}{3d} \\ &= -\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(3A-5iB)\sqrt{\tan(}}{3d}\end{aligned}$$

Mathematica [A] time = 3.3122, size = 110, normalized size = 1.06

$$-\frac{2a^2\sqrt{\tan(c+dx)}\left(\sqrt{i\tan(c+dx)}(3A+B\tan(c+dx)-6iB)-6(A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)\right)}{3d\sqrt{i\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]
],x]
```

```
[Out] (-2*a^2*Sqrt[Tan[c + d*x]]*(-6*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d
*x)))/(1 + E^((2*I)*(c + d*x)))]] + Sqrt[I*Tan[c + d*x]]*(3*A - (6*I)*B + B
```

```
*Tan[c + d*x])))/(3*d*Sqrt[I*Tan[c + d*x]])
```

Maple [B] time = 0.014, size = 500, normalized size = 4.8

$$-\frac{2a^2B}{3d}(\tan(dx+c))^{\frac{3}{2}}-2\frac{a^2A\sqrt{\tan(dx+c)}}{d}+\frac{4ia^2B}{d}\sqrt{\tan(dx+c)}-\frac{iBa^2\sqrt{2}}{d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{iBa^2}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] -2/3/d*a^2*B*tan(d*x+c)^(3/2)-2/d*a^2*A*tan(d*x+c)^(1/2)+4*I/d*a^2*B*tan(d*
x+c)^(1/2)-I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-I/d*a^2*B*a
rctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2*I/d*a^2*B*2^(1/2)*ln((1+2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+1
/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+1/d*a^2*A*arctan(-1+2^(
1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)
^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+1/2*I/d*a^2*A*l
n((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*2^(1/2)+I/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+I/d*a^
2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^2*B*ln((1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2
)+1/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+1/d*a^2*B*arctan(-1+
2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [B] time = 2.07537, size = 238, normalized size = 2.29

$$-\frac{4\,Ba^2\tan(dx+c)^{\frac{3}{2}}+4\,(3\,A-6i\,B)a^2\sqrt{\tan(dx+c)}+3\left(2\,\sqrt{2}(-(i+1)\;A+(i-1)\;B)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan(dx}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="maxima")
```

```
[Out] -1/6*(4*B*a^2*tan(d*x + c)^(3/2) + 4*(3*A - 6*I*B)*a^2*sqrt(tan(d*x + c)) +
 3*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt
(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*sqrt(2)*(
sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)*log(sqrt
```

```
(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A + (I + 1)*B
)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^2)/d
```

Fricas [B] time = 1.77262, size = 1034, normalized size = 9.94

$$\frac{3\sqrt{\frac{\left(-16i\,A^2-32\,AB+16i\,B^2\right)a^4}{d^2}}\left(de^{(2i\,dx+2i\,c)}+d\right)\log\left(\frac{\left(4\,(A-i\,B)a^2e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-16i\,A^2-32\,AB+16i\,B^2\right)a^4}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}\right)e^{(-2i\,dx-2i\,c}}{(2i\,A+2\,B)a^2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="fricas")
```

```
[Out] 1/12*(3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c
) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I*A^2 - 32*A*B
+ 16*I*B^2)*a^4/d^2)*(I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)
*a^2)) - 3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*
I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I*A^2 - 32*A
*B + 16*I*B^2)*a^4/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A +
2*B)*a^2)) - 8*((3*A - 7*I*B)*a^2*e^(2*I*d*x + 2*I*c) + (3*A - 5*I*B)*a^2)*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(2*I*d*x
 + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int\frac{A}{\sqrt{\tan(c+dx)}}\,dx+\int-A\tan^{\frac{3}{2}}(c+dx)\,dx+\int B\sqrt{\tan(c+dx)}\,dx+\int-B\tan^{\frac{5}{2}}(c+dx)\,dx+\int 2iA\sqrt{\tan(c+d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] a**2*(Integral(A/sqrt(tan(c + d*x)), x) + Integral(-A*tan(c + d*x)**(3/2),
x) + Integral(B*sqrt(tan(c + d*x)), x) + Integral(-B*tan(c + d*x)**(5/2), x
) + Integral(2*I*A*sqrt(tan(c + d*x)), x) + Integral(2*I*B*tan(c + d*x)**(3
```

```
/2), x))
```

Giac [A] time = 1.36067, size = 124, normalized size = 1.19

$$\frac{(2i-2)\sqrt{2}\left(-iAa^2-Ba^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d}-\frac{2\left(Ba^2d^2\tan(dx+c)^{\frac{3}{2}}+3\,Aa^2d^2\sqrt{\tan(dx+c)}-6\right.}{3\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="giac")
```

```
[Out] (2*I - 2)*sqrt(2)*(-I*A*a^2 - B*a^2)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan
(d*x + c)))/d - 2/3*(B*a^2*d^2*tan(d*x + c)^(3/2) + 3*A*a^2*d^2*sqrt(tan(d*
x + c)) - 6*I*B*a^2*d^2*sqrt(tan(d*x + c)))/d^3
```

3.123 $\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=98

$$-\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a^2(-B+iA)\sqrt{\tan(c+dx)}}{d}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{d\sqrt{\tan(c+dx)}}$$

```
[Out] (-4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (2*
a^2*(I*A - B)*Sqrt[Tan[c + d*x]])/d - (2*A*(a^2 + I*a^2*Tan[c + d*x]))/(d*S
qrt[Tan[c + d*x]])
```

Rubi [A] time = 0.213756, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3593, 3592, 3533, 205}

$$-\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a^2(-B+iA)\sqrt{\tan(c+dx)}}{d}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```


```
[Out] (-4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (2*
a^2*(I*A - B)*Sqrt[Tan[c + d*x]])/d - (2*A*(a^2 + I*a^2*Tan[c + d*x]))/(d*S
qrt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{d\sqrt{\tan(c+dx)}}+2\int \frac{(a+ia\tan(c+dx))\left(\frac{1}{2}a(3iA+B)\right.}{\sqrt{\tan(c+}}$$

$$= \frac{2a^2(iA-B)\sqrt{\tan(c+dx)}}{d}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{d\sqrt{\tan(c+dx)}}+2\int \frac{a^2(iA-}{}$$

$$= \frac{2a^2(iA-B)\sqrt{\tan(c+dx)}}{d}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{d\sqrt{\tan(c+dx)}}+\frac{\left(4a^4(iA+B\right.}{}$$

$$= -\frac{4\sqrt[4]{-1}a^2(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2a^2(iA-B)\sqrt{\tan(}}{d}$$

Mathematica [A] time = 3.24912, size = 85, normalized size = 0.87

$$-\frac{2a^2\left(-2(A-iB)\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)+A+B\tan(c+dx)\right)}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2
),x]
```

```
[Out] (-2*a^2*(A - 2*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2
*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]] + B*Tan[c + d*x]))/(d*Sqrt[Tan[c + d
*x]])
```

Maple [B] time = 0.016, size = 484, normalized size = 4.9

$$-2\,\frac{a^2B\sqrt{\tan(dx+c)}}{d}-2\,\frac{a^2A}{d\sqrt{\tan(dx+c)}}+\frac{iAa^2\sqrt{2}}{d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)+\frac{iAa^2\sqrt{2}}{d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] -2/d*a^2*B*tan(d*x+c)^(1/2)-2*a^2*A/d/tan(d*x+c)^(1/2)+I/d*a^2*A*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))+I/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/
2))*2^(1/2)+1/2*I/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
)/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+1/d*a^2*B*2^(1/2)*arctan(1+2^(1/
2)*tan(d*x+c)^(1/2))+1/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+
1/2/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))+1/2*I/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+t
an(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+I/d*a^2*B*2^(1/
2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+I/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c
)^(1/2))*2^(1/2)-1/2/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/d*a^2*A*2^(1/2)*arctan(1+2^
(1/2)*tan(d*x+c)^(1/2))-1/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/
2)
```

Maxima [B] time = 1.83462, size = 230, normalized size = 2.35

$$-\frac{4\,Ba^2\sqrt{\tan(dx+c)}-\left(2\,\sqrt{2}((i-1)\,A+(i+1)\,B)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan(dx+c)}\right)\right)+2\,\sqrt{2}((i-1)\,A+(i+1)\,B)\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="maxima")
```

```
[Out] -1/2*(4*B*a^2*sqrt(tan(d*x + c)) - (2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arcta
n(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I
```

```
 + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*(-
(I + 1)*A + (I - 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) +
 sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
 + c) + 1))*a^2 + 4*A*a^2/sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 1.76831, size = 1010, normalized size = 10.31

$$\sqrt{\frac{(16iA^2+32AB-16iB^2)a^4}{d^2}}\left(de^{(2idx+2ic)}-d\right)\log\left(\frac{\left(4(A-iB)a^2e^{(2idx+2ic)}+\sqrt{\frac{(16iA^2+32AB-16iB^2)a^4}{d^2}}\left(de^{(2idx+2ic)}+d\right)\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}\right)e^{(-2idx-2ic)}}{(2iA+2B)a^2}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="fricas")
```

```
[Out] 1/4*(sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) -
d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((16*I*A^2 + 32*A*B - 16*
I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) -
sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*lo
g((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2
)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) + ((-8*
I*A - 8*B)*a^2*e^(2*I*d*x + 2*I*c) + (-8*I*A + 8*B)*a^2)*sqrt((-I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int\frac{A}{\tan^{\frac{3}{2}}(c+dx)}\,dx+\int -A\sqrt{\tan(c+dx)}\,dx+\int\frac{B}{\sqrt{\tan(c+dx)}}\,dx+\int -B\tan^{\frac{3}{2}}(c+dx)\,dx+\int\frac{2iA}{\sqrt{\tan(c+dx)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] a**2*(Integral(A/tan(c + d*x)**(3/2), x) + Integral(-A*sqrt(tan(c + d*x)),
x) + Integral(B/sqrt(tan(c + d*x)), x) + Integral(-B*tan(c + d*x)**(3/2), x
```

```
) + Integral(2*I*A/sqrt(tan(c + d*x)), x) + Integral(2*I*B*sqrt(tan(c + d*x
)), x))
```

Giac [A] time = 1.26082, size = 95, normalized size = 0.97

$$-\frac{2\,Ba^2\sqrt{\tan\left(dx+c\right)}}{d}+\frac{\left(i+1\right)\,\sqrt{2}\left(8i\,Aa^2+8\,Ba^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\,\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,d}-\frac{2\,Aa^2}{d\sqrt{\tan\left(dx+c\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="giac")
```

```
[Out] -2*B*a^2*sqrt(tan(d*x + c))/d + (1/4*I + 1/4)*sqrt(2)*(8*I*A*a^2 + 8*B*a^2)
*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/d - 2*A*a^2/(d*sqrt(tan(
d*x + c)))
```

3.124 $\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=102

$$\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(3B+5iA)}{3d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{3d\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a
^2*((5*I)*A + 3*B))/(3*d*Sqrt[Tan[c + d*x]]) - (2*A*(a^2 + I*a^2*Tan[c + d*
x]))/(3*d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 0.217649, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3593, 3591, 3533, 205}

$$\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(3B+5iA)}{3d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a
^2*((5*I)*A + 3*B))/(3*d*Sqrt[Tan[c + d*x]]) - (2*A*(a^2 + I*a^2*Tan[c + d*
x]))/(3*d*Tan[c + d*x]^(3/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{2}{3}\int \frac{(a+ia\tan(c+dx))\left(\frac{1}{2}a(5iA+3B)\right.}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2a^2(5iA+3B)}{3d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{2}{3}\int \frac{-3a^2(A-iB)-}{\sqrt{t}}$$

$$= -\frac{2a^2(5iA+3B)}{3d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{\left(12a^4(A-iB)^2\right)\text{Subs}}{}$$

$$= \frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(5iA+3B)}{3d\sqrt{\tan(c+dx)}}-\frac{2A}{}$$

Mathematica [A] time = 3.18703, size = 96, normalized size = 0.94

$$-\frac{2a^2\left(-6i(A-iB)\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)+A\cot(c+dx)+6iA+3B\right)}{3d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2
),x]
```

```
[Out] (-2*a^2*((6*I)*A + 3*B + A*Cot[c + d*x] - (6*I)*(A - I*B)*ArcTanh[Sqrt[(-1
+ E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]]))/(
3*d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.017, size = 504, normalized size = 4.9

$$-\frac{2\,a^2A}{3\,d}\left(\tan\left(dx+c\right)\right)^{-\frac{3}{2}}-\frac{4\,ia^2A}{d}\frac{1}{\sqrt{\tan\left(dx+c\right)}}-2\,\frac{a^2B}{d\sqrt{\tan\left(dx+c\right)}}+\frac{iBa^2\sqrt{2}}{d}\arctan\left(-1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)+\frac{\frac{i}{2}a^2 \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -2/3*a^2*A/d/tan(d*x+c)^(3/2)-4*I/d*a^2/tan(d*x+c)^(1/2)*A-2/d*a^2/tan(d*x+
c)^(1/2)*B+I/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2*I/d*a^
2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c)))+I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1
/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^2*A*2^(1/2)*ln
((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c)))-1/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2*I/d*a^2*A*l
n((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*2^(1/2)-I/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-I/d*a
^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2/d*a^2*B*ln((1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2
)-1/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/d*a^2*B*2^(1/2)*a
rctan(1+2^(1/2)*tan(d*x+c)^(1/2))
```

Maxima [B] time = 2.48213, size = 239, normalized size = 2.34

$$\frac{3\left(2\,\sqrt{2}\left(-\left(i+1\right)\,A+\left(i-1\right)\,B\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)+2\,\sqrt{2}\left(-\left(i+1\right)\,A+\left(i-1\right)\,B\right)\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\cdots\right.\right.\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="maxima")
```

```
[Out] 1/6*(3*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*
sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*sqrt(
2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)*log(
sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A + (I +
1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^2 + 4*(3*(-2*I
*A - B)*a^2*tan(d*x + c) - A*a^2)/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.80269, size = 1181, normalized size = 11.58

$$-\frac{3\sqrt{\frac{\left(-16i\,A^2-32\,AB+16i\,B^2\right)a^4}{d^2}}\left(de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(\left(\frac{4\,(A-i\,B)a^2e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-16i\,A^2-32\,AB+16i\,B^2\right)a^4}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\frac{-i\,e^{(2i}}{e^{(2i}}}}{(2i\,A+2\,B)a^2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="fricas")
```

```
[Out] -1/12*(3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(4*I*d*x + 4*I*
c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c)
+ sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(I*d*e^(2*I*d*x + 2*I*c) +
I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*
d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*
a^4/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((4*(A -
I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2
)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 8*((7*A -
 3*I*B)*a^2*e^(4*I*d*x + 4*I*c) + 2*A*a^2*e^(2*I*d*x + 2*I*c) - (5*A - 3*I*
B)*a^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^
(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int \frac{A}{\tan^{\frac{5}{2}}(c+dx)}\,dx + \int -\frac{A}{\sqrt{\tan(c+dx)}}\,dx + \int \frac{B}{\tan^{\frac{3}{2}}(c+dx)}\,dx + \int -B\sqrt{\tan(c+dx)}\,dx + \int \frac{2iA}{\tan^{\frac{3}{2}}(c+dx)}\,dx +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] a**2*(Integral(A/tan(c + d*x)**(5/2), x) + Integral(-A/sqrt(tan(c + d*x)),
x) + Integral(B/tan(c + d*x)**(3/2), x) + Integral(-B*sqrt(tan(c + d*x)), x
) + Integral(2*I*A/tan(c + d*x)**(3/2), x) + Integral(2*I*B/sqrt(tan(c + d*
x)), x))
```

Giac [A] time = 1.27096, size = 108, normalized size = 1.06

$$-\frac{(2i-2)\sqrt{2}\left(-i\,Aa^2-Ba^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d}-\frac{12i\,Aa^2\tan(dx+c)+6\,Ba^2\tan(dx+c)+2\,Aa^2}{3\,d\tan(dx+c)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="giac")
```

```
[Out] -(2*I - 2)*sqrt(2)*(-I*A*a^2 - B*a^2)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(ta
n(d*x + c)))/d - 1/3*(12*I*A*a^2*tan(d*x + c) + 6*B*a^2*tan(d*x + c) + 2*A*
a^2)/(d*tan(d*x + c)^(3/2))
```

3.125 $\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=127

$$\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(5B+7iA)}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a^2(A-iB)}{d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{5d\tan^{\frac{5}{2}}(c+dx)}$$

```
[Out] (4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a
^2*((7*I)*A + 5*B))/(15*d*Tan[c + d*x]^(3/2)) + (4*a^2*(A - I*B))/(d*Sqrt[T
an[c + d*x]]) - (2*A*(a^2 + I*a^2*Tan[c + d*x]))/(5*d*Tan[c + d*x]^(5/2))
```

Rubi [A] time = 0.257492, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3593, 3591, 3529, 3533, 205}

$$\frac{4\sqrt[4]{-1}a^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(5B+7iA)}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a^2(A-iB)}{d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{5d\tan^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```

```
[Out] (4*(-1)^(1/4)*a^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*a
^2*((7*I)*A + 5*B))/(15*d*Tan[c + d*x]^(3/2)) + (4*a^2*(A - I*B))/(d*Sqrt[T
an[c + d*x]]) - (2*A*(a^2 + I*a^2*Tan[c + d*x]))/(5*d*Tan[c + d*x]^(5/2))
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{(a+ia\tan(c+dx))\left(\frac{1}{2}a(7iA+5B)\right.}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2a^2(7iA+5B)}{15d\tan^{\frac{3}{2}}(c+dx)} - \frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{-5a^2(A-iB)-}{\mathrm{ta}}$$

$$= -\frac{2a^2(7iA+5B)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{4a^2(A-iB)}{d\sqrt{\tan(c+dx)}} - \frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}$$

$$= -\frac{2a^2(7iA+5B)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{4a^2(A-iB)}{d\sqrt{\tan(c+dx)}} - \frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{(2}{}$$

$$= \frac{4\sqrt[4]{-1}a^2(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{2a^2(7iA+5B)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{}{d}$$

Mathematica [B] time = 4.94616, size = 272, normalized size = 2.14

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(-\frac{4ie^{-2ic}(A-iB)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}} - \frac{(\cos(2c)-i\sin(2c))\csc^2(c}{}\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2
),x]
```

```
[Out] (Cos[c + d*x]^3*(((-4*I)*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(
1 + E^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((
2*I)*(c + d*x)))]])/(E^((2*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2
*I)*(c + d*x)))]) - (Csc[c + d*x]^2*(Cos[2*c] - I*Sin[2*c])*(-27*A + (30*I)
*B + (33*A - (30*I)*B)*Cos[2*(c + d*x)] + 5*((2*I)*A + B)*Sin[2*(c + d*x)])
)/(15*Sqrt[Tan[c + d*x]]))*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/(
d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.018, size = 537, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -2/5*a^2*A/d/tan(d*x+c)^(5/2)-I/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))+4*a^2*A/d/tan(d*x+c)^(1/2)-I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))-2/3/d*a^2/tan(d*x+c)^(3/2)*B-1/2*I/d*a^2*B*ln((1-2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/
2*I/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))-4/3*I/d*a^2/tan(d*x+c)^(3/2)*A-1/d*a^2*B*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/d*a^2
*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-4*I/d*a^2/tan(d*x+c)^(1/2)*B-
I/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-I/d*a^2*A*arctan(-1+2
^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)
+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/d*a^2*A*arc
tan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)
*tan(d*x+c)^(1/2))
```

Maxima [A] time = 1.82405, size = 265, normalized size = 2.09

$$-\frac{15\left(2\sqrt{2}((i-1)A+(i+1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}((i-1)A+(i+1)B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorit
hm="maxima")
```

```
[Out] -1/30*(15*(2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt
(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*lo
g(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A + (I
 - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^2 - 4*((30*
A - 30*I*B)*a^2*tan(d*x + c)^2 + 5*(-2*I*A - B)*a^2*tan(d*x + c) - 3*A*a^2)
/tan(d*x + c)^(5/2))/d
```

Fricas [B] time = 1.92264, size = 1359, normalized size = 10.7

$$-\frac{15\sqrt{\frac{(16i\,A^2+32\,AB-16i\,B^2)a^4}{d^2}}\left(de^{(6i\,dx+6i\,c)}-3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}-d\right)\log\left(\left(\frac{4\,(A-i\,B)a^2e^{(2i\,dx+2i\,c)}+\sqrt{\frac{(16i\,A^2+32\,AB-16i\,B^2)a^4}{d^2}}\left(de^{(2i\,c}\right.}{(2i\,A+2\,B)a^2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorit
hm="fricas")
```

```
[Out] -1/60*(15*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(6*I*d*x + 6*I*
c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((4*(A - I*B
)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d
*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 15*sqrt((16*I*A^2
+ 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I
*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c)
 - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)
*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x
- 2*I*c)/((2*I*A + 2*B)*a^2)) - ((344*I*A + 280*B)*a^2*e^(6*I*d*x + 6*I*c)
+ (-88*I*A - 200*B)*a^2*e^(4*I*d*x + 4*I*c) + (-248*I*A - 280*B)*a^2*e^(2*I
*d*x + 2*I*c) + (184*I*A + 200*B)*a^2)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c)
+ 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.25522, size = 146, normalized size = 1.15

$$\frac{(i+1)\sqrt{2}\left(8i\,Aa^2+8\,Ba^2\right)\arctan\left(\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,d}+\frac{60\,Aa^2\tan\left(dx+c\right)^2-60i\,Ba^2\tan\left(dx+c\right)^2-20i\,A\ldots}{15\,d\tan\left(dx\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorit
hm="giac")
```

```
[Out] (1/4*I + 1/4)*sqrt(2)*(8*I*A*a^2 + 8*B*a^2)*arctan((1/2*I - 1/2)*sqrt(2)*sq
rt(tan(d*x + c)))/d + 1/15*(60*A*a^2*tan(d*x + c)^2 - 60*I*B*a^2*tan(d*x +
c)^2 - 20*I*A*a^2*tan(d*x + c) - 10*B*a^2*tan(d*x + c) - 6*A*a^2)/(d*tan(d*
x + c)^(5/2))
```

3.126 $\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=154

$$-\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(A-iB)}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a^2(7B+9iA)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(B+iA)}{d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\right.}{7d\tan^{\frac{7}{2}}}$$

```
[Out] (-4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*
a^2*((9*I)*A + 7*B))/(35*d*Tan[c + d*x]^(5/2)) + (4*a^2*(A - I*B))/(3*d*Tan
[c + d*x]^(3/2)) + (4*a^2*(I*A + B))/(d*Sqrt[Tan[c + d*x]]) - (2*A*(a^2 + I
*a^2*Tan[c + d*x]))/(7*d*Tan[c + d*x]^(7/2))
```

Rubi [A] time = 0.298643, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3593, 3591, 3529, 3533, 205}

$$-\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{4a^2(A-iB)}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a^2(7B+9iA)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(B+iA)}{d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia^2\right.}{7d\tan^{\frac{7}{2}}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),x]
```


```
[Out] (-4*(-1)^(1/4)*a^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (2*
a^2*((9*I)*A + 7*B))/(35*d*Tan[c + d*x]^(5/2)) + (4*a^2*(A - I*B))/(3*d*Tan
[c + d*x]^(3/2)) + (4*a^2*(I*A + B))/(d*Sqrt[Tan[c + d*x]]) - (2*A*(a^2 + I
*a^2*Tan[c + d*x]))/(7*d*Tan[c + d*x]^(7/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{7d\tan^{\frac{7}{2}}(c+dx)}+\frac{2}{7}\int \frac{(a+ia\tan(c+dx))\left(\frac{1}{2}a(9iA+7B)\right.}{\tan^{\frac{7}{2}}(c+}$$

$$= -\frac{2a^2(9iA+7B)}{35d\tan^{\frac{5}{2}}(c+dx)}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{7d\tan^{\frac{7}{2}}(c+dx)}+\frac{2}{7}\int \frac{-7a^2(A-iB)-}{\text{t}}$$

$$= -\frac{2a^2(9iA+7B)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(A-iB)}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2A\left(a^2+ia^2\tan(c+dx)\right)}{7d\tan^{\frac{7}{2}}(c+dx)}+$$

$$= -\frac{2a^2(9iA+7B)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(A-iB)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a^2(iA+B)}{d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia\right.}{7d\tan}$$

$$= -\frac{2a^2(9iA+7B)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(A-iB)}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a^2(iA+B)}{d\sqrt{\tan(c+dx)}}-\frac{2A\left(a^2+ia\right.}{7d\tan}$$

$$= -\frac{4\sqrt[4]{-1}a^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2a^2(9iA+7B)}{35d\tan^{\frac{5}{2}}(c+dx)}+$$

Mathematica [A] time = 7.11641, size = 296, normalized size = 1.92

$$\frac{\cos^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(\frac{4e^{-2ic}(A-iB)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}}-\frac{(\cos(2c)-i\sin(2c))\csc^3(c+}{}\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2
),x]
```

```
[Out] (Cos[c + d*x]^3*((4*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E
^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]])/(E^((2*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(
c + d*x)))]) - (Csc[c + d*x]^3*(Cos[2*c] - I*Sin[2*c])*((-25*A + (70*I)*B)*
Cos[c + d*x] + (85*A - (70*I)*B)*Cos[3*(c + d*x)] + 42*((-8*I)*A - 9*B + ((
12*I)*A + 11*B)*Cos[2*(c + d*x)])*Sin[c + d*x]))/(210*Sqrt[Tan[c + d*x]]))*
(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^2
*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.017, size = 570, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] -2/7/d*a^2*A/tan(d*x+c)^(7/2)+4/3*a^2*A/d/tan(d*x+c)^(3/2)+I/d*a^2*A*2^(1/2
)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-I/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))+4/d*a^2/tan(d*x+c)^(1/2)*B+4*I/d*a^2/tan(d*x+c)^(1/2)*A-2/5/
d*a^2/tan(d*x+c)^(5/2)*B+1/2*I/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/2*I/d*a^2*B*2^(1/
2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+t
an(d*x+c)))-4/3*I/d*a^2/tan(d*x+c)^(3/2)*B+1/d*a^2*A*2^(1/2)*arctan(1+2^(1/
2)*tan(d*x+c)^(1/2))+1/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+
1/2/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))-4/5*I/d*a^2/tan(d*x+c)^(5/2)*A-I/d*a^2*B*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+I/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+
c)^(1/2))*2^(1/2)+1/2/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1
+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/d*a^2*B*2^(1/2)*arctan(1+2
^(1/2)*tan(d*x+c)^(1/2))+1/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1
/2)
```

Maxima [A] time = 2.01341, size = 289, normalized size = 1.88

$$-\frac{105\left(2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(-\frac{1}{2}\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algorit
hm="maxima")
```

```
[Out] -1/210*(105*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2)
 + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*
sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)
*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A +
(I + 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^2 - 4*(21
```

```
0*(I*A + B)*a^2*tan(d*x + c)^3 + (70*A - 70*I*B)*a^2*tan(d*x + c)^2 + 21*(-
2*I*A - B)*a^2*tan(d*x + c) - 15*A*a^2)/tan(d*x + c)^(7/2))/d
```

Fricas [B] time = 2.29091, size = 1547, normalized size = 10.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algorit
hm="fricas")
```

```
[Out] 1/420*(105*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(8*I*d*x + 8*
I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x +
 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I*A^2 - 3
2*A*B + 16*I*B^2)*a^4/d^2)*(I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A
+ 2*B)*a^2)) - 105*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(8*I*
d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2
*I*d*x + 2*I*c) + d)*log((4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I
*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)
/((2*I*A + 2*B)*a^2)) - 8*((337*A - 301*I*B)*a^2*e^(8*I*d*x + 8*I*c) - 6*(4
6*A - 63*I*B)*a^2*e^(6*I*d*x + 6*I*c) - 10*(5*A - 14*I*B)*a^2*e^(4*I*d*x +
4*I*c) + 18*(22*A - 21*I*B)*a^2*e^(2*I*d*x + 2*I*c) - (167*A - 161*I*B)*a^2
)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(8*I*d
*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*
I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.27336, size = 184, normalized size = 1.19

$$\frac{(2i-2)\sqrt{2}\left(-iAa^2-Ba^2\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{d}-\frac{-420i\,Aa^2\tan\left(dx+c\right)^3-420\,Ba^2\tan\left(dx+c\right)^3-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algorit
hm="giac")
```

```
[Out] (2*I - 2)*sqrt(2)*(-I*A*a^2 - B*a^2)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan
(d*x + c)))/d - 1/105*(-420*I*A*a^2*tan(d*x + c)^3 - 420*B*a^2*tan(d*x + c)
^3 - 140*A*a^2*tan(d*x + c)^2 + 140*I*B*a^2*tan(d*x + c)^2 + 84*I*A*a^2*tan
(d*x + c) + 42*B*a^2*tan(d*x + c) + 30*A*a^2)/(d*tan(d*x + c)^(7/2))
```

3.127 $\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=198

$$-\frac{16a^3(18A-19iB)\tan^{\frac{5}{2}}(c+dx)}{315d}+\frac{8a^3(B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(9A-}{}$$

```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (8*a
^3*(A - I*B)*Sqrt[Tan[c + d*x]])/d + (8*a^3*(I*A + B)*Tan[c + d*x]^(3/2))/(
3*d) - (16*a^3*(18*A - (19*I)*B)*Tan[c + d*x]^(5/2))/(315*d) + (((2*I)/9)*a
*B*Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2)/d - (2*(9*A - (13*I)*B)*Tan
[c + d*x]^(5/2)*(a^3 + I*a^3*Tan[c + d*x]))/(63*d)
```

Rubi [A] time = 0.467445, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3594, 3592, 3528, 3533, 205}

$$-\frac{16a^3(18A-19iB)\tan^{\frac{5}{2}}(c+dx)}{315d}+\frac{8a^3(B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(9A-}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```



```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (8*a
^3*(A - I*B)*Sqrt[Tan[c + d*x]])/d + (8*a^3*(I*A + B)*Tan[c + d*x]^(3/2))/(
3*d) - (16*a^3*(18*A - (19*I)*B)*Tan[c + d*x]^(5/2))/(315*d) + (((2*I)/9)*a
*B*Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2)/d - (2*(9*A - (13*I)*B)*Tan
[c + d*x]^(5/2)*(a^3 + I*a^3*Tan[c + d*x]))/(63*d)
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}{9d} + \frac{2}{9}\int \tan^{\frac{3}{2}}(c+d$$

$$= \frac{2iaB\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}{9d} - \frac{2(9A-13iB)\,\mathrm{ta}}{}$$

$$= -\frac{16a^3(18A-19iB)\tan^{\frac{5}{2}}(c+dx)}{315d} + \frac{2iaB\tan^{\frac{5}{2}}(c+dx)(a+}{9d}$$

$$= \frac{8a^3(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{16a^3(18A-19iB)\tan^{\frac{5}{2}}(c+d}{315d}$$

$$= \frac{8a^3(A-iB)\sqrt{\tan(c+dx)}}{d} + \frac{8a^3(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{1}{}$$

$$= \frac{8a^3(A-iB)\sqrt{\tan(c+dx)}}{d} + \frac{8a^3(iA+B)\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{1}{}$$

$$= \frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} + \frac{8a^3(A-}{}$$

Mathematica [B] time = 10.0018, size = 496, normalized size = 2.51

$$\frac{\cos^4(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\left(\sec(c)\left(\frac{2}{7}\cos(3c)-\frac{2}{7}i\sin(3c)\right)\sec^3(c+dx)(-3B\sin(}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (-8*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x
)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Co
s[c + d*x]^4*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*E^((3*I)*c)*
Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(Cos[d*x] + I*Si
n[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^4*(Sec[c]*(144
9*A*Cos[c] - (1547*I)*B*Cos[c] + (465*I)*A*Sin[c] + 555*B*Sin[c])*((2*Cos[3
*c])/315 - ((2*I)/315)*Sin[3*c]) + Sec[c]*Sec[c + d*x]^2*(189*A*Cos[c] - (3
22*I)*B*Cos[c] + (45*I)*A*Sin[c] + 135*B*Sin[c])*((-2*Cos[3*c])/315 + ((2*I
)/315)*Sin[3*c]) + Sec[c + d*x]^4*(((-2*I)/9)*B*Cos[3*c] - (2*B*Sin[3*c])/9
```

```
) + Sec[c]*Sec[c + d*x]^3*((2*Cos[3*c])/7 - ((2*I)/7)*Sin[3*c])*((-I)*A*Sin
[d*x] - 3*B*Sin[d*x]) + Sec[c]*Sec[c + d*x]*((2*Cos[3*c])/21 - ((2*I)/21)*S
in[3*c])*((31*I)*A*Sin[d*x] + 37*B*Sin[d*x]))*Sqrt[Tan[c + d*x]]*(a + I*a*T
an[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c
+ d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.014, size = 610, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -2*I/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+8/3*I/d*a^3*A*tan(d
*x+c)^(3/2)-6/7/d*a^3*B*tan(d*x+c)^(7/2)+2*I/d*a^3*B*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*2^(1/2)-6/5/d*a^3*A*tan(d*x+c)^(5/2)+2*I/d*a^3*B*arctan(-1+2^(
1/2)*tan(d*x+c)^(1/2))*2^(1/2)+8/3/d*a^3*B*tan(d*x+c)^(3/2)-2/9*I/d*a^3*B*t
an(d*x+c)^(9/2)+8*a^3*A*tan(d*x+c)^(1/2)/d+I/d*a^3*B*2^(1/2)*ln((1+2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+8/5*I
/d*a^3*B*tan(d*x+c)^(5/2)-I/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/d*a^3*A*arctan(1+2^(
1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2)
)*2^(1/2)-1/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2
^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-2/7*I/d*a^3*A*tan(d*x+c)^(7/2)-8*I/d*a
^3*B*tan(d*x+c)^(1/2)-2*I/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/
2)-1/d*a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*
2^(1/2)-2/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 1.89566, size = 316, normalized size = 1.6

$$-\frac{70 i B a^3 \tan(dx+c)^{\frac{9}{2}} + 90 (i A + 3 B) a^3 \tan(dx+c)^{\frac{7}{2}} + 2 (189 A - 252 i B) a^3 \tan(dx+c)^{\frac{5}{2}} + 840 (-i A - B) a^3 \tan(dx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/315*(70*I*B*a^3*tan(d*x + c)^(9/2) + 90*(I*A + 3*B)*a^3*tan(d*x + c)^(7/
2) + 2*(189*A - 252*I*B)*a^3*tan(d*x + c)^(5/2) + 840*(-I*A - B)*a^3*tan(d*
x + c)^(3/2) - 2*(1260*A - 1260*I*B)*a^3*sqrt(tan(d*x + c)) - 315*(sqrt(2)*
(-(2*I + 2)*A + (2*I - 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x +
 c)))) + sqrt(2)*(-(2*I + 2)*A + (2*I - 2)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)
- 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)*log(sqrt(2)*sqrt
(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-s
qrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^3)/d
```

Fricas [B] time = 2.41392, size = 1569, normalized size = 7.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/1260*(315*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(8*I*d*x +
 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*
x + 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2
- 128*A*B + 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-I*e^(
2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*
I*A + 4*B)*a^3)) - 315*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^
(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d
*e^(2*I*d*x + 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((
-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x -
2*I*c)/((4*I*A + 4*B)*a^3)) - 16*((957*A - 1051*I*B)*a^3*e^(8*I*d*x + 8*I*c
) + 5*(579*A - 547*I*B)*a^3*e^(6*I*d*x + 6*I*c) + 21*(171*A - 173*I*B)*a^3*
e^(4*I*d*x + 4*I*c) + 5*(429*A - 433*I*B)*a^3*e^(2*I*d*x + 2*I*c) + 4*(123*
A - 124*I*B)*a^3)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
1)))/(d*e^(8*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*
I*c) + 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.34052, size = 262, normalized size = 1.32

$$\frac{(4i-4)\sqrt{2}\left(iAa^3+Ba^3\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{d}-\frac{70iBa^3d^8\tan\left(dx+c\right)^{\frac{9}{2}}+90iAa^3d^8\tan\left(dx+c\right)^{\frac{7}{2}}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] (4*I - 4)*sqrt(2)*(I*A*a^3 + B*a^3)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(
d*x + c)))/d - 1/315*(70*I*B*a^3*d^8*tan(d*x + c)^(9/2) + 90*I*A*a^3*d^8*ta
n(d*x + c)^(7/2) + 270*B*a^3*d^8*tan(d*x + c)^(7/2) + 378*A*a^3*d^8*tan(d*x
 + c)^(5/2) - 504*I*B*a^3*d^8*tan(d*x + c)^(5/2) - 840*I*A*a^3*d^8*tan(d*x
+ c)^(3/2) - 840*B*a^3*d^8*tan(d*x + c)^(3/2) - 2520*A*a^3*d^8*sqrt(tan(d*x
 + c)) + 2520*I*B*a^3*d^8*sqrt(tan(d*x + c)))/d^9
```

3.128 $\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=171

$$-\frac{8a^3(21A-23iB)\tan^{\frac{3}{2}}(c+dx)}{105d}+\frac{8\sqrt[4]{-1}a^3(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(7A-11iB)\tan^{\frac{3}{2}}(c+dx)\left(a^3+ia^3\tan\right.}{35d}$$

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (8*a
^3*(I*A + B)*Sqrt[Tan[c + d*x]])/d - (8*a^3*(21*A - (23*I)*B)*Tan[c + d*x]^
(3/2))/(105*d) + (((2*I)/7)*a*B*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2
)/d - (2*(7*A - (11*I)*B)*Tan[c + d*x]^(3/2)*(a^3 + I*a^3*Tan[c + d*x]))/(3
5*d)
```

Rubi [A] time = 0.421445, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3594, 3592, 3528, 3533, 205}

$$-\frac{8a^3(21A-23iB)\tan^{\frac{3}{2}}(c+dx)}{105d}+\frac{8\sqrt[4]{-1}a^3(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(7A-11iB)\tan^{\frac{3}{2}}(c+dx)\left(a^3+ia^3\tan\right.}{35d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (8*a
^3*(I*A + B)*Sqrt[Tan[c + d*x]])/d - (8*a^3*(21*A - (23*I)*B)*Tan[c + d*x]^
(3/2))/(105*d) + (((2*I)/7)*a*B*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2
)/d - (2*(7*A - (11*I)*B)*Tan[c + d*x]^(3/2)*(a^3 + I*a^3*Tan[c + d*x]))/(3
5*d)
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}{7d} + \frac{2}{7}\int \sqrt{\tan(c+}$$

$$= \frac{2iaB\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}{7d} - \frac{2(7A-11iB)\,\mathrm{ta}}{}$$

$$= -\frac{8a^3(21A-23iB)\tan^{\frac{3}{2}}(c+dx)}{105d} + \frac{2iaB\tan^{\frac{3}{2}}(c+dx)(a+}{7d}$$

$$= \frac{8a^3(iA+B)\sqrt{\tan(c+dx)}}{d} - \frac{8a^3(21A-23iB)\tan^{\frac{3}{2}}(c+dx}{105d}$$

$$= \frac{8a^3(iA+B)\sqrt{\tan(c+dx)}}{d} - \frac{8a^3(21A-23iB)\tan^{\frac{3}{2}}(c+dx}{105d}$$

$$= \frac{8\sqrt[4]{-1}a^3(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} + \frac{8a^3(iA+}{}$$

Mathematica [B] time = 9.84344, size = 452, normalized size = 2.64

$$\frac{\cos^4(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\left(\sec(c)\left(-\frac{2}{35}\sin(3c)-\frac{2}{35}i\cos(3c)\right)\sec^2(c+dx)(7A\,\mathrm{co}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] ((-8*I)*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c +
 d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]
]*Cos[c + d*x]^4*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*E^((3*I)
*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(Cos[d*x] +
I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^4*(Sec[c]*
Sec[c + d*x]^2*(7*A*Cos[c] - (21*I)*B*Cos[c] + 5*B*Sin[c])*(((-2*I)/35)*Cos
[3*c] - (2*Sin[3*c])/35) + Sec[c]*((441*I)*A*Cos[c] + 483*B*Cos[c] - 105*A*
Sin[c] + (155*I)*B*Sin[c])*((2*Cos[3*c])/105 - ((2*I)/105)*Sin[3*c]) - I*B*
Sec[c]*Sec[c + d*x]^3*((2*Cos[3*c])/7 - ((2*I)/7)*Sin[3*c])*Sin[d*x] + Sec[
c]*Sec[c + d*x]*((-2*Cos[3*c])/21 + ((2*I)/21)*Sin[3*c])*(21*A*Sin[d*x] - (
31*I)*B*Sin[d*x]))*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c
 + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.014, size = 574, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -I/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c)))-2/7*I/d*a^3*B*tan(d*x+c)^(7/2)-6/5/d*a^3*B*tan(
d*x+c)^(5/2)-2/5*I/d*a^3*A*tan(d*x+c)^(5/2)-2/d*a^3*A*tan(d*x+c)^(3/2)-I/d*
a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*2^(1/2)+8*a^3*B*tan(d*x+c)^(1/2)/d-2*I/d*a^3*A*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*2^(1/2)+8*I/d*a^3*A*tan(d*x+c)^(1/2)+8/3*I/d*a^3*B*ta
n(d*x+c)^(3/2)-2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/d*a^3
*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/d*a^3*B*2^(1/2)*ln((1+2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-2
*I/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2*I/d*a^3*B*arctan(-1
+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2*I/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)
^(1/2))*2^(1/2)+1/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+2/d*a^3*A*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*2^(1/2)+2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 2.10206, size = 289, normalized size = 1.69

$$-\frac{30iBa^3\tan(dx+c)^{\frac{7}{2}} + 42(iA+3B)a^3\tan(dx+c)^{\frac{5}{2}} + 2(105A-140iB)a^3\tan(dx+c)^{\frac{3}{2}} + 840(-iA-B)a^3\sqrt{\tan(}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/105*(30*I*B*a^3*tan(d*x + c)^(7/2) + 42*(I*A + 3*B)*a^3*tan(d*x + c)^(5/
2) + 2*(105*A - 140*I*B)*a^3*tan(d*x + c)^(3/2) + 840*(-I*A - B)*a^3*sqrt(t
an(d*x + c)) - 105*(sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(1/2*sqrt(2)
*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*a
rctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(I + 1)*A
+ (I - 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*(
```

```
-(I + 1)*A + (I - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)
)*a^3)/d
```

Fricas [B] time = 2.08939, size = 1381, normalized size = 8.08

$$-\frac{105\sqrt{\frac{\left(64i A^2+128\,AB-64i B^2\right)a^6}{d^2}}\left(de^{(6i\,dx+6i\,c)}+3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(\left(\frac{8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(64i A^2+128\,AB-64i B^2\right)a^6}{d^2}}\,(d}{(4i\,A+4\,B)}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/420*(105*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6
*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((8*(A -
I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2
)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 105*sqrt((64*I
*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x
 + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x +
2*I*c) - sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I*
c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2
*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - ((4368*I*A + 5104*B)*a^3*e^(6*I*d*x
+ 6*I*c) + (10752*I*A + 10336*B)*a^3*e^(4*I*d*x + 4*I*c) + (9072*I*A + 8816
*B)*a^3*e^(2*I*d*x + 2*I*c) + (2688*I*A + 2624*B)*a^3)*sqrt((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4
*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.27522, size = 217, normalized size = 1.27

$$-\frac{(i-1)\sqrt{2}\left(16Aa^3-16iBa^3\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4d}-\frac{30iBa^3d^6\tan\left(dx+c\right)^{\frac{7}{2}}+42iAa^3d^6\tan\left(dx+c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] -(1/4*I - 1/4)*sqrt(2)*(16*A*a^3 - 16*I*B*a^3)*arctan(-(1/2*I - 1/2)*sqrt(2
)*sqrt(tan(d*x + c)))/d - 1/105*(30*I*B*a^3*d^6*tan(d*x + c)^(7/2) + 42*I*A
*a^3*d^6*tan(d*x + c)^(5/2) + 126*B*a^3*d^6*tan(d*x + c)^(5/2) + 210*A*a^3*
d^6*tan(d*x + c)^(3/2) - 280*I*B*a^3*d^6*tan(d*x + c)^(3/2) - 840*I*A*a^3*d
^6*sqrt(tan(d*x + c)) - 840*B*a^3*d^6*sqrt(tan(d*x + c)))/d^7
```

3.129 $\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=146

$$-\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{16a^3(5A-6iB)\sqrt{\tan(c+dx)}}{15d}-\frac{2(5A-9iB)\sqrt{\tan(c+dx)}\left(a^3+ia^3\tan\right.}{15d}$$

```
[Out] (-8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (16
*a^3*(5*A - (6*I)*B)*Sqrt[Tan[c + d*x]])/(15*d) + (((2*I)/5)*a*B*Sqrt[Tan[c
 + d*x]]*(a + I*a*Tan[c + d*x])^2)/d - (2*(5*A - (9*I)*B)*Sqrt[Tan[c + d*x]
]*(a^3 + I*a^3*Tan[c + d*x]))/(15*d)
```

Rubi [A] time = 0.376554, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3594, 3592, 3533, 205}

$$-\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{16a^3(5A-6iB)\sqrt{\tan(c+dx)}}{15d}-\frac{2(5A-9iB)\sqrt{\tan(c+dx)}\left(a^3+ia^3\tan\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] (-8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (16
*a^3*(5*A - (6*I)*B)*Sqrt[Tan[c + d*x]])/(15*d) + (((2*I)/5)*a*B*Sqrt[Tan[c
 + d*x]]*(a + I*a*Tan[c + d*x])^2)/d - (2*(5*A - (9*I)*B)*Sqrt[Tan[c + d*x]
]*(a^3 + I*a^3*Tan[c + d*x]))/(15*d)
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{2iaB\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2}{5d} + \frac{2}{5}\int \frac{(a+ia\tan(c+dx))^2\left(\right.}{}$$

$$= \frac{2iaB\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2}{5d} - \frac{2(5A-9iB)\sqrt{\tan(c+dx)}\left(\right.}{15d}$$

$$= -\frac{16a^3(5A-6iB)\sqrt{\tan(c+dx)}}{15d} + \frac{2iaB\sqrt{\tan(c+dx)}(a+ia\tan(c+d}{5d}$$

$$= -\frac{16a^3(5A-6iB)\sqrt{\tan(c+dx)}}{15d} + \frac{2iaB\sqrt{\tan(c+dx)}(a+ia\tan(c+d}{5d}$$

$$= -\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{16a^3(5A-6iB)\sqrt{ta}}{15d}$$

Mathematica [A] time = 7.25288, size = 273, normalized size = 1.87

$$\frac{\cos^4(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\left(\frac{8e^{-3ic}(A-iB)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}} - \frac{1}{15}(\cos(3c)-i\sin(3\right.}{d(\cos(dx)+i\sin(dx))^3(A\cos(c+dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]
],x]
```

```
[Out] (Cos[c + d*x]^4*((8*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E
^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]])/(E^((3*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(
c + d*x)))]) - (Sec[c + d*x]^2*(Cos[3*c] - I*Sin[3*c])*(45*A - (57*I)*B + 9
*(5*A - (7*I)*B)*Cos[2*(c + d*x)] + 5*(I*A + 3*B)*Sin[2*(c + d*x)])*Sqrt[Ta
n[c + d*x]])/15)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x
] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.016, size = 538, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] I/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^
(1/2)+tan(d*x+c)))*2^(1/2)+2*I/d*a^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^
(1/2))-2/d*a^3*B*tan(d*x+c)^(3/2)-2*I/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(
1/2))*2^(1/2)-6*a^3*A*tan(d*x+c)^(1/2)/d-I/d*a^3*B*2^(1/2)*ln((1+2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-2*I/d*a
^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/3*I/d*a^3*A*tan(d*x+c)^(
3/2)+2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^3*A*2^(1/2
)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c)))+2/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/5*I/d*a^3
*B*tan(d*x+c)^(5/2)+8*I/d*a^3*B*tan(d*x+c)^(1/2)+2*I/d*a^3*A*arctan(-1+2^(1
/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+2/d*a^3*B*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(
1/2))*2^(1/2)
```

Maxima [A] time = 2.11047, size = 262, normalized size = 1.79

$$-\frac{6i\,Ba^3\tan\left(dx+c\right)^{\frac{5}{2}}+10\left(i\,A+3\,B\right)a^3\tan\left(dx+c\right)^{\frac{3}{2}}+2\left(45\,A-60i\,B\right)a^3\sqrt{\tan\left(dx+c\right)}+15\left(\sqrt{2}\left(-\left(2i+2\right)\,A+\left(2i-2\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="maxima")
```

```
[Out] -1/15*(6*I*B*a^3*tan(d*x + c)^(5/2) + 10*(I*A + 3*B)*a^3*tan(d*x + c)^(3/2)
 + 2*(45*A - 60*I*B)*a^3*sqrt(tan(d*x + c)) + 15*(sqrt(2)*(-(2*I + 2)*A + (
2*I - 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + sqrt(2)*
(-(2*I + 2)*A + (2*I - 2)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x
+ c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) +
tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)*sqrt(tan(d
*x + c)) + tan(d*x + c) + 1))*a^3)/d
```

Fricas [B] time = 1.8495, size = 1214, normalized size = 8.32

$$\frac{15\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(de^{(4i\,dx+4i\,c)}+2\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\cdots}\right.}{(4i\,A+4\,B)a^3}\right.\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="fricas")
```

```
[Out] 1/60*(15*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I
*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c)
 + sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c)
+ I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*
I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 15*sqrt((-64*I*A^2 - 128*A*B + 64*I*B
^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((8*(
A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^
6/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 16*(
(25*A - 39*I*B)*a^3*e^(4*I*d*x + 4*I*c) + 3*(15*A - 19*I*B)*a^3*e^(2*I*d*x
+ 2*I*c) + 4*(5*A - 6*I*B)*a^3)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) + 1)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.38623, size = 171, normalized size = 1.17

$$\frac{(4i-4)\sqrt{2}\left(-iAa^3-Ba^3\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d}-\frac{6iBa^3d^4\tan(dx+c)^{\frac{5}{2}}+10iAa^3d^4\tan(dx+c)^{\frac{3}{2}}+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="giac")
```

```
[Out] (4*I - 4)*sqrt(2)*(-I*A*a^3 - B*a^3)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan
(d*x + c)))/d - 1/15*(6*I*B*a^3*d^4*tan(d*x + c)^(5/2) + 10*I*A*a^3*d^4*tan
(d*x + c)^(3/2) + 30*B*a^3*d^4*tan(d*x + c)^(3/2) + 90*A*a^3*d^4*sqrt(tan(d
*x + c)) - 120*I*B*a^3*d^4*sqrt(tan(d*x + c)))/d^5
```

3.130 $\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=134

$$-\frac{8\sqrt[4]{-1}a^3(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2(-B+3iA)\sqrt{\tan(c+dx)}\left(a^3+ia^3\tan(c+dx)\right)}{3d}-\frac{16a^3B\sqrt{\tan(c+\dots}}{3d}$$

```
[Out] (-8*(-1)^(1/4)*a^3*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (16
*a^3*B*Sqrt[Tan[c + d*x]])/(3*d) - (2*a*A*(a + I*a*Tan[c + d*x])^2)/(d*Sqrt
[Tan[c + d*x]]) + (2*((3*I)*A - B)*Sqrt[Tan[c + d*x]]*(a^3 + I*a^3*Tan[c +
d*x]))/(3*d)
```

Rubi [A] time = 0.354862, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3593, 3594, 3592, 3533, 205}

$$-\frac{8\sqrt[4]{-1}a^3(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{2(-B+3iA)\sqrt{\tan(c+dx)}\left(a^3+ia^3\tan(c+dx)\right)}{3d}-\frac{16a^3B\sqrt{\tan(c+\dots}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```

```
[Out] (-8*(-1)^(1/4)*a^3*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (16
*a^3*B*Sqrt[Tan[c + d*x]])/(3*d) - (2*a*A*(a + I*a*Tan[c + d*x])^2)/(d*Sqrt
[Tan[c + d*x]]) + (2*((3*I)*A - B)*Sqrt[Tan[c + d*x]]*(a^3 + I*a^3*Tan[c +
d*x]))/(3*d)
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^2}{d\sqrt{\tan(c+dx)}} + 2\int \frac{(a+ia\tan(c+dx))^2\left(\frac{1}{2}a(5iA+B)\right.}{\sqrt{\tan(c+}}$$

$$= -\frac{2aA(a+ia\tan(c+dx))^2}{d\sqrt{\tan(c+dx)}} + \frac{2(3iA-B)\sqrt{\tan(c+dx)}\left(a^3+ia^3\tan(\right.}{3d}$$

$$= -\frac{16a^3B\sqrt{\tan(c+dx)}}{3d} - \frac{2aA(a+ia\tan(c+dx))^2}{d\sqrt{\tan(c+dx)}} + \frac{2(3iA-B)\sqrt{\tan}}{}$$

$$= -\frac{16a^3B\sqrt{\tan(c+dx)}}{3d} - \frac{2aA(a+ia\tan(c+dx))^2}{d\sqrt{\tan(c+dx)}} + \frac{2(3iA-B)\sqrt{\tan}}{}$$

$$= -\frac{8\sqrt[4]{-1}a^3(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} - \frac{16a^3B\sqrt{\tan(c+dx}}{3d}$$

Mathematica [A] time = 6.5167, size = 151, normalized size = 1.13

$$-\frac{a^3\sqrt{i\tan(c+dx)}\sqrt{\tan(c+dx)}\csc^2(c+dx)\left(\sqrt{i\tan(c+dx)}(3(A-3iB)\sin(2(c+dx))+(-B-3iA)\cos(2(c+dx))-3\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2
),x]
```

```
[Out] -(a^3*Csc[c + d*x]^2*(-12*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))
/(1 + E^((2*I)*(c + d*x)))]]*Sin[2*(c + d*x)] + ((-3*I)*A + B + ((-3*I)*A -
 B)*Cos[2*(c + d*x)] + 3*(A - (3*I)*B)*Sin[2*(c + d*x)])*Sqrt[I*Tan[c + d*x
]])*Sqrt[I*Tan[c + d*x]]*Sqrt[Tan[c + d*x]])/(3*d)
```

Maple [B] time = 0.017, size = 521, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] I/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan
(d*x+c)^(1/2)+tan(d*x+c)))+2*I/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*
2^(1/2)-6*a^3*B*tan(d*x+c)^(1/2)/d-2/d*a^3*A/tan(d*x+c)^(1/2)+I/d*a^3*B*ln(
(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c)))*2^(1/2)+2*I/d*a^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-2*I/d*
a^3*A*tan(d*x+c)^(1/2)+2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
+2/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^3*B*2^(1/2)*ln
((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c)))+2*I/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/3*I/d*a^3*
B*tan(d*x+c)^(3/2)+2*I/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1
/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*2^(1/2)-2/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1
/2)-2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 2.5345, size = 254, normalized size = 1.9

$$-\frac{2iBa^3\tan(dx+c)^{\frac{3}{2}} + 6(iA+3B)a^3\sqrt{\tan(dx+c)} + 3\left(\sqrt{2}(-(2i-2)A-(2i+2)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="maxima")
```

```
[Out] -1/3*(2*I*B*a^3*tan(d*x + c)^(3/2) + 6*(I*A + 3*B)*a^3*sqrt(tan(d*x + c)) +
 3*(sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sq
rt(tan(d*x + c)))) + sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(-1/2*sqrt(
2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log
(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*(-(I + 1)*A + (I
- 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^3 + 6*A*a^3/
sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 1.81921, size = 1069, normalized size = 7.98

$$\frac{3\sqrt{\frac{(64iA^2+128AB-64iB^2)a^6}{d^2}}\left(de^{(4idx+4ic)}-d\right)\log\left(\frac{\left(8(A-iB)a^3e^{(2idx+2ic)}+\sqrt{\frac{(64iA^2+128AB-64iB^2)a^6}{d^2}}\left(de^{(2idx+2ic)}+d\right)\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}\right)e^{(-2idx-2ic)}}{(4iA+4B)a^3}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="fricas")
```

```
[Out] 1/12*(3*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I*c
) - d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((64*I*A^2 + 128*A*B
- 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3
)) - 3*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I*c)
 - d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) - sqrt((64*I*A^2 + 128*A*B -
 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)
) + ((-48*I*A - 80*B)*a^3*e^(4*I*d*x + 4*I*c) + (-48*I*A + 16*B)*a^3*e^(2*I
*d*x + 2*I*c) + 64*B*a^3)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) + 1)))/(d*e^(4*I*d*x + 4*I*c) - d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\int \frac{A}{\tan^{\frac{3}{2}}(c+dx)}\,dx + \int -3A\sqrt{\tan(c+dx)}\,dx + \int \frac{B}{\sqrt{\tan(c+dx)}}\,dx + \int -3B\tan^{\frac{3}{2}}(c+dx)\,dx + \int \frac{3iA}{\sqrt{\tan(c+dx}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] a**3*(Integral(A/tan(c + d*x)**(3/2), x) + Integral(-3*A*sqrt(tan(c + d*x))
, x) + Integral(B/sqrt(tan(c + d*x)), x) + Integral(-3*B*tan(c + d*x)**(3/2
), x) + Integral(3*I*A/sqrt(tan(c + d*x)), x) + Integral(-I*A*tan(c + d*x)*
*(3/2), x) + Integral(3*I*B*sqrt(tan(c + d*x)), x) + Integral(-I*B*tan(c +
d*x)**(5/2), x))
```

Giac [A] time = 1.39826, size = 149, normalized size = 1.11

$$-\frac{2\,Aa^3}{d\sqrt{\tan(dx+c)}} + \frac{(i+1)\,\sqrt{2}\left(16i\,Aa^3 + 16\,Ba^3\right)\arctan\left(-\left(\frac{1}{2}i - \frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{4\,d} - \frac{2i\,Ba^3d^2\tan(dx+c)^{\frac{3}{2}} + 6i\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="giac")
```

```
[Out] -2*A*a^3/(d*sqrt(tan(d*x + c))) + (1/4*I + 1/4)*sqrt(2)*(16*I*A*a^3 + 16*B*
a^3)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/d - 1/3*(2*I*B*a^3*d
^2*tan(d*x + c)^(3/2) + 6*I*A*a^3*d^2*sqrt(tan(d*x + c)) + 18*B*a^3*d^2*sqr
t(tan(d*x + c)))/d^3
```

3.131 $\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=136

$$\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(3B+7iA)\left(a^3+ia^3\tan(c+dx)\right)}{3d\sqrt{\tan(c+dx)}}-\frac{16a^3A\sqrt{\tan(c+dx)}}{3d}-\frac{2aA(a+\ldots}{3d\tan\ldots}$$

```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (16*
a^3*A*Sqrt[Tan[c + d*x]])/(3*d) - (2*a*A*(a + I*a*Tan[c + d*x])^2)/(3*d*Tan
[c + d*x]^(3/2)) - (2*((7*I)*A + 3*B)*(a^3 + I*a^3*Tan[c + d*x]))/(3*d*Sqrt
[Tan[c + d*x]])
```

Rubi [A] time = 0.357701, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3593, 3592, 3533, 205}

$$\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(3B+7iA)\left(a^3+ia^3\tan(c+dx)\right)}{3d\sqrt{\tan(c+dx)}}-\frac{16a^3A\sqrt{\tan(c+dx)}}{3d}-\frac{2aA(a+\ldots}{3d\tan\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```



```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d - (16*
a^3*A*Sqrt[Tan[c + d*x]])/(3*d) - (2*a*A*(a + I*a*Tan[c + d*x])^2)/(3*d*Tan
[c + d*x]^(3/2)) - (2*((7*I)*A + 3*B)*(a^3 + I*a^3*Tan[c + d*x]))/(3*d*Sqrt
[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^2}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{2}{3}\int \frac{(a+ia\tan(c+dx))^2\left(\frac{1}{2}a(7iA+3B)\right.}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2aA(a+ia\tan(c+dx))^2}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7iA+3B)\left(a^3+ia^3\tan(c+dx)\right)}{3d\sqrt{\tan(c+dx)}}+\frac{4}{3}$$

$$= -\frac{16a^3A\sqrt{\tan(c+dx)}}{3d}-\frac{2aA(a+ia\tan(c+dx))^2}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7iA+3B)\left(a^3+\right.}{3d\sqrt{\tan}}$$

$$= -\frac{16a^3A\sqrt{\tan(c+dx)}}{3d}-\frac{2aA(a+ia\tan(c+dx))^2}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7iA+3B)\left(a^3+\right.}{3d\sqrt{\tan}}$$

$$= \frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{16a^3A\sqrt{\tan(c+dx)}}{3d}-$$

Mathematica [A] time = 6.69537, size = 266, normalized size = 1.96

$$\frac{\cos^4(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\left(-\frac{8e^{-3ic}(A-iB)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}}-\frac{1}{3}(\cos(3c)-i\sin(3c)\right.}{d(\cos(dx)+i\sin(dx))^3(A\cos(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2
),x]
```

```
[Out] (Cos[c + d*x]^4*((-8*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 +
E^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)
*(c + d*x)))]])/(E^((3*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]) - (Csc[c + d*x]^2*(Cos[3*c] - I*Sin[3*c])*(A + (3*I)*B + (A -
 (3*I)*B)*Cos[2*(c + d*x)] + 3*((3*I)*A + B)*Sin[2*(c + d*x)])*Sqrt[Tan[c +
 d*x]])/3)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*
Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.017, size = 522, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] 2*I/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/3/d*a^3*A/tan(d*x
+c)^(3/2)-I/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/d*a^3/tan(d*x+c)^(1/2)*B-2*I/d*a^3*A
*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2*I/d*a^3*B*tan(d*x+c)^(1/2)-6*
I/d*a^3/tan(d*x+c)^(1/2)*A-2/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(
1/2)-2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/d*a^3*A*2^(1/2
)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c)))-2*I/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+2*I/d*a^
3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+I/d*a^3*B*2^(1/2)*ln((1+2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1
/d*a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*2^(1/2)-2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1
```

```
/2)-2/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 2.09837, size = 255, normalized size = 1.88

$$-\frac{6i\,Ba^3\sqrt{\tan\left(dx+c\right)}-3\left(\sqrt{2}(-(2i+2)\ A+(2i-2)\ B)\arctan\left(\frac{1}{2}\ \sqrt{2}\left(\sqrt{2}+2\ \sqrt{\tan\left(dx+c\right)}\right)\right)+\sqrt{2}(-(2i+2)\ A+(2i\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="maxima")
```

```
[Out] -1/3*(6*I*B*a^3*sqrt(tan(d*x + c)) - 3*(sqrt(2)*(-(2*I + 2)*A + (2*I - 2)*B
)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I + 2
)*A + (2*I - 2)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) +
sqrt(2)*((I - 1)*A + (I + 1)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x +
c) + 1) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) +
 tan(d*x + c) + 1))*a^3 - 2*(3*(-3*I*A - B)*a^3*tan(d*x + c) - A*a^3)/tan(d
*x + c)^(3/2))/d
```

Fricas [B] time = 1.8594, size = 1185, normalized size = 8.71

$$-\frac{3\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}+i\,d\right)\sqrt{\cdots}\right.}{(4i\,A+4\,B)a^3}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="fricas")
```

```
[Out] -1/12*(3*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I
*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c)
 + sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c)
+ I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*
I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 3*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^
2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((8*(A
```

```
 - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6
/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 16*((
5*A - 3*I*B)*a^3*e^(4*I*d*x + 4*I*c) + (A + 3*I*B)*a^3*e^(2*I*d*x + 2*I*c)
- 4*A*a^3)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d
*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\int \frac{A}{\tan^{\frac{5}{2}}(c+dx)}\,dx + \int -\frac{3A}{\sqrt{\tan(c+dx)}}\,dx + \int \frac{B}{\tan^{\frac{3}{2}}(c+dx)}\,dx + \int -3B\sqrt{\tan(c+dx)}\,dx + \int \frac{3iA}{\tan^{\frac{3}{2}}(c+dx)}\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] a**3*(Integral(A/tan(c + d*x)**(5/2), x) + Integral(-3*A/sqrt(tan(c + d*x))
, x) + Integral(B/tan(c + d*x)**(3/2), x) + Integral(-3*B*sqrt(tan(c + d*x)
), x) + Integral(3*I*A/tan(c + d*x)**(3/2), x) + Integral(-I*A*sqrt(tan(c +
 d*x)), x) + Integral(3*I*B/sqrt(tan(c + d*x)), x) + Integral(-I*B*tan(c +
d*x)**(3/2), x))
```

Giac [A] time = 1.36722, size = 131, normalized size = 0.96

$$-\frac{2i\,Ba^3\sqrt{\tan(dx+c)}}{d} - \frac{(4i-4)\,\sqrt{2}\left(-i\,Aa^3 - Ba^3\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d} + \frac{-18i\,Aa^3\tan(dx+c) - 6}{3\,d\tan(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="giac")
```

```
[Out] -2*I*B*a^3*sqrt(tan(d*x + c))/d - (4*I - 4)*sqrt(2)*(-I*A*a^3 - B*a^3)*arct
an(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/d + 1/3*(-18*I*A*a^3*tan(d*x
+ c) - 6*B*a^3*tan(d*x + c) - 2*A*a^3)/(d*tan(d*x + c)^(3/2))
```

3.132 $\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=144

$$\frac{8\sqrt[4]{-1}a^3(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(5B+9iA)\left(a^3+ia^3\tan(c+dx)\right)}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{16a^3(6A-5iB)}{15d\sqrt{\tan(c+dx)}}-\frac{2aA(a+ia\,\mathrm{ta}}{5d\tan^{\frac{5}{2}}(}$$

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (16*
a^3*(6*A - (5*I)*B))/(15*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c + d*
x])^2)/(5*d*Tan[c + d*x]^(5/2)) - (2*((9*I)*A + 5*B)*(a^3 + I*a^3*Tan[c + d
*x]))/(15*d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 0.376675, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3593, 3591, 3533, 205}

$$\frac{8\sqrt[4]{-1}a^3(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}-\frac{2(5B+9iA)\left(a^3+ia^3\tan(c+dx)\right)}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{16a^3(6A-5iB)}{15d\sqrt{\tan(c+dx)}}-\frac{2aA(a+ia\,\mathrm{ta}}{5d\tan^{\frac{5}{2}}(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (16*
a^3*(6*A - (5*I)*B))/(15*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c + d*
x])^2)/(5*d*Tan[c + d*x]^(5/2)) - (2*((9*I)*A + 5*B)*(a^3 + I*a^3*Tan[c + d
*x]))/(15*d*Tan[c + d*x]^(3/2))
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^2}{5d\tan^{\frac{5}{2}}(c+dx)}+\frac{2}{5}\int \frac{(a+ia\tan(c+dx))^2\left(\frac{1}{2}a(9iA+5B\right.}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2aA(a+ia\tan(c+dx))^2}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2(9iA+5B)\left(a^3+ia^3\tan(c+dx)\right)}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4}{15}$$

$$= \frac{16a^3(6A-5iB)}{15d\sqrt{\tan(c+dx)}}-\frac{2aA(a+ia\tan(c+dx))^2}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2(9iA+5B)\left(a^3+ia\right.}{15d\tan^{\frac{3}{2}}(c}$$

$$= \frac{16a^3(6A-5iB)}{15d\sqrt{\tan(c+dx)}}-\frac{2aA(a+ia\tan(c+dx))^2}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2(9iA+5B)\left(a^3+ia\right.}{15d\tan^{\frac{3}{2}}(c}$$

$$= \frac{8\sqrt[4]{-1}a^3(iA+B)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{16a^3(6A-5iB)}{15d\sqrt{\tan(c+dx)}}-$$

Mathematica [B] time = 10.0278, size = 449, normalized size = 3.12

$$\frac{\cos^4(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\left(\csc(c)\left(-\frac{2}{15}\cos(3c)+\frac{2}{15}i\sin(3c)\right)\csc^2(c+dx)(15iA$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2
),x]
```

```
[Out] ((-8*I)*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c +
 d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]
]*Cos[c + d*x]^4*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*E^((3*I)
*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(Cos[d*x] +
I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^4*(Csc[c]*
(63*A*Cos[c] - (45*I)*B*Cos[c] + (15*I)*A*Sin[c] + 5*B*Sin[c])*((2*Cos[3*c]
)/15 - ((2*I)/15)*Sin[3*c]) + Csc[c]*Csc[c + d*x]^2*(3*A*Cos[c] + (15*I)*A*
Sin[c] + 5*B*Sin[c])*((-2*Cos[3*c])/15 + ((2*I)/15)*Sin[3*c]) + A*Csc[c]*Cs
c[c + d*x]^3*((2*Cos[3*c])/5 - ((2*I)/5)*Sin[3*c])*Sin[d*x] + Csc[c]*Csc[c
+ d*x]*((-6*Cos[3*c])/5 + ((6*I)/5)*Sin[3*c])*(7*A*Sin[d*x] - (5*I)*B*Sin[d
*x]))*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*
(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.017, size = 538, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -2/5/d*a^3*A/tan(d*x+c)^(5/2)-I/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-2/3/d*a^3/tan(d*x+
c)^(3/2)*B-6*I/d*a^3/tan(d*x+c)^(1/2)*B+8/d*a^3*A/tan(d*x+c)^(1/2)-I/d*a^3*
B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c)))*2^(1/2)-2*I/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2
*I/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/d*a^3*B*arctan(1+2^
(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2
))*2^(1/2)-1/d*a^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-
```

```
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-2*I/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x
+c)^(1/2))*2^(1/2)-2*I/d*a^3/tan(d*x+c)^(3/2)*A-2*I/d*a^3*A*arctan(-1+2^(1/
2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+2/d*a^3*A*arctan(1+
2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1
/2))*2^(1/2)
```

Maxima [A] time = 2.28586, size = 262, normalized size = 1.82

$$\frac{15\left(\sqrt{2}(-(2i-2)\ A-(2i+2)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)+\sqrt{2}(-(2i-2)\ A-(2i+2)\ B)\arctan\left(-\frac{1}{2}\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorit
hm="maxima")
```

```
[Out] 1/15*(15*(sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2)
+ 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(-1/2
*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(I + 1)*A + (I - 1)*
B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*(-(I + 1)*A
 + (I - 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^3 + 2*
((60*A - 45*I*B)*a^3*tan(d*x + c)^2 + 5*(-3*I*A - B)*a^3*tan(d*x + c) - 3*A
*a^3)/tan(d*x + c)^(5/2))/d
```

Fricas [B] time = 1.87915, size = 1366, normalized size = 9.49

$$-\frac{15\sqrt{\frac{\left(64i\,A^2+128\,AB-64i\,B^2\right)a^6}{d^2}}\left(de^{(6i\,dx+6i\,c)}-3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}-d\right)\log\left(\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(64i\,A^2+128\,AB-64i\,B^2\right)a^6}{d^2}}\left(\right.\right.}{(4i\,A+4\,B)}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorit
hm="fricas")
```

```
[Out] -1/60*(15*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6*I
*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((8*(A - I*
B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*
(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 15*sqrt((64*I*A^
2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x +
4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I
*c) - sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I*c)
+ d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*
d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - ((624*I*A + 400*B)*a^3*e^(6*I*d*x + 6*I
*c) + (-288*I*A - 320*B)*a^3*e^(4*I*d*x + 4*I*c) + (-528*I*A - 400*B)*a^3*e
^(2*I*d*x + 2*I*c) + (384*I*A + 320*B)*a^3)*sqrt((-I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*
I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.36458, size = 146, normalized size = 1.01

$$\frac{(i+1)\ \sqrt{2}\left(-16i\,Aa^3 - 16\,Ba^3\right)\arctan\left(-\left(\frac{1}{2}i - \frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,d} + \frac{120\,Aa^3\tan\left(dx+c\right)^2 - 90i\,Ba^3\tan\left(dx+c\right)^2 - 3}{15\,d\tan}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorit
hm="giac")
```

```
[Out] (1/4*I + 1/4)*sqrt(2)*(-16*I*A*a^3 - 16*B*a^3)*arctan(-(1/2*I - 1/2)*sqrt(2
)*sqrt(tan(d*x + c)))/d + 1/15*(120*A*a^3*tan(d*x + c)^2 - 90*I*B*a^3*tan(d
*x + c)^2 - 30*I*A*a^3*tan(d*x + c) - 10*B*a^3*tan(d*x + c) - 6*A*a^3)/(d*t
an(d*x + c)^(5/2))
```

3.133 $\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=169

$$-\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{8a^3(23A-21iB)}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7B+11iA)\left(a^3+ia^3\tan(c+dx)\right)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{8a^3(B}{d\sqrt{\tan(c}}$$

```
[Out] (-8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (8*
a^3*(23*A - (21*I)*B))/(105*d*Tan[c + d*x]^(3/2)) + (8*a^3*(I*A + B))/(d*Sq
rt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c + d*x])^2)/(7*d*Tan[c + d*x]^(7/2
)) - (2*((11*I)*A + 7*B)*(a^3 + I*a^3*Tan[c + d*x]))/(35*d*Tan[c + d*x]^(5/
2))
```

Rubi [A] time = 0.424736, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3593, 3591, 3529, 3533, 205}

$$-\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d}+\frac{8a^3(23A-21iB)}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7B+11iA)\left(a^3+ia^3\tan(c+dx)\right)}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{8a^3(B}{d\sqrt{\tan(c}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),x]
```


```
[Out] (-8*(-1)^(1/4)*a^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d + (8*
a^3*(23*A - (21*I)*B))/(105*d*Tan[c + d*x]^(3/2)) + (8*a^3*(I*A + B))/(d*Sq
rt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c + d*x])^2)/(7*d*Tan[c + d*x]^(7/2
)) - (2*((11*I)*A + 7*B)*(a^3 + I*a^3*Tan[c + d*x]))/(35*d*Tan[c + d*x]^(5/
2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^2}{7d\tan^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{(a+ia\tan(c+dx))^2\left(\frac{1}{2}a(11iA+7\right.}{\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2aA(a+ia\tan(c+dx))^2}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(11iA+7B)\left(a^3+ia^3\tan(c+dx)\right)}{35d\tan^{\frac{5}{2}}(c+dx)} +$$

$$= \frac{8a^3(23A-21iB)}{105d\tan^{\frac{3}{2}}(c+dx)} - \frac{2aA(a+ia\tan(c+dx))^2}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(11iA+7B)\left(a^3+\right.}{35d\tan^{\frac{5}{2}}(}$$

$$= \frac{8a^3(23A-21iB)}{105d\tan^{\frac{3}{2}}(c+dx)} + \frac{8a^3(iA+B)}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+ia\tan(c+dx))^2}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2}{}$$

$$= \frac{8a^3(23A-21iB)}{105d\tan^{\frac{3}{2}}(c+dx)} + \frac{8a^3(iA+B)}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+ia\tan(c+dx))^2}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2}{}$$

$$= -\frac{8\sqrt[4]{-1}a^3(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{d} + \frac{8a^3(23A-21iB)}{105d\tan^{\frac{3}{2}}(c+dx)}$$

Mathematica [B] time = 12.0529, size = 495, normalized size = 2.93

$$\frac{8e^{-3ic}(A-iB)\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\cos^4(c+dx)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{d\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}(\cos(dx)+i\sin(dx))^3(A\cos(c+dx)+B\sin(c+dx))} + \frac{\cos^4(c+}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2
),x]
```

```
[Out] (8*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)
))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Cos
[c + d*x]^4*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/(d*E^((3*I)*c)*S
qrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(Cos[d*x] + I*Sin
[d*x])^3*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c + d*x]^4*(Csc[c]*Csc[c
 + d*x]^2*((-63*I)*A*Cos[c] - 21*B*Cos[c] + 170*A*Sin[c] - (105*I)*B*Sin[c]
)*((2*Cos[3*c])/105 - ((2*I)/105)*Sin[3*c]) + Csc[c]*((483*I)*A*Cos[c] + 44
1*B*Cos[c] - 155*A*Sin[c] + (105*I)*B*Sin[c])*((2*Cos[3*c])/105 - ((2*I)/10
5)*Sin[3*c]) + Csc[c + d*x]^4*((-2*A*Cos[3*c])/7 + ((2*I)/7)*A*Sin[3*c]) +
Csc[c]*Csc[c + d*x]*((2*Cos[3*c])/5 - ((2*I)/5)*Sin[3*c])*((-23*I)*A*Sin[d*
```

```
x] - 21*B*Sin[d*x]) + Csc[c]*Csc[c + d*x]^3*((2*Cos[3*c])/5 - ((2*I)/5)*Sin
[3*c])*((3*I)*A*Sin[d*x] + B*Sin[d*x]))*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c +
 d*x])^3*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x]
 + B*Sin[c + d*x]))
```

Maple [B] time = 0.019, size = 572, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] -2/7/d*a^3*A/tan(d*x+c)^(7/2)-6/5*I/d*a^3/tan(d*x+c)^(5/2)*A+8/d*a^3/tan(d*
x+c)^(1/2)*B+I/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/5/d*a^3/tan(d*x+c)^(5/2)*B+2*I/d*
a^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+8/3/d*a^3*A/tan(d*x+c)^(3/
2)-2*I/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-I/d*a^3*B*2^(1/2)
*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan
(d*x+c)))-2*I/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+2/d*a^3*A
*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/d*a^3*A*2^(1/2)*ln((1+2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+2/d
*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2*I/d*a^3/tan(d*x+c)^(3/2
)*B+8*I/d*a^3/tan(d*x+c)^(1/2)*A+2*I/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(
1/2))*2^(1/2)+1/d*a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/
2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+2/d*a^3*B*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*2^(1/2)+2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 2.10347, size = 286, normalized size = 1.69

$$-\frac{105\left(\sqrt{2}(-(2i+2)\ A+(2i-2)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+\sqrt{2}(-(2i+2)\ A+(2i-2)\ B)\arctan\left(-\frac{1}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algorit
hm="maxima")
```

```
[Out] -1/105*(105*(sqrt(2)*(-(2*I + 2)*A + (2*I - 2)*B)*arctan(1/2*sqrt(2)*(sqrt(
2) + 2*sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I + 2)*A + (2*I - 2)*B)*arctan(-
1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1
)*B)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((I - 1)*
A + (I + 1)*B)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*a^3 - 2
*(420*(I*A + B)*a^3*tan(d*x + c)^3 + (140*A - 105*I*B)*a^3*tan(d*x + c)^2 +
 21*(-3*I*A - B)*a^3*tan(d*x + c) - 15*A*a^3)/tan(d*x + c)^(7/2))/d
```

Fricas [B] time = 2.07294, size = 1558, normalized size = 9.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algorit
hm="fricas")
```

```
[Out] 1/420*(105*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(8*I*d*x + 8
*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x
+ 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2 -
128*A*B + 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*
A + 4*B)*a^3)) - 105*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(8
*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e
^(2*I*d*x + 2*I*c) + d)*log((8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-6
4*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*
I*c)/((4*I*A + 4*B)*a^3)) - 16*((319*A - 273*I*B)*a^3*e^(8*I*d*x + 8*I*c) -
 3*(109*A - 133*I*B)*a^3*e^(6*I*d*x + 6*I*c) - 5*(19*A - 21*I*B)*a^3*e^(4*I
*d*x + 4*I*c) + 3*(129*A - 133*I*B)*a^3*e^(2*I*d*x + 2*I*c) - 4*(41*A - 42*
I*B)*a^3)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(d*
e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4
*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.37301, size = 184, normalized size = 1.09

$$\frac{(4i-4)\sqrt{2}\left(-iAa^3-Ba^3\right)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{d}-\frac{-840iAa^3\tan(dx+c)^3-840Ba^3\tan(dx+c)^3-28}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algorit
hm="giac")
```

```
[Out] (4*I - 4)*sqrt(2)*(-I*A*a^3 - B*a^3)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan
(d*x + c)))/d - 1/105*(-840*I*A*a^3*tan(d*x + c)^3 - 840*B*a^3*tan(d*x + c)
^3 - 280*A*a^3*tan(d*x + c)^2 + 210*I*B*a^3*tan(d*x + c)^2 + 126*I*A*a^3*ta
n(d*x + c) + 42*B*a^3*tan(d*x + c) + 30*A*a^3)/(d*tan(d*x + c)^(7/2))
```

3.134 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=306

$$\frac{(-B+iA)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad}-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)((4+i)A+(1+6i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad}+\ldots$$

```
[Out] ((-1/4 - I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x
]]])/(Sqrt[2]*a*d) + ((1/4 + I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*((1 + 4*I)*A - (6 + I
)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) - ((
(3 - 5*I)*A + (5 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x
]])/(8*Sqrt[2]*a*d) - (5*(I*A - B)*Sqrt[Tan[c + d*x]])/(2*a*d) - ((3*A + (7
*I)*B)*Tan[c + d*x]^(3/2))/(6*a*d) + ((I*A - B)*Tan[c + d*x]^(5/2))/(2*d*(a
 + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.408079, antiderivative size = 306, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(-B+iA)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad}-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)((4+i)A+(1+6i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad}+\ldots$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] ((-1/4 - I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x
]]])/(Sqrt[2]*a*d) + ((1/4 + I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*((1 + 4*I)*A - (6 + I
)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) - ((
(3 - 5*I)*A + (5 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x
]])/(8*Sqrt[2]*a*d) - (5*(I*A - B)*Sqrt[Tan[c + d*x]])/(2*a*d) - ((3*A + (7
*I)*B)*Tan[c + d*x]^(3/2))/(6*a*d) + ((I*A - B)*Tan[c + d*x]^(5/2))/(2*d*(a
 + I*a*Tan[c + d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \tan^{\frac{3}{2}}(c+dx)\left(\frac{5}{2}a(iA-B)+\frac{1}{2}a(3A+7iB)\tan(c+\right.}{2a^2}$$

$$= -\frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \sqrt{\tan(c+dx)}\left(-\frac{1}{2}a(3\right.}{}$$

$$= -\frac{5(iA-B)\sqrt{\tan(c+dx)}}{2ad} - \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}$$

$$= -\frac{5(iA-B)\sqrt{\tan(c+dx)}}{2ad} - \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}$$

$$= -\frac{5(iA-B)\sqrt{\tan(c+dx)}}{2ad} - \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}$$

$$= -\frac{5(iA-B)\sqrt{\tan(c+dx)}}{2ad} - \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}$$

$$= \frac{((3-5i)A+(5+7i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{8\sqrt{2}ad} - \frac{((3-5i)A}{}$$

$$= -\frac{((3+5i)A-(5-7i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad} + \frac{((3+5i)A-(5-7i)B}{}$$

Mathematica [A] time = 2.79564, size = 248, normalized size = 0.81

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(\frac{2}{3}\tan(c+dx)\sec(c+dx)(\cos(dx)-i\sin(dx))(4(3A+2iB)\sin(2(c+dx))+(11\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x])*((-1 - I)*(((4 + I)*A + (1 +
6*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + ((-1 - 4*I)*A + (6 + I)*B)*Lo
g[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(Cos[
c] + I*Sin[c])*Sqrt[Sin[2*(c + d*x)]] + (2*Sec[c + d*x]*(Cos[d*x] - I*Sin[d
*x])*((-15*I)*A + 19*B + ((-15*I)*A + 11*B)*Cos[2*(c + d*x)] + 4*(3*A + (2*
I)*B)*Sin[2*(c + d*x)])*Tan[c + d*x])/3))/(8*d*(A*Cos[c + d*x] + B*Sin[c +
```

```
d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.052, size = 290, normalized size = 1.

$$\frac{-\frac{2i}{3}B}{ad}(\tan(dx+c))^{\frac{3}{2}}+2\frac{B\sqrt{\tan(dx+c)}}{ad}-\frac{2\,iA}{ad}\sqrt{\tan(dx+c)}-\frac{\frac{i}{2}B}{ad(\tan(dx+c)-i)}\sqrt{\tan(dx+c)}-\frac{A}{2\,ad(\tan(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -2/3*I/d/a*B*tan(d*x+c)^(3/2)+2/d/a*B*tan(d*x+c)^(1/2)-2*I/d/a*A*tan(d*x+c)
^(1/2)-1/2*I/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*B-1/2/d/a*tan(d*x+c)^(1/2)
/(tan(d*x+c)-I)*A+4/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1
/2)-I*2^(1/2)))*A+6*I/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^
(1/2)-I*2^(1/2)))*B-1/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^
(1/2)+I*2^(1/2)))*A+I/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^
(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.04194, size = 1886, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/24*(3*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 + 2
*A*B - I*B^2)/(a^2*d^2))*log(2*((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B
^2)/(a^2*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A +
 B)) - 3*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 +
2*A*B - I*B^2)/(a^2*d^2))*log(-2*((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*
e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I
*B^2)/(a^2*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A
 + B)) - 6*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-4*I*A
^2 + 12*A*B + 9*I*B^2)/(a^2*d^2))*log(-((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-4*I*A^2 +
12*A*B + 9*I*B^2)/(a^2*d^2)) + 2*A + 3*I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) + 6
*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-4*I*A^2 + 12*A*
B + 9*I*B^2)/(a^2*d^2))*log(((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-4*I*A^2 + 12*A*B + 9*
I*B^2)/(a^2*d^2)) - 2*A - 3*I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) + 2*((-27*I*A
+ 19*B)*e^(4*I*d*x + 4*I*c) + (-30*I*A + 38*B)*e^(2*I*d*x + 2*I*c) - 3*I*A
+ 3*B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(a*d*e
^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.22592, size = 223, normalized size = 0.73

$$-\frac{(i-1)\ \sqrt{2}(4i\,A-6\,B)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,ad}+\frac{(i+1)\ \sqrt{2}(-i\,A-B)\arctan\left(\left(\frac{1}{2}i-\frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] -(1/4*I - 1/4)*sqrt(2)*(4*I*A - 6*B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(
d*x + c)))/(a*d) + (1/4*I + 1/4)*sqrt(2)*(-I*A - B)*arctan((1/2*I - 1/2)*sq
rt(2)*sqrt(tan(d*x + c)))/(a*d) - 1/2*(A*sqrt(tan(d*x + c)) + I*B*sqrt(tan(
d*x + c)))/(a*d*(tan(d*x + c) - I)) - 1/3*(2*I*B*a^2*d^2*tan(d*x + c)^(3/2)
 + 6*I*A*a^2*d^2*sqrt(tan(d*x + c)) - 6*B*a^2*d^2*sqrt(tan(d*x + c)))/(a^3*
d^3)
```

3.135 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=275

$$\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{((1-3i)A+(3+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad}-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)((1+2i)A-(4+i)B)\tan^{-1}\left(\sqrt{\right.}}{\sqrt{2}ad}$$

```
[Out] -((((1 - 3*I)*A + (3 + 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(4*Sq
rt[2]*a*d) - ((1/4 + I/4)*((1 + 2*I)*A - (4 + I)*B)*ArcTan[1 + Sqrt[2]*Sqrt
[Tan[c + d*x]]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*((2 + I)*A + (1 + 4*I)*B)*Log
[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) + ((1/8 + I/
8)*((2 + I)*A + (1 + 4*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d
*x]])/(Sqrt[2]*a*d) - ((A + (5*I)*B)*Sqrt[Tan[c + d*x]])/(2*a*d) + ((I*A -
B)*Tan[c + d*x]^(3/2))/(2*d*(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.354326, antiderivative size = 275, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))}-\frac{((1-3i)A+(3+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad}-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)((1+2i)A-(4+i)B)\tan^{-1}\left(\sqrt{\right.}}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] -((((1 - 3*I)*A + (3 + 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(4*Sq
rt[2]*a*d) - ((1/4 + I/4)*((1 + 2*I)*A - (4 + I)*B)*ArcTan[1 + Sqrt[2]*Sqrt
[Tan[c + d*x]]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*((2 + I)*A + (1 + 4*I)*B)*Log
[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) + ((1/8 + I/
8)*((2 + I)*A + (1 + 4*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d
*x]])/(Sqrt[2]*a*d) - ((A + (5*I)*B)*Sqrt[Tan[c + d*x]])/(2*a*d) + ((I*A -
B)*Tan[c + d*x]^(3/2))/(2*d*(a + I*a*Tan[c + d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
```

```
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \sqrt{\tan(c+dx)}\left(\frac{3}{2}a(iA-B)+\frac{1}{2}a(A+5iB)\tan(c+a\right.}{2a^2}$$

$$= -\frac{(A+5iB)\sqrt{\tan(c+dx)}}{2ad} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\int \frac{-\frac{1}{2}a(A+5iB)+\frac{3}{2}a(iA-B)\tan(}{\sqrt{\tan(c+dx)}}}{2a^2}$$

$$= -\frac{(A+5iB)\sqrt{\tan(c+dx)}}{2ad} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{\text{Subst}\left(\int \frac{-\frac{1}{2}a(A+5iB)+\frac{3}{2}a(i}{1+x^4}\right.}{a}$$

$$= -\frac{(A+5iB)\sqrt{\tan(c+dx)}}{2ad} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{((1+3i)A-(3-5i)B)\,\text{S}}{}$$

$$= -\frac{(A+5iB)\sqrt{\tan(c+dx)}}{2ad} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{2d(a+ia\tan(c+dx))} - \frac{((1+3i)A-(3-5i)B)\,\text{S}}{}$$

$$= -\frac{((1+3i)A-(3-5i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{8\sqrt{2}ad} + \frac{((1+3i)A}{}$$

$$= -\frac{((1-3i)A+(3+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad} + \frac{((1-3i)A+(3+5i)B}{}$$

Mathematica [A] time = 2.08446, size = 220, normalized size = 0.8

$$\frac{(\cos(dx) + i\sin(dx))(A + B\tan(c + dx))\left(\tan(c + dx)(-4\cos(dx) + 4i\sin(dx))(-4B\sin(c + dx) + (A + 5iB)\cos(c + dx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(A + B*Tan[c + d*x])*(-((((1 - 3*I)*A + (3 + 5*I)*
B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((2 + I)*A + (1 + 4*I)*B)*
Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(Co
s[c] + I*Sin[c])*Sqrt[Sin[2*(c + d*x)]]) + (-4*Cos[d*x] + (4*I)*Sin[d*x])*(
(A + (5*I)*B)*Cos[c + d*x] - 4*B*Sin[c + d*x])*Tan[c + d*x]))/(8*d*(A*Cos[c
 + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.047, size = 255, normalized size = 0.9

$$\frac{-2\,iB}{ad}\sqrt{\tan(dx+c)} + \frac{\frac{i}{2}A}{ad\,(\tan(dx+c)-i)}\sqrt{\tan(dx+c)} - \frac{B}{2\,ad\,(\tan(dx+c)-i)}\sqrt{\tan(dx+c)} + 4\,\frac{B}{ad\left(\sqrt{2}-i\sqrt{2}\right)}\,\mathrm{arc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -2*I/d/a*B*tan(d*x+c)^(1/2)+1/2*I/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*A-1/2
/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*B+4/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*t
an(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*B-2*I/d/a/(2^(1/2)-I*2^(1/2))*arctan(2
*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-I/d/a/(2^(1/2)+I*2^(1/2))*arctan(2
*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A-1/d/a/(2^(1/2)+I*2^(1/2))*arctan(2
*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.02616, size = 1642, normalized size = 5.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/8*(a*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(
1/2*((4*I*a*d*e^(2*I*d*x + 2*I*c) + 4*I*a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) + 4
*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a*d*sqrt(
(-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1/2*((-4*I*a*d*
e^(2*I*d*x + 2*I*c) - 4*I*a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) + 4*(A - I*B)*e^(
2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a*d*sqrt((I*A^2 - 4*A
*B - 4*I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(((a*d*e^(2*I*d*x + 2*I*c)
+ a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I
*A^2 - 4*A*B - 4*I*B^2)/(a^2*d^2)) + I*A - 2*B)*e^(-2*I*d*x - 2*I*c)/(a*d))
 + 2*a*d*sqrt((I*A^2 - 4*A*B - 4*I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(
-((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((I*A^2 - 4*A*B - 4*I*B^2)/(a^2*d^2)) - I*A + 2*B)*
e^(-2*I*d*x - 2*I*c)/(a*d)) + 2*((A + 9*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)
*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x
- 2*I*c)/(a*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.22339, size = 162, normalized size = 0.59

$$-\frac{(i+1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{4ad}+\frac{(i-1)\sqrt{2}(2A+4iB)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{4ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] -(1/4*I + 1/4)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
 + c)))/(a*d) + (1/4*I - 1/4)*sqrt(2)*(2*A + 4*I*B)*arctan(-(1/2*I + 1/2)*s
qrt(2)*sqrt(tan(d*x + c)))/(a*d) - 2*I*B*sqrt(tan(d*x + c))/(a*d) - 1/2*(-I
*A*sqrt(tan(d*x + c)) + B*sqrt(tan(d*x + c)))/(a*d*(tan(d*x + c) - I))
```

3.136 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=236

$$-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad}+\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}ad}+\frac{(-B+iA)}{2d(a+ia}$$

```
[Out] ((-1/4 + I/4)*(A + (2 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt
[2]*a*d) + ((1/4 - I/4)*(A + (2 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x
]]])/(Sqrt[2]*a*d) + ((1/8 + I/8)*(A - (2 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*(A - (2 + I)*B)*Log
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) + ((I*A - B)
*Sqrt[Tan[c + d*x]])/(2*d*(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.286259, antiderivative size = 236, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3595, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad}+\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}ad}+\frac{(-B+iA)}{2d(a+ia}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] ((-1/4 + I/4)*(A + (2 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt
[2]*a*d) + ((1/4 - I/4)*(A + (2 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x
]]])/(Sqrt[2]*a*d) + ((1/8 + I/8)*(A - (2 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*(A - (2 + I)*B)*Log
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) + ((I*A - B)
*Sqrt[Tan[c + d*x]])/(2*d*(a + I*a*Tan[c + d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \frac{(iA-B)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} - \frac{\int \frac{\frac{1}{2}a(iA-B)-\frac{1}{2}a(A-3iB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{2a^2}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}a(iA-B)-\frac{1}{2}a(A-3iB)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{a^2 d}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} - \frac{\left(\left(\frac{1}{4}+\frac{i}{4}\right)(A-(2+i)B)\right)\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{ad}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} - -\frac{\left(\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\right)\text{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2}\,dx, x,\right.}{\sqrt{2}ad}$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{\sqrt{2}ad} - \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A}{}$$

$$= -\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad} + \frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B}{}$$

Mathematica [A] time = 1.58294, size = 198, normalized size = 0.84

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(4(A+iB)\sin(c+dx)(\sin(dx)+i\cos(dx))+(1+i)(-\sin(c)+i\cos(c))\sqrt{\sin(2(}\right.}{8d\sqrt{\tan(c+dx)}(a+ia\,\text{ta}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(4*(A + I*B)*(I*Cos[d*x] + Sin[d*x])*Sin[c + d*x]
+ (1 + I)*((A + (2 - I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + I*(A - (2
+ I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c +
d*x]*(I*Cos[c] - Sin[c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(8*d
```

```
*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x]
))
```

Maple [A] time = 0.061, size = 192, normalized size = 0.8

$$\frac{\frac{i}{2}B}{ad(\tan(dx+c)-i)}\sqrt{\tan(dx+c)}+\frac{A}{2ad(\tan(dx+c)-i)}\sqrt{\tan(dx+c)}-\frac{2iB}{ad\left(\sqrt{2}-i\sqrt{2}\right)}\arctan\left(2\frac{\sqrt{\tan(dx+c)}}{\sqrt{2}-i\sqrt{2}}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/2*I/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*B+1/2/d/a*tan(d*x+c)^(1/2)/(tan(d
*x+c)-I)*A-2*I/d/a*B/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)
-I*2^(1/2)))+1/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*A-I/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.80759, size = 1477, normalized size = 6.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/8*(a*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(2
*((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2)) + (A - I*B)*e^(
2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a*d*sqrt((I*A^2 + 2*A*B
 - I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(-2*((a*d*e^(2*I*d*x + 2*I*c) +
 a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*
A^2 + 2*A*B - I*B^2)/(a^2*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*
x - 2*I*c)/(I*A + B)) - 2*a*d*sqrt(I*B^2/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log
(((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt(I*B^2/(a^2*d^2)) + I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)
) + 2*a*d*sqrt(I*B^2/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(-((a*d*e^(2*I*d*x +
 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))
*sqrt(I*B^2/(a^2*d^2)) - I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*((I*A - B)*e^
(2*I*d*x + 2*I*c) + I*A - B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{A\sqrt{\tan(c+dx)}}{i\tan(c+dx)+1}\,dx + \int \frac{B\tan^{\frac{3}{2}}(c+dx)}{i\tan(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] (Integral(A*sqrt(tan(c + d*x))/(I*tan(c + d*x) + 1), x) + Integral(B*tan(c
+ d*x)**(3/2)/(I*tan(c + d*x) + 1), x))/a
```

Giac [A] time = 1.24527, size = 131, normalized size = 0.56

$$-\frac{(i-1)\sqrt{2}B\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{2\,ad} - \frac{(i-1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{4\,ad} + \frac{A\sqrt{\tan}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] -(1/2*I - 1/2)*sqrt(2)*B*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/(
a*d) - (1/4*I - 1/4)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(t
an(d*x + c)))/(a*d) + 1/2*(A*sqrt(tan(d*x + c)) + I*B*sqrt(tan(d*x + c)))/(
a*d*(tan(d*x + c) - I))
```

3.137 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}\,dx$

Optimal. Leaf size=234

$$-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(B+(2+i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad}+\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(B+(2+i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}ad}+\frac{(A+iB)\sqrt{}}{2d(a+ia}$$

```
[Out] ((-1/4 + I/4)*((2 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt
[2]*a*d) + ((1/4 - I/4)*((2 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x
]]])/(Sqrt[2]*a*d) - (((3 + I)*A - (1 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) + (((3 + I)*A - (1 + I)*B)*Log[1 + S
qrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) + ((A + I*B)*Sqr
t[Tan[c + d*x]])/(2*d*(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.2913, antiderivative size = 234, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(B+(2+i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad}+\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(B+(2+i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}ad}+\frac{(A+iB)\sqrt{}}{2d(a+ia}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])),x]
```


```
[Out] ((-1/4 + I/4)*((2 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt
[2]*a*d) + ((1/4 - I/4)*((2 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x
]]])/(Sqrt[2]*a*d) - (((3 + I)*A - (1 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) + (((3 + I)*A - (1 + I)*B)*Log[1 + S
qrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) + ((A + I*B)*Sqr
t[Tan[c + d*x]])/(2*d*(a + I*a*Tan[c + d*x]))
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
```

```
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}\,dx = \frac{(A+iB)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} + \frac{\int \frac{\frac{1}{2}a(3A-iB)-\frac{1}{2}a(iA-B)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{2a^2}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} + \frac{\text{Subst}\left(\int \frac{\frac{1}{2}a(3A-iB)-\frac{1}{2}a(iA-B)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{a^2d}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} + \frac{((3+i)A-(1+i)B)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+a}\right.}{4ad}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{2d(a+ia\tan(c+dx))} - \frac{((3+i)A-(1+i)B)\,\text{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2}\,dx, x, \sqrt{\tan}\right.}{8\sqrt{2}ad}$$

$$= -\frac{((3+i)A-(1+i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{8\sqrt{2}ad} + \frac{((3+i)A-}{}$$

$$= -\frac{\left(\frac{1}{4}-\frac{i}{4}\right)((2+i)A+B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}ad} + \frac{\left(\frac{1}{4}-\frac{i}{4}\right)((2+i)A+B}{}$$

Mathematica [A] time = 1.98748, size = 199, normalized size = 0.85

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(4(A+iB)\sin(c+dx)(\cos(dx)-i\sin(dx))+(1+i)(-\sin(c)+i\cos(c))\sqrt{\sin(2(}\right.}{8d\sqrt{\tan(c+dx)}(a+ia\,\text{ta}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(4*(A + I*B)*(Cos[d*x] - I*Sin[d*x])*Sin[c + d*x]
+ (1 + I)*(((2 + I)*A + B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + ((-1 - 2*I
)*A + I*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c
 + d*x]*(I*Cos[c] - Sin[c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(
```

```
8*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d
*x]))
```

Maple [A] time = 0.057, size = 192, normalized size = 0.8

$$\frac{B}{2\,ad\,(\tan(dx+c)-i)}\sqrt{\tan(dx+c)}-\frac{\frac{i}{2}A}{ad\,(\tan(dx+c)-i)}\sqrt{\tan(dx+c)}-\frac{2\,iA}{ad\left(\sqrt{2}-i\sqrt{2}\right)}\arctan\left(2\,\frac{\sqrt{\tan(dx+c)}}{\sqrt{2}-i\sqrt{2}}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/2/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*B-1/2*I/d/a*tan(d*x+c)^(1/2)/(tan(d
*x+c)-I)*A-2*I/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I
*2^(1/2)))*A+I/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*A+1/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.83499, size = 1513, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/8*(a*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1
/2*((4*I*a*d*e^(2*I*d*x + 2*I*c) + 4*I*a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) + 4*
(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a*d*sqrt((
-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1/2*((-4*I*a*d*e
^(2*I*d*x + 2*I*c) - 4*I*a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) + 4*(A - I*B)*e^(2
*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 2*a*d*sqrt(I*A^2/(a^2*d^
2))*e^(2*I*d*x + 2*I*c)*log(((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(I*A^2/(a^2*d^2)) + I*A)
*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*a*d*sqrt(I*A^2/(a^2*d^2))*e^(2*I*d*x + 2*I
*c)*log(-((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(I*A^2/(a^2*d^2)) - I*A)*e^(-2*I*d*x - 2*I*
c)/(a*d)) + 2*((A + I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.22894, size = 132, normalized size = 0.56

$$-\frac{(i-1)\sqrt{2}A\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{2\,ad}-\frac{(i-1)\sqrt{2}(i\,A+B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,ad}-\frac{i\,A\sqrt{\mathrm{ta}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] -(1/2*I - 1/2)*sqrt(2)*A*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/(
a*d) - (1/4*I - 1/4)*sqrt(2)*(I*A + B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(t
an(d*x + c)))/(a*d) - 1/2*(I*A*sqrt(tan(d*x + c)) - B*sqrt(tan(d*x + c)))/(
```

```
a*d*(tan(d*x + c) - I))
```

3.138 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx$

Optimal. Leaf size=267

$$\frac{((5+3i)A-(3-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad}+\frac{((3-i)B-(5+3i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{4\sqrt{2}ad}+\frac{}{2d\sqrt{\tan(c+}}$$

```
[Out] (((5 + 3*I)*A - (3 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(4*Sqrt[
2]*a*d) + (((-5 - 3*I)*A + (3 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
])/(4*Sqrt[2]*a*d) - ((1/8 - I/8)*((4 + I)*A + (1 + 2*I)*B)*Log[1 - Sqrt[2]
*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) + (((5 - 3*I)*A + (3 + I
)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) -
(5*A + I*B)/(2*a*d*Sqrt[Tan[c + d*x]]) + (A + I*B)/(2*d*Sqrt[Tan[c + d*x]]*
(a + I*a*Tan[c + d*x]))
```

Rubi [A] time = 0.365688, antiderivative size = 267, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{((5+3i)A-(3-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad}+\frac{((3-i)B-(5+3i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{4\sqrt{2}ad}+\frac{}{2d\sqrt{\tan(c+}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])),x]
```

```
[Out] (((5 + 3*I)*A - (3 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(4*Sqrt[
2]*a*d) + (((-5 - 3*I)*A + (3 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
])/(4*Sqrt[2]*a*d) - ((1/8 - I/8)*((4 + I)*A + (1 + 2*I)*B)*Log[1 - Sqrt[2]
*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a*d) + (((5 - 3*I)*A + (3 + I
)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) -
(5*A + I*B)/(2*a*d*Sqrt[Tan[c + d*x]]) + (A + I*B)/(2*d*Sqrt[Tan[c + d*x]]*
(a + I*a*Tan[c + d*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
```

```
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx = \frac{A+iB}{2d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))} + \frac{\int \frac{\frac{1}{2}a(5A+iB)-\frac{3}{2}a(iA-B)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)}\,dx}{2a^2}$$

$$= -\frac{5A+iB}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))} + \frac{\int \frac{-\frac{3}{2}a(iA-B)-\frac{1}{2}a(5A}{\sqrt{\tan(c+}}}{2a^2}$$

$$= -\frac{5A+iB}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))} + \frac{\mathrm{Subst}\left(\int \frac{-\frac{3}{2}a(iA-}{}\right.}{}$$

$$= -\frac{5A+iB}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))} - \frac{((5+3i)A-(3-}{}$$

$$= -\frac{5A+iB}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))} - \frac{((5+3i)A-(3-}{}$$

$$= -\frac{((5-3i)A+(3+i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{8\sqrt{2}ad} + \frac{((5-3i)A}{}$$

$$= \frac{((5+3i)A-(3-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad} - \frac{((5+3i)A-(3-i)B)\tan}{4\sqrt{}}$$

Mathematica [A] time = 2.10408, size = 217, normalized size = 0.81

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left((-4\cos(dx)+4i\sin(dx))(4A\cos(c+dx)+(-B+5iA)\sin(c+dx))+(-\sin(\right.}{8d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*((-4*Cos[d*x] + (4*I)*Sin[d*x])*(4*A*Cos[c + d*x]
+ ((5*I)*A - B)*Sin[c + d*x]) + (((3 - 5*I)*A + (1 + 3*I)*B)*ArcSin[Cos[c +
 d*x] - Sin[c + d*x]] - (1 + I)*((4 + I)*A + (1 + 2*I)*B)*Log[Cos[c + d*x]
+ Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(I*Cos[c] - Sin[c])*
Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(8*d*(A*Cos[c + d*x] + B*Sin[
c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.049, size = 254, normalized size = 1.

$$-\frac{A}{2\,ad\left(\tan\left(dx+c\right)-i\right)}\sqrt{\tan\left(dx+c\right)}-\frac{\frac{i}{2}B}{ad\left(\tan\left(dx+c\right)-i\right)}\sqrt{\tan\left(dx+c\right)}-\frac{2\,iB}{ad\left(\sqrt{2}-i\sqrt{2}\right)}\arctan\left(2\,\frac{\sqrt{\tan\left(dx+c\right)}}{\sqrt{2}-i\sqrt{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/2/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*A-1/2*I/d/a*tan(d*x+c)^(1/2)/(tan(
d*x+c)-I)*B-2*I/d/a*B/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2
)-I*2^(1/2)))-4/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-
I*2^(1/2)))*A-1/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+
I*2^(1/2)))*A+I/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+
I*2^(1/2)))*B-2*A/a/d/tan(d*x+c)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.97593, size = 1832, normalized size = 6.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/8*((a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 + 2*A*
B - I*B^2)/(a^2*d^2))*log(2*((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)
/(a^2*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)
) - (a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 + 2*A*B
 - I*B^2)/(a^2*d^2))*log(-2*((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)
/(a^2*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)
) + 2*(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((-4*I*A^2 +
4*A*B + I*B^2)/(a^2*d^2))*log(((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(
2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-4*I*A^2 + 4*A*B + I
*B^2)/(a^2*d^2)) + 2*A + I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*(a*d*e^(4*I*d
*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a^2
*d^2))*log(-((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a^2*d^2)) -
 2*A - I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) + 2*((-9*I*A + B)*e^(4*I*d*x + 4*I*
c) - 8*I*A*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) + 1)))/(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*
I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.29897, size = 153, normalized size = 0.57

$$\frac{(i+1)\sqrt{2}(iA+B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,ad}-\frac{(i-1)\sqrt{2}(4iA-2B)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right.}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] (1/4*I + 1/4)*sqrt(2)*(I*A + B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
+ c)))/(a*d) - (1/4*I - 1/4)*sqrt(2)*(4*I*A - 2*B)*arctan(-(1/2*I + 1/2)*sq
rt(2)*sqrt(tan(d*x + c)))/(a*d) + 1/2*(-5*I*A*tan(d*x + c) + B*tan(d*x + c)
 - 4*A)/((I*tan(d*x + c)^(3/2) + sqrt(tan(d*x + c)))*a*d)
```

3.139 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx$

Optimal. Leaf size=296

$$\frac{((7-5i)A+(5+3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad}-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)((6+i)A+(1+4i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}ad}+\frac{}{2d}$$

```
[Out] (((7 - 5*I)*A + (5 + 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(4*Sqr
t[2]*a*d) - ((1/4 - I/4)*((6 + I)*A + (1 + 4*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]]])/(Sqrt[2]*a*d) + (((7 + 5*I)*A - (5 - 3*I)*B)*Log[1 - Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) + (((-7 - 5*I)*A + (5
 - 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a
*d) - (7*A + (3*I)*B)/(6*a*d*Tan[c + d*x]^(3/2)) + (5*(I*A - B))/(2*a*d*Sqr
t[Tan[c + d*x]]) + (A + I*B)/(2*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])
)
```

Rubi [A] time = 0.401374, antiderivative size = 296, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{((7-5i)A+(5+3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad}-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)((6+i)A+(1+4i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}ad}+\frac{}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])),x]
```

```
[Out] (((7 - 5*I)*A + (5 + 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(4*Sqr
t[2]*a*d) - ((1/4 - I/4)*((6 + I)*A + (1 + 4*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]]])/(Sqrt[2]*a*d) + (((7 + 5*I)*A - (5 - 3*I)*B)*Log[1 - Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a*d) + (((-7 - 5*I)*A + (5
 - 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(8*Sqrt[2]*a
*d) - (7*A + (3*I)*B)/(6*a*d*Tan[c + d*x]^(3/2)) + (5*(I*A - B))/(2*a*d*Sqr
t[Tan[c + d*x]]) + (A + I*B)/(2*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])
)
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))}dx = \frac{A+iB}{2d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))} + \frac{\int \frac{\frac{1}{2}a(7A+3iB)-\frac{5}{2}a(iA-B)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)}dx}{2a^2}$$

$$= -\frac{7A+3iB}{6ad\tan^{\frac{3}{2}}(c+dx)} + \frac{A+iB}{2d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))} + \frac{\int \frac{-\frac{5}{2}a(iA-B)-\frac{1}{2}a(7}{\tan^{\frac{3}{2}}}}{2}$$

$$= -\frac{7A+3iB}{6ad\tan^{\frac{3}{2}}(c+dx)} + \frac{5(iA-B)}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx}$$

$$= -\frac{7A+3iB}{6ad\tan^{\frac{3}{2}}(c+dx)} + \frac{5(iA-B)}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx}$$

$$= -\frac{7A+3iB}{6ad\tan^{\frac{3}{2}}(c+dx)} + \frac{5(iA-B)}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx}$$

$$= -\frac{7A+3iB}{6ad\tan^{\frac{3}{2}}(c+dx)} + \frac{5(iA-B)}{2ad\sqrt{\tan(c+dx)}} + \frac{A+iB}{2d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx}$$

$$= \frac{((7+5i)A-(5-3i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{8\sqrt{2}ad} - \frac{((7+5i)A}{}$$

$$= \frac{((7-5i)A+(5+3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{4\sqrt{2}ad} - \frac{((7-5i)A+(5+3i)B}{}$$

Mathematica [A] time = 2.72783, size = 241, normalized size = 0.81

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(\frac{2}{3}\csc(c+dx)(\cos(dx)-i\sin(dx))((-12B+8iA)\sin(2(c+dx))+(11A+15iB}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*((1 - I)*(((6 + I)*A + (1 + 4*I)*B)*ArcSin[Cos[c +
 d*x] - Sin[c + d*x]] + ((-1 - 6*I)*A + (4 + I)*B)*Log[Cos[c + d*x] + Sin[c
```

```
 + d*x] + Sqrt[Sin[2*(c + d*x)]]]])*Sec[c + d*x]*(Cos[c] + I*Sin[c])*Sqrt[Si
n[2*(c + d*x)]] + (2*Csc[c + d*x]*(Cos[d*x] - I*Sin[d*x])*(-19*A - (15*I)*B
 + (11*A + (15*I)*B)*Cos[2*(c + d*x)] + ((8*I)*A - 12*B)*Sin[2*(c + d*x)]))
/3)*(A + B*Tan[c + d*x]))/(8*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c
 + d*x]]*(a + I*a*Tan[c + d*x]))
```

Maple [A] time = 0.049, size = 289, normalized size = 1.

$$\frac{\frac{i}{2}A}{ad\left(\tan\left(dx+c\right)-i\right)}\sqrt{\tan\left(dx+c\right)}-\frac{B}{2\,ad\left(\tan\left(dx+c\right)-i\right)}\sqrt{\tan\left(dx+c\right)}-4\,\frac{B}{ad\left(\sqrt{2}-i\sqrt{2}\right)}\arctan\left(2\,\frac{\sqrt{\tan\left(dx+c\right)}}{\sqrt{2}-i\sqrt{2}}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/2*I/d/a*tan(d*x+c)^(1/2)/(tan(d*x+c)-I)*A-1/2/d/a*tan(d*x+c)^(1/2)/(tan(d
*x+c)-I)*B-4/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2
^(1/2)))*B+6*I/d/a/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I
*2^(1/2)))*A-I/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*A-1/d/a/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*B+2*I/d/a/tan(d*x+c)^(1/2)*A-2*B/a/d/tan(d*x+c)^(1/2)-2/3*A/a/d/
tan(d*x+c)^(3/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.08418, size = 2156, normalized size = 7.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/24*(3*(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*
d*x + 2*I*c))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2))*log(1/2*((4*I*a*d*e^
(2*I*d*x + 2*I*c) + 4*I*a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) + 4*(A - I*B)*e^(2*
I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*(a*d*e^(6*I*d*x + 6*I*c
) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-I*A^2 - 2*A
*B + I*B^2)/(a^2*d^2))*log(1/2*((-4*I*a*d*e^(2*I*d*x + 2*I*c) - 4*I*a*d)*sq
rt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2
*A*B + I*B^2)/(a^2*d^2)) + 4*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2
*I*c)/(I*A + B)) + 6*(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) +
 a*d*e^(2*I*d*x + 2*I*c))*sqrt((9*I*A^2 - 12*A*B - 4*I*B^2)/(a^2*d^2))*log(
-((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((9*I*A^2 - 12*A*B - 4*I*B^2)/(a^2*d^2)) + 3*I*A -
2*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 6*(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*
I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((9*I*A^2 - 12*A*B - 4*I*B^2)
/(a^2*d^2))*log(((a*d*e^(2*I*d*x + 2*I*c) + a*d)*sqrt((-I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((9*I*A^2 - 12*A*B - 4*I*B^2)/(a^2*d
^2)) - 3*I*A + 2*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) + 2*((19*A + 27*I*B)*e^(6*I
*d*x + 6*I*c) - (19*A + 3*I*B)*e^(4*I*d*x + 4*I*c) - (35*A + 27*I*B)*e^(2*I
*d*x + 2*I*c) + 3*A + 3*I*B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1)))/(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*
e^(2*I*d*x + 2*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.25524, size = 190, normalized size = 0.64

$$\frac{(i-1)\sqrt{2}(iA+B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,ad}-\frac{(i-1)\sqrt{2}(6\,A+4i\,B)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{4\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] (1/4*I - 1/4)*sqrt(2)*(I*A + B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
+ c)))/(a*d) - (1/4*I - 1/4)*sqrt(2)*(6*A + 4*I*B)*arctan(-(1/2*I + 1/2)*sq
rt(2)*sqrt(tan(d*x + c)))/(a*d) - 1/2*(-I*A*sqrt(tan(d*x + c)) + B*sqrt(tan
(d*x + c)))/(a*d*(tan(d*x + c) - I)) + 1/3*I*(6*A*tan(d*x + c) + 6*I*B*tan(
d*x + c) + 2*I*A)/(a*d*tan(d*x + c)^(3/2))
```

3.140 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=316

$$\frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))}+\frac{((9+5i)A-(25-21i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{((9+5i)A-(25-21i)B)\tan^{-1}\left(\right.}{16\sqrt{2}a^2d}$$

```
[Out] (((9 + 5*I)*A - (25 - 21*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*
Sqrt[2]*a^2*d) - (((9 + 5*I)*A - (25 - 21*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(16*Sqrt[2]*a^2*d) - ((1/32 - I/32)*((7 + 2*I)*A + (2 + 23*I)*
B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) + ((
1/32 - I/32)*((7 + 2*I)*A + (2 + 23*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) + (5*(I*A - 5*B)*Sqrt[Tan[c + d*x]])/(8*
a^2*d) + ((3*A + (7*I)*B)*Tan[c + d*x]^(3/2))/(8*a^2*d*(1 + I*Tan[c + d*x])
) + ((I*A - B)*Tan[c + d*x]^(5/2))/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.574982, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))}+\frac{((9+5i)A-(25-21i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{((9+5i)A-(25-21i)B)\tan^{-1}\left(\right.}{16\sqrt{2}a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] (((9 + 5*I)*A - (25 - 21*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*
Sqrt[2]*a^2*d) - (((9 + 5*I)*A - (25 - 21*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(16*Sqrt[2]*a^2*d) - ((1/32 - I/32)*((7 + 2*I)*A + (2 + 23*I)*
B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) + ((
1/32 - I/32)*((7 + 2*I)*A + (2 + 23*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) + (5*(I*A - 5*B)*Sqrt[Tan[c + d*x]])/(8*
a^2*d) + ((3*A + (7*I)*B)*Tan[c + d*x]^(3/2))/(8*a^2*d*(1 + I*Tan[c + d*x])
) + ((I*A - B)*Tan[c + d*x]^(5/2))/(4*d*(a + I*a*Tan[c + d*x])^2)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} - \frac{\int \frac{\tan^{\frac{3}{2}}(c+dx)\left(\frac{5}{2}a(iA-B)+\frac{1}{2}a(A+9iB)\tan(c+dx)\right)}{a+ia\tan(c+dx)}\,dx}{4a^2}$$

$$= \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \sqrt{\tan(c+dx)}\left(-\frac{3}{2}a^2(3\right.}{}$$

$$= \frac{5(iA-5B)\sqrt{\tan(c+dx)}}{8a^2d} + \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

$$= \frac{5(iA-5B)\sqrt{\tan(c+dx)}}{8a^2d} + \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

$$= \frac{5(iA-5B)\sqrt{\tan(c+dx)}}{8a^2d} + \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

$$= \frac{5(iA-5B)\sqrt{\tan(c+dx)}}{8a^2d} + \frac{(3A+7iB)\tan^{\frac{3}{2}}(c+dx)}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2}$$

$$= -\frac{((9-5i)A+(25+21i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^2d} + \frac{((9-5}{}$$

$$= \frac{((9+5i)A-(25-21i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d} - \frac{((9+5i)A-(25-21}{}$$

Mathematica [A] time = 2.26112, size = 255, normalized size = 0.81

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(2\tan(c+dx)(\sin(2dx)+i\cos(2dx))((-43B+7iA)\sin(2(c+dx))\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
2,x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x])*((((5 - 9*I)*A
 + (21 + 25*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((7 + 2*I)*
A + (2 + 23*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]]
)*Sec[c + d*x]*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]] + 2*(I*Cos[2*
d*x] + Sin[2*d*x])*(5*A + (9*I)*B + (5*A + (41*I)*B)*Cos[2*(c + d*x)] + ((7
*I)*A - 43*B)*Sin[2*(c + d*x)])*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Si
```

```
n[c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.049, size = 311, normalized size = 1.

$$-2\,\frac{B\sqrt{\tan\left(dx+c\right)}}{a^{2}d}+\frac{7\,A}{8\,a^{2}d\left(\tan\left(dx+c\right)-i\right)^{2}}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}+\frac{\frac{11\,i}{8}B}{a^{2}d\left(\tan\left(dx+c\right)-i\right)^{2}}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}-\frac{\frac{5\,i}{8}A}{a^{2}d\left(\tan\left(dx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] -2/d/a^2*B*tan(d*x+c)^(1/2)+7/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*A+1
1/8*I/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*B-5/8*I/d/a^2/(tan(d*x+c)-I)^
2*tan(d*x+c)^(1/2)*A+9/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*B-7/4/d/a^
2/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-23/4
*I/d/a^2/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))
*B-1/2/d/a^2/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/
2)))*A+1/2*I/d/a^2/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I
*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.03076, size = 1759, normalized size = 5.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] 1/32*(2*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*l
og(2*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) + (A -
I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a^2*d*sqrt((I
*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-2*((a^2*d*e^(2*I*
d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - (A - I*B)*e^(2*I*d*x + 2*
I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + a^2*d*sqrt((-49*I*A^2 + 322*A*B + 5
29*I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/8*((a^2*d*e^(2*I*d*x + 2*I*c
) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqr
t((-49*I*A^2 + 322*A*B + 529*I*B^2)/(a^4*d^2)) + 7*A + 23*I*B)*e^(-2*I*d*x
- 2*I*c)/(a^2*d)) - a^2*d*sqrt((-49*I*A^2 + 322*A*B + 529*I*B^2)/(a^4*d^2))
*e^(4*I*d*x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I
*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-49*I*A^2 + 322*
A*B + 529*I*B^2)/(a^4*d^2)) - 7*A - 23*I*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) +
 2*((6*I*A - 42*B)*e^(4*I*d*x + 4*I*c) + (5*I*A - 9*B)*e^(2*I*d*x + 2*I*c)
- I*A + B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^
(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.24115, size = 196, normalized size = 0.62

$$-\frac{(i+1)\sqrt{2}(-iA-B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{8a^2d}+\frac{(i-1)\sqrt{2}(-7iA+23B)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx\right.}\right.}{16a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] -(1/8*I + 1/8)*sqrt(2)*(-I*A - B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*
x + c)))/(a^2*d) + (1/16*I - 1/16)*sqrt(2)*(-7*I*A + 23*B)*arctan(-(1/2*I +
 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^2*d) - 2*B*sqrt(tan(d*x + c))/(a^2*d)
+ 1/8*(7*A*tan(d*x + c)^(3/2) + 11*I*B*tan(d*x + c)^(3/2) - 5*I*A*sqrt(tan(
d*x + c)) + 9*B*sqrt(tan(d*x + c)))/(a^2*d*(tan(d*x + c) - I)^2)
```

3.141 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=277

$$\frac{((1+3i)A+(9+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{((1+3i)A+(9+5i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^2d}+\frac{(A+5iB)}{8a^2d(1+}$$

```
[Out] (((1 + 3*I)*A + (9 + 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sq
rt[2]*a^2*d) - (((1 + 3*I)*A + (9 + 5*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(16*Sqrt[2]*a^2*d) + (((1 - 3*I)*A - (9 - 5*I)*B)*Log[1 - Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^2*d) - (((1 - 3*I)*A - (9
 - 5*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*
a^2*d) + ((A + (5*I)*B)*Sqrt[Tan[c + d*x]])/(8*a^2*d*(1 + I*Tan[c + d*x]))
+ ((I*A - B)*Tan[c + d*x]^(3/2))/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.500545, antiderivative size = 277, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3595, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{((1+3i)A+(9+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{((1+3i)A+(9+5i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^2d}+\frac{(A+5iB)}{8a^2d(1+}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] (((1 + 3*I)*A + (9 + 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sq
rt[2]*a^2*d) - (((1 + 3*I)*A + (9 + 5*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(16*Sqrt[2]*a^2*d) + (((1 - 3*I)*A - (9 - 5*I)*B)*Log[1 - Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^2*d) - (((1 - 3*I)*A - (9
 - 5*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*
a^2*d) + ((A + (5*I)*B)*Sqrt[Tan[c + d*x]])/(8*a^2*d*(1 + I*Tan[c + d*x]))
+ ((I*A - B)*Tan[c + d*x]^(3/2))/(4*d*(a + I*a*Tan[c + d*x])^2)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
```

```
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} - \frac{\int \frac{\sqrt{\tan(c+dx)}\left(\frac{3}{2}a(iA-B)-\frac{1}{2}a(A-7iB)\tan(c+dx)\right)}{a+ia\tan(c+dx)}\,dx}{4a^2}$$

$$= \frac{(A+5iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \frac{-\frac{1}{2}a^2(A+5iB)-\frac{3}{2}a^2(iA+3B)\text{ta}}{\sqrt{\tan(c+dx)}}}{8a^4}$$

$$= \frac{(A+5iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\text{Subst}\left(\int \frac{-\frac{1}{2}a^2(A+5iB)-\frac{3}{2}a^2}{1+x^4}\right.}{}$$

$$= \frac{(A+5iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\left(\left(\frac{1}{16}+\frac{i}{16}\right)((1+2i)A+(\right.}{}$$

$$= \frac{(A+5iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{((1-3i)A-(9-5i)B)\text{Su}}{}$$

$$= \frac{((1-3i)A-(9-5i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^2d} - \frac{((1-3i)A-}{}$$

$$= \frac{((1+3i)A+(9+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d} - \frac{((1+3i)A+(9+5i)B)}{1}$$

Mathematica [A] time = 2.35207, size = 243, normalized size = 0.88

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(4\sin(c+dx)(\sin(2dx)+i\cos(2dx))((3A+7iB)\sin(c+dx)+(5B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
2,x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(4*(I*Cos[2*d*x] + Sin[2*d*x])*Sin[
c + d*x]*(((-I)*A + 5*B)*Cos[c + d*x] + (3*A + (7*I)*B)*Sin[c + d*x]) - (1
+ I)*(((-1 + 2*I)*A + (2 + 7*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + ((
-2 + I)*A + (7 + 2*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c +
d*x)]]])*Sec[c + d*x]*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]])*(A +
B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]
*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.05, size = 294, normalized size = 1.1

$$\frac{7B}{8a^2d(\tan(dx+c)-i)^2}(\tan(dx+c))^{\frac{3}{2}} - \frac{\frac{3i}{8}A}{a^2d(\tan(dx+c)-i)^2}(\tan(dx+c))^{\frac{3}{2}} - \frac{\frac{5i}{8}B}{a^2d(\tan(dx+c)-i)^2}\sqrt{\tan(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 7/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*B-3/8*I/d/a^2/(tan(d*x+c)-I)^2*
tan(d*x+c)^(3/2)*A-5/8*I/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*B-1/8/d/a^
2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*A-7/4/d/a^2*B/(2^(1/2)-I*2^(1/2))*arcta
n(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))-1/4*I/d/a^2/(2^(1/2)-I*2^(1/2))*a
rctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/2/d/a^2/(2^(1/2)+I*2^(1/2
))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B-1/2*I/d/a^2/(2^(1/2)+I*
2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.94814, size = 1754, normalized size = 6.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] -1/32*(2*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)
*log(1/4*((8*I*a^2*d*e^(2*I*d*x + 2*I*c) + 8*I*a^2*d)*sqrt((-I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*
d^2)) + 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) -
2*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/
4*((-8*I*a^2*d*e^(2*I*d*x + 2*I*c) - 8*I*a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))
+ 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a^2*d*
sqrt((I*A^2 + 14*A*B - 49*I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/8*((a
^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 14*A*B - 49*I*B^2)/(a^4*d^2)) + I*A + 7*B
)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + a^2*d*sqrt((I*A^2 + 14*A*B - 49*I*B^2)/(a
^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 +
14*A*B - 49*I*B^2)/(a^4*d^2)) - I*A - 7*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) -
2*(2*(A + 3*I*B)*e^(4*I*d*x + 4*I*c) + (A + 5*I*B)*e^(2*I*d*x + 2*I*c) - A
- I*B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-4*
I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.23344, size = 166, normalized size = 0.6

$$-\frac{(i+1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{8a^2d}+\frac{(i-1)\sqrt{2}(A-7iB)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] -(1/8*I + 1/8)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
 + c)))/(a^2*d) + (1/16*I - 1/16)*sqrt(2)*(A - 7*I*B)*arctan(-(1/2*I + 1/2)
*sqrt(2)*sqrt(tan(d*x + c)))/(a^2*d) - 1/8*(3*I*A*tan(d*x + c)^(3/2) - 7*B*
tan(d*x + c)^(3/2) + A*sqrt(tan(d*x + c)) + 5*I*B*sqrt(tan(d*x + c)))/(a^2*
d*(tan(d*x + c) - I)^2)
```

3.142 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=279

$$\frac{((1+3i)B-(1-3i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{((1+3i)B-(1-3i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^2d}+\frac{(3B+iA)\sqrt{}}{8a^2d(1+i}$$

```
[Out] (((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*S
qrt[2]*a^2*d) - (((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c
 + d*x]]])/(16*Sqrt[2]*a^2*d) + (((1 + 3*I)*A + (1 - 3*I)*B)*Log[1 - Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^2*d) - (((1 + 3*I)*A +
(1 - 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2
]*a^2*d) + ((I*A + 3*B)*Sqrt[Tan[c + d*x]])/(8*a^2*d*(1 + I*Tan[c + d*x]))
+ ((I*A - B)*Sqrt[Tan[c + d*x]])/(4*d*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.468838, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{((1+3i)B-(1-3i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{((1+3i)B-(1-3i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^2d}+\frac{(3B+iA)\sqrt{}}{8a^2d(1+i}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] (((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*S
qrt[2]*a^2*d) - (((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c
 + d*x]]])/(16*Sqrt[2]*a^2*d) + (((1 + 3*I)*A + (1 - 3*I)*B)*Log[1 - Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^2*d) - (((1 + 3*I)*A +
(1 - 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2
]*a^2*d) + ((I*A + 3*B)*Sqrt[Tan[c + d*x]])/(8*a^2*d*(1 + I*Tan[c + d*x]))
+ ((I*A - B)*Sqrt[Tan[c + d*x]])/(4*d*(a + I*a*Tan[c + d*x])^2)
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
```

```
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(iA-B)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} - \frac{\int \frac{\frac{1}{2}a(iA-B)-\frac{1}{2}a(3A-5iB)\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}\,dx}{4a^2}$$

$$= \frac{(iA+3B)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} - \frac{\int \frac{\frac{1}{2}a^2(3iA+B)-\frac{1}{2}a^2(A-3iB)\tan\cdots}{\sqrt{\tan(c+dx)}}\cdots}{8a^4}$$

$$= \frac{(iA+3B)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}a^2(3iA+B)-\frac{1}{2}a^2(\cdots}{1+x^4}\cdots\right)}{4\cdots}$$

$$= \frac{(iA+3B)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} - \frac{((1+3i)A+(1-3i)B)\,\text{S}\cdots}{\cdots}$$

$$= \frac{(iA+3B)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} + \frac{((1+3i)A+(1-3i)B)\,\text{S}\cdots}{\cdots}$$

$$= \frac{((1+3i)A+(1-3i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^2d} - \frac{((1+3i)A\cdots}{\cdots}$$

$$= \frac{((-1+3i)A+(1+3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d} - \frac{((-1+3i)A+(1+3i\cdots}{\cdots}$$

Mathematica [A] time = 1.95422, size = 241, normalized size = 0.86

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left((1-i)(-\sin(2c)+i\cos(2c))\sqrt{\sin(2(c+dx))}\sec(c+dx)\left(((1+2i\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
2,x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(-4*(Cos[2*d*x] - I*Sin[2*d*x])*Sin
[c + d*x]*(((-3*I)*A - B)*Cos[c + d*x] + (A - (3*I)*B)*Sin[c + d*x]) + (1 -
 I)*(((1 + 2*I)*A + (2 + I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + ((-2 -
 I)*A + (1 + 2*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)
]]])*Sec[c + d*x]*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Ta
n[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a
+ I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.06, size = 294, normalized size = 1.1

$$\frac{A}{8a^2d(\tan(dx+c)-i)^2}(\tan(dx+c))^{\frac{3}{2}}-\frac{\frac{3i}{8}B}{a^2d(\tan(dx+c)-i)^2}(\tan(dx+c))^{\frac{3}{2}}-\frac{\frac{3i}{8}A}{a^2d(\tan(dx+c)-i)^2}\sqrt{\tan(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*A-3/8*I/d/a^2/(tan(d*x+c)-I)^2*
tan(d*x+c)^(3/2)*B-3/8*I/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*A-1/8/d/a^
2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*B-1/4/d/a^2/(2^(1/2)-I*2^(1/2))*arctan(
2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/4*I/d/a^2/(2^(1/2)-I*2^(1/2))*a
rctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*B+1/2/d/a^2/(2^(1/2)+I*2^(1/2
))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A-1/2*I/d/a^2/(2^(1/2)+I*
2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.9048, size = 1694, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] -1/32*(2*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*
log(2*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) + (A -
 I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a^2*d*sqrt((
I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-2*((a^2*d*e^(2*I
*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - (A - I*B)*e^(2*I*d*x + 2
*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a^2*d*sqrt((-I*A^2 + 2*A*B + I*B^2
)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/8*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*
d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^
2 + 2*A*B + I*B^2)/(a^4*d^2)) + A + I*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + a^
2*d*sqrt((-I*A^2 + 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-1/8*(
(a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2
*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 + 2*A*B + I*B^2)/(a^4*d^2)) - A - I*B)*e
^(-2*I*d*x - 2*I*c)/(a^2*d)) - 2*((2*I*A + 2*B)*e^(4*I*d*x + 4*I*c) + (3*I*
A + B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^
(2*I*d*x + 2*I*c) + 1)))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.20037, size = 171, normalized size = 0.61

$$\frac{(i-1)\ \sqrt{2}(iA-B)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{16\,a^2d}-\frac{(i+1)\ \sqrt{2}(-iA-B)\arctan\left(\left(\frac{1}{2}i-\frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{8\,a^2d}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] (1/16*I - 1/16)*sqrt(2)*(I*A - B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(d*x
 + c)))/(a^2*d) - (1/8*I + 1/8)*sqrt(2)*(-I*A - B)*arctan((1/2*I - 1/2)*sqr
t(2)*sqrt(tan(d*x + c)))/(a^2*d) + 1/8*(A*tan(d*x + c)^(3/2) - 3*I*B*tan(d*
x + c)^(3/2) - 3*I*A*sqrt(tan(d*x + c)) - B*sqrt(tan(d*x + c)))/(a^2*d*(tan
(d*x + c) - I)^2)
```

3.143 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=285

$$\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+2i)B-(2-7i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^2d}+\frac{((9-5i)A+(1-3i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^2d}+$$

```
[Out] ((1/16 + I/16)*((-2 + 7*I)*A + (1 + 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*a^2*d) + (((9 - 5*I)*A + (1 - 3*I)*B)*ArcTan[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^2*d) + ((1/32 + I/32)*((-7 + 2*I)*A + (2
 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d
) + (((9 + 5*I)*A - (1 + 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(32*Sqrt[2]*a^2*d) + ((5*A + I*B)*Sqrt[Tan[c + d*x]])/(8*a^2*d*(1
 + I*Tan[c + d*x])) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(4*d*(a + I*a*Tan[c +
d*x])^2)
```

Rubi [A] time = 0.499608, antiderivative size = 285, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+2i)B-(2-7i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^2d}+\frac{((9-5i)A+(1-3i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^2d}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2),x]
```


```
[Out] ((1/16 + I/16)*((-2 + 7*I)*A + (1 + 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*a^2*d) + (((9 - 5*I)*A + (1 - 3*I)*B)*ArcTan[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^2*d) + ((1/32 + I/32)*((-7 + 2*I)*A + (2
 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d
) + (((9 + 5*I)*A - (1 + 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(32*Sqrt[2]*a^2*d) + ((5*A + I*B)*Sqrt[Tan[c + d*x]])/(8*a^2*d*(1
 + I*Tan[c + d*x])) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(4*d*(a + I*a*Tan[c +
d*x])^2)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2}\,dx = \frac{(A+iB)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} + \frac{\int \frac{\frac{1}{2}a(7A-iB)-\frac{3}{2}a(iA-B)\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}\,dx}{4a^2}$$

$$= \frac{(5A+iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} + \frac{\int \frac{\frac{3}{2}a^2(3A-iB)-\frac{1}{2}a^2(5iA-B)\,\mathrm{ta}}{\sqrt{\tan(c+dx)}}}{8a^4}$$

$$= \frac{(5A+iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} + \frac{\mathrm{Subst}\left(\int \frac{\frac{3}{2}a^2(3A-iB)-\frac{1}{2}a^2}{1+x^4}\right.}{}$$

$$= \frac{(5A+iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} + \frac{((9+5i)A-(1+3i)B)\,\mathrm{S}}{}$$

$$= \frac{(5A+iB)\sqrt{\tan(c+dx)}}{8a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\sqrt{\tan(c+dx)}}{4d(a+ia\tan(c+dx))^2} - \frac{((9+5i)A-(1+3i)B)\,\mathrm{S}}{}$$

$$= -\frac{((9+5i)A-(1+3i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^2d} + \frac{((9+5i)}{}$$

$$= -\frac{((9-5i)A+(1-3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d} + \frac{((9-5i)A+(1-3i)}{}$$

Mathematica [A] time = 2.17374, size = 243, normalized size = 0.85

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(4\sin(c+dx)(\sin(2dx)+i\cos(2dx))((5A+iB)\sin(c+dx)+(3B-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2
),x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(4*(I*Cos[2*d*x] + Sin[2*d*x])*Sin[
c + d*x]*(((-7*I)*A + 3*B)*Cos[c + d*x] + (5*A + I*B)*Sin[c + d*x]) + (((5
+ 9*I)*A + (3 + I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((2 + 7
*I)*A + (1 - 2*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)
]]])*Sec[c + d*x]*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Ta
n[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a
+ I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.065, size = 294, normalized size = 1.

$$\frac{-\frac{5i}{8}A}{a^2d\left(\tan\left(dx+c\right)-i\right)^2}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}+\frac{B}{8\,a^2d\left(\tan\left(dx+c\right)-i\right)^2}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}-\frac{7\,A}{8\,a^2d\left(\tan\left(dx+c\right)-i\right)^2}\sqrt{\tan\left(dx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] -5/8*I/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*A+1/8/d/a^2/(tan(d*x+c)-I)^2
*tan(d*x+c)^(3/2)*B-7/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*A-3/8*I/d/a
^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*B-7/4*I/d/a^2/(2^(1/2)-I*2^(1/2))*arct
an(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/4/d/a^2*B/(2^(1/2)-I*2^(1/2)
)*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))+1/2/d/a^2/(2^(1/2)+I*2^(1/
2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B+1/2*I/d/a^2/(2^(1/2)+I
*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.86404, size = 1755, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] 1/32*(2*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*
log(1/4*((8*I*a^2*d*e^(2*I*d*x + 2*I*c) + 8*I*a^2*d)*sqrt((-I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d
^2)) + 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2
*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/4
*((-8*I*a^2*d*e^(2*I*d*x + 2*I*c) - 8*I*a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) +
 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + a^2*d*s
qrt((49*I*A^2 + 14*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/8*((a^
2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) + 1))*sqrt((49*I*A^2 + 14*A*B - I*B^2)/(a^4*d^2)) + 7*I*A + B)
*e^(-2*I*d*x - 2*I*c)/(a^2*d)) - a^2*d*sqrt((49*I*A^2 + 14*A*B - I*B^2)/(a^
4*d^2))*e^(4*I*d*x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((49*I*A^2
+ 14*A*B - I*B^2)/(a^4*d^2)) - 7*I*A - B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + 2
*(2*(3*A + I*B)*e^(4*I*d*x + 4*I*c) + (7*A + 3*I*B)*e^(2*I*d*x + 2*I*c) + A
 + I*B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-4
*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: TypeError
```

Giac [A] time = 1.24192, size = 170, normalized size = 0.6

$$\frac{(i+1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{8a^2d}+\frac{(i-1)\sqrt{2}(7A-iB)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] (1/8*I + 1/8)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
+ c)))/(a^2*d) + (1/16*I - 1/16)*sqrt(2)*(7*A - I*B)*arctan(-(1/2*I + 1/2)*
sqrt(2)*sqrt(tan(d*x + c)))/(a^2*d) - 1/8*(5*I*A*tan(d*x + c)^(3/2) - B*tan
(d*x + c)^(3/2) + 7*A*sqrt(tan(d*x + c)) + 3*I*B*sqrt(tan(d*x + c)))/(a^2*d
*(tan(d*x + c) - I)^2)
```

3.144 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=318

$$\frac{((25+21i)A-(9-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((2+23i)A-(7+2i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}a^2d}$$

```
[Out] (((25 + 21*I)*A - (9 - 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*
Sqrt[2]*a^2*d) - ((1/16 - I/16)*((2 + 23*I)*A - (7 + 2*I)*B)*ArcTan[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^2*d) - ((1/32 - I/32)*((23 + 2*I)*A +
(2 + 7*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a
^2*d) + ((1/32 - I/32)*((23 + 2*I)*A + (2 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Ta
n[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) - (5*(5*A + I*B))/(8*a^2*d*Sqr
t[Tan[c + d*x]]) + (7*A + (3*I)*B)/(8*a^2*d*(1 + I*Tan[c + d*x])*Sqrt[Tan[c
 + d*x]]) + (A + I*B)/(4*d*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.578141, antiderivative size = 318, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{((25+21i)A-(9-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((2+23i)A-(7+2i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2),x]
```


```
[Out] (((25 + 21*I)*A - (9 - 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*
Sqrt[2]*a^2*d) - ((1/16 - I/16)*((2 + 23*I)*A - (7 + 2*I)*B)*ArcTan[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^2*d) - ((1/32 - I/32)*((23 + 2*I)*A +
(2 + 7*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a
^2*d) + ((1/32 - I/32)*((23 + 2*I)*A + (2 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Ta
n[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) - (5*(5*A + I*B))/(8*a^2*d*Sqr
t[Tan[c + d*x]]) + (7*A + (3*I)*B)/(8*a^2*d*(1 + I*Tan[c + d*x])*Sqrt[Tan[c
 + d*x]]) + (A + I*B)/(4*d*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx = \frac{A+iB}{4d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2} + \frac{\int \frac{\frac{1}{2}a(9A+iB)-\frac{5}{2}a(iA-B)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx}{4a^2}$$

$$= \frac{7A+3iB}{8a^2d(1+i\tan(c+dx))\sqrt{\tan(c+dx)}} + \frac{A+iB}{4d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}$$

$$= -\frac{5(5A+iB)}{8a^2d\sqrt{\tan(c+dx)}} + \frac{7A+3iB}{8a^2d(1+i\tan(c+dx))\sqrt{\tan(c+dx)}} + \frac{}{4d\sqrt{\tan(c+}}$$

$$= -\frac{5(5A+iB)}{8a^2d\sqrt{\tan(c+dx)}} + \frac{7A+3iB}{8a^2d(1+i\tan(c+dx))\sqrt{\tan(c+dx)}} + \frac{}{4d\sqrt{\tan(c+}}$$

$$= -\frac{5(5A+iB)}{8a^2d\sqrt{\tan(c+dx)}} + \frac{7A+3iB}{8a^2d(1+i\tan(c+dx))\sqrt{\tan(c+dx)}} + \frac{}{4d\sqrt{\tan(c+}}$$

$$= -\frac{5(5A+iB)}{8a^2d\sqrt{\tan(c+dx)}} + \frac{7A+3iB}{8a^2d(1+i\tan(c+dx))\sqrt{\tan(c+dx)}} + \frac{}{4d\sqrt{\tan(c+}}$$

$$= -\frac{((25-21i)A+(9+5i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^2d} + \frac{((25}{}$$

$$= \frac{((25+21i)A-(9-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^2d} - \frac{((25+21i)A-(9-}{}$$

Mathematica [A] time = 2.38228, size = 250, normalized size = 0.79

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left((-2\cos(2dx)+2i\sin(2dx))((-7B+43iA)\sin(2(c+dx))+(41A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2
),x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*((((21 - 25*I)*A + (5 + 9*I)*B)*Arc
Sin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((23 + 2*I)*A + (2 + 7*I)*B)*Log
[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(I*Cos
[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]] + (-2*Cos[2*d*x] + (2*I)*Sin[2*d*x
```

```
])*(-9*A - (5*I)*B + (41*A + (5*I)*B)*Cos[2*(c + d*x)] + ((43*I)*A - 7*B)*S
in[2*(c + d*x)]))*(A + B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d
*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.055, size = 311, normalized size = 1.

$$-\frac{9A}{8a^2d(\tan(dx+c)-i)^2}(\tan(dx+c))^{\frac{3}{2}}-\frac{\frac{5i}{8}B}{a^2d(\tan(dx+c)-i)^2}(\tan(dx+c))^{\frac{3}{2}}+\frac{\frac{11i}{8}A}{a^2d(\tan(dx+c)-i)^2}\sqrt{\tan(dx+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] -9/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*A-5/8*I/d/a^2/(tan(d*x+c)-I)^2
*tan(d*x+c)^(3/2)*B+11/8*I/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*A-7/8/d/
a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*B-7/4*I/d/a^2/(2^(1/2)-I*2^(1/2))*arc
tan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*B-23/4/d/a^2/(2^(1/2)-I*2^(1/2)
)*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/2/d/a^2/(2^(1/2)+I*2^(
1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A+1/2*I/d/a^2/(2^(1/2)
+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B-2/d/a^2*A/tan(
d*x+c)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.37269, size = 2009, normalized size = 6.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] 1/32*(2*(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((I*A^2
 + 2*A*B - I*B^2)/(a^4*d^2))*log(2*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A
*B - I*B^2)/(a^4*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c
)/(I*A + B)) - 2*(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c))*sq
rt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*log(-2*((a^2*d*e^(2*I*d*x + 2*I*c) +
a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I
*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d
*x - 2*I*c)/(I*A + B)) + (a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*
I*c))*sqrt((-529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2))*log(1/8*((a^2*d*e^(
2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) + 1))*sqrt((-529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2)) + 23*A + 7*I*
B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) - (a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*
I*d*x + 4*I*c))*sqrt((-529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2))*log(-1/8*
((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(
2*I*d*x + 2*I*c) + 1))*sqrt((-529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2)) -
23*A - 7*I*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + 2*((-42*I*A + 6*B)*e^(6*I*d*x
 + 6*I*c) + (-33*I*A + B)*e^(4*I*d*x + 4*I*c) + (10*I*A - 6*B)*e^(2*I*d*x +
 2*I*c) + I*A - B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
 1)))/(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: TypeError
```

Giac [A] time = 1.22138, size = 193, normalized size = 0.61

$$\frac{(i-1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{8a^2d}+\frac{(i-1)\sqrt{2}(-23iA+7B)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx}\right.}{16a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] (1/8*I - 1/8)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*x
+ c)))/(a^2*d) + (1/16*I - 1/16)*sqrt(2)*(-23*I*A + 7*B)*arctan(-(1/2*I + 1
/2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^2*d) - 2*A/(a^2*d*sqrt(tan(d*x + c))) -
1/8*(9*A*tan(d*x + c)^(3/2) + 5*I*B*tan(d*x + c)^(3/2) - 11*I*A*sqrt(tan(d*
x + c)) + 7*B*sqrt(tan(d*x + c)))/(a^2*d*(tan(d*x + c) - I)^2)
```

3.145 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=347

$$\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((47+2i)A+(2+23i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^2d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((47+2i)A+(2+23i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan\right.}}{\sqrt{2}a^2d}$$

```
[Out] ((1/16 - I/16)*((47 + 2*I)*A + (2 + 23*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*a^2*d) - ((1/16 - I/16)*((47 + 2*I)*A + (2 + 23*I)*B)*Ar
cTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^2*d) + (((49 + 45*I)*A - (
25 - 21*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[
2]*a^2*d) - ((1/32 - I/32)*((2 + 47*I)*A - (23 + 2*I)*B)*Log[1 + Sqrt[2]*Sq
rt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) - (7*(7*A + (3*I)*B))/(24
*a^2*d*Tan[c + d*x]^(3/2)) + (9*A + (5*I)*B)/(8*a^2*d*(1 + I*Tan[c + d*x])*
Tan[c + d*x]^(3/2)) + (5*((9*I)*A - 5*B))/(8*a^2*d*Sqrt[Tan[c + d*x]]) + (A
 + I*B)/(4*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.630958, antiderivative size = 347, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((47+2i)A+(2+23i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^2d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((47+2i)A+(2+23i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan\right.}}{\sqrt{2}a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2),x]
```


```
[Out] ((1/16 - I/16)*((47 + 2*I)*A + (2 + 23*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*a^2*d) - ((1/16 - I/16)*((47 + 2*I)*A + (2 + 23*I)*B)*Ar
cTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^2*d) + (((49 + 45*I)*A - (
25 - 21*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[
2]*a^2*d) - ((1/32 - I/32)*((2 + 47*I)*A - (23 + 2*I)*B)*Log[1 + Sqrt[2]*Sq
rt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^2*d) - (7*(7*A + (3*I)*B))/(24
*a^2*d*Tan[c + d*x]^(3/2)) + (9*A + (5*I)*B)/(8*a^2*d*(1 + I*Tan[c + d*x])*
Tan[c + d*x]^(3/2)) + (5*((9*I)*A - 5*B))/(8*a^2*d*Sqrt[Tan[c + d*x]]) + (A
 + I*B)/(4*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2)
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
```

```
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx = \frac{A+iB}{4d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2} + \frac{\int \frac{\frac{1}{2}a(11A+3iB)-\frac{7}{2}a(iA-B)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx}{4a^2}$$

$$= \frac{9A+5iB}{8a^2d(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)} + \frac{A+iB}{4d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}$$

$$= -\frac{7(7A+3iB)}{24a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{9A+5iB}{8a^2d(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)} + \frac{}{4d\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{7(7A+3iB)}{24a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{9A+5iB}{8a^2d(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)} + \frac{5(9iA-5}{8a^2d\sqrt{\tan(c}}$$

$$= -\frac{7(7A+3iB)}{24a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{9A+5iB}{8a^2d(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)} + \frac{5(9iA-5}{8a^2d\sqrt{\tan(c}}$$

$$= -\frac{7(7A+3iB)}{24a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{9A+5iB}{8a^2d(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)} + \frac{5(9iA-5}{8a^2d\sqrt{\tan(c}}$$

$$= -\frac{7(7A+3iB)}{24a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{9A+5iB}{8a^2d(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)} + \frac{5(9iA-5}{8a^2d\sqrt{\tan(c}}$$

$$= \frac{((49+45i)A-(25-21i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^2d} - \frac{((49+}{}$$

$$= \frac{\left(\frac{1}{16}-\frac{i}{16}\right)((47+2i)A+(2+23i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^2d} - \frac{\left(\frac{1}{16}-\frac{i}{16}\right)}{}$$

Mathematica [A] time = 3.22352, size = 282, normalized size = 0.81

$$-\frac{i\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(\frac{1}{3}\csc(c+dx)(\cos(2dx)-i\sin(2dx))((129B-269iA)\cos(c+dx}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2
```

```
),x]
```

```
[Out] ((-I/32)*Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*((Csc[c + d*x]*(Cos[2*d*x]
- I*Sin[2*d*x])*(((-269*I)*A + 129*B)*Cos[c + d*x] + ((205*I)*A - 129*B)*Co
s[3*(c + d*x)] - 2*(-71*A - (27*I)*B + (199*A + (123*I)*B)*Cos[2*(c + d*x)]
)*Sin[c + d*x]))/3 + (1 + I)*(((47 + 2*I)*A + (2 + 23*I)*B)*ArcSin[Cos[c +
d*x] - Sin[c + d*x]] + ((-2 - 47*I)*A + (23 + 2*I)*B)*Log[Cos[c + d*x] + Si
n[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(Cos[2*c] + I*Sin[2*c])*
Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c
+ d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2)
```

Maple [A] time = 0.052, size = 346, normalized size = 1.

$$\frac{\frac{13i}{8}A}{a^2d\left(\tan\left(dx+c\right)-i\right)^2}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}-\frac{9B}{8a^2d\left(\tan\left(dx+c\right)-i\right)^2}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}+\frac{15A}{8a^2d\left(\tan\left(dx+c\right)-i\right)^2}\sqrt{\tan\left(dx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 13/8*I/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(3/2)*A-9/8/d/a^2/(tan(d*x+c)-I)^2
*tan(d*x+c)^(3/2)*B+15/8/d/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*A+11/8*I/d
/a^2/(tan(d*x+c)-I)^2*tan(d*x+c)^(1/2)*B-23/4/d/a^2*B/(2^(1/2)-I*2^(1/2))*a
rctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))+47/4*I/d/a^2/(2^(1/2)-I*2^(1/
2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/2/d/a^2/(2^(1/2)+I*2
^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B-1/2*I/d/a^2/(2^(1/
2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A-2/3/d/a^2*A/
tan(d*x+c)^(3/2)+4*I/d/a^2/tan(d*x+c)^(1/2)*A-2/d/a^2/tan(d*x+c)^(1/2)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.31857, size = 2340, normalized size = 6.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] -1/96*(6*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e
^(4*I*d*x + 4*I*c))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*log(1/4*((8*I*
a^2*d*e^(2*I*d*x + 2*I*c) + 8*I*a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) + 8*(A -
I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 6*(a^2*d*e^(8*I
*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sq
rt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*log(1/4*((-8*I*a^2*d*e^(2*I*d*x + 2*
I*c) - 8*I*a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) + 8*(A - I*B)*e^(2*I*d*x + 2*I
*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2
*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((2209*I*A^2 - 2162
*A*B - 529*I*B^2)/(a^4*d^2))*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((2209*I*A
^2 - 2162*A*B - 529*I*B^2)/(a^4*d^2)) + 47*I*A - 23*B)*e^(-2*I*d*x - 2*I*c)
/(a^2*d)) - 3*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^
2*d*e^(4*I*d*x + 4*I*c))*sqrt((2209*I*A^2 - 2162*A*B - 529*I*B^2)/(a^4*d^2)
)*log(1/8*((a^2*d*e^(2*I*d*x + 2*I*c) + a^2*d)*sqrt((-I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((2209*I*A^2 - 2162*A*B - 529*I*B^2)/(
a^4*d^2)) - 47*I*A + 23*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + 2*(2*(101*A + 63
*I*B)*e^(8*I*d*x + 8*I*c) - (103*A + 27*I*B)*e^(6*I*d*x + 6*I*c) - (269*A +
 129*I*B)*e^(4*I*d*x + 4*I*c) + 3*(13*A + 9*I*B)*e^(2*I*d*x + 2*I*c) + 3*A
+ 3*I*B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(a^2
*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4
*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.26507, size = 221, normalized size = 0.64

$$\frac{(i-1)\sqrt{2}(47A+23iB)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^2d}+\frac{(i+1)\sqrt{2}(A-iB)\arctan\left(\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{8a^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] (1/16*I - 1/16)*sqrt(2)*(47*A + 23*I*B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(t
an(d*x + c)))/(a^2*d) + (1/8*I + 1/8)*sqrt(2)*(A - I*B)*arctan((1/2*I - 1/2
)*sqrt(2)*sqrt(tan(d*x + c)))/(a^2*d) - 1/3*(-12*I*A*tan(d*x + c) + 6*B*tan
(d*x + c) + 2*A)/(a^2*d*tan(d*x + c)^(3/2)) - 1/8*(-13*I*A*tan(d*x + c)^(3/
2) + 9*B*tan(d*x + c)^(3/2) - 15*A*sqrt(tan(d*x + c)) - 11*I*B*sqrt(tan(d*x
 + c)))/(a^2*d*(tan(d*x + c) - I)^2)
```

3.146 $\int \frac{\tan^{\frac{9}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=393

$$-\frac{3(-5B+2iA)\tan^{\frac{5}{2}}(c+dx)}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d}+\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((29+i)A+(1+76i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+\right.}{\sqrt{2}a^3d}$$

```
[Out] ((1/16 + I/16)*((29 + I)*A + (1 + 76*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]])/(Sqrt[2]*a^3*d) - ((1/16 + I/16)*((29 + I)*A + (1 + 76*I)*B)*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^3*d) - (((28 - 30*I)*A + (75 +
 77*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a
^3*d) - ((1/32 + I/32)*((1 + 29*I)*A - (76 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) + (15*((2*I)*A - 5*B)*Sqrt[Tan[
c + d*x]])/(8*a^3*d) + (7*(4*A + (11*I)*B)*Tan[c + d*x]^(3/2))/(24*a^3*d) +
 ((I*A - B)*Tan[c + d*x]^(9/2))/(6*d*(a + I*a*Tan[c + d*x])^3) + ((A + (2*I
)*B)*Tan[c + d*x]^(7/2))/(4*a*d*(a + I*a*Tan[c + d*x])^2) - (3*((2*I)*A - 5
*B)*Tan[c + d*x]^(5/2))/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.82717, antiderivative size = 393, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{3(-5B+2iA)\tan^{\frac{5}{2}}(c+dx)}{8d\left(a^3+ia^3\tan(c+dx)\right)}+\frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d}+\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((29+i)A+(1+76i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+\right.}{\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(9/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] ((1/16 + I/16)*((29 + I)*A + (1 + 76*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]])/(Sqrt[2]*a^3*d) - ((1/16 + I/16)*((29 + I)*A + (1 + 76*I)*B)*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^3*d) - (((28 - 30*I)*A + (75 +
 77*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a
^3*d) - ((1/32 + I/32)*((1 + 29*I)*A - (76 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) + (15*((2*I)*A - 5*B)*Sqrt[Tan[
c + d*x]])/(8*a^3*d) + (7*(4*A + (11*I)*B)*Tan[c + d*x]^(3/2))/(24*a^3*d) +
 ((I*A - B)*Tan[c + d*x]^(9/2))/(6*d*(a + I*a*Tan[c + d*x])^3) + ((A + (2*I
)*B)*Tan[c + d*x]^(7/2))/(4*a*d*(a + I*a*Tan[c + d*x])^2) - (3*((2*I)*A - 5
```

```
*B)*Tan[c + d*x]^(5/2))/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{9}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\tan^{\frac{9}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\tan^{\frac{7}{2}}(c+dx)\left(\frac{9}{2}a(iA-B)+\frac{3}{2}a(A+5iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^2}dx}{6a^2}$$

$$= \frac{(iA-B)\tan^{\frac{9}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+2iB)\tan^{\frac{7}{2}}(c+dx)}{4ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\tan^{\frac{5}{2}}(c+dx)\left(-21a^2(A+2iB\right.}{a+ia\,\text{ta}}}{2}$$

$$= \frac{(iA-B)\tan^{\frac{9}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+2iB)\tan^{\frac{7}{2}}(c+dx)}{4ad(a+ia\tan(c+dx))^2} - \frac{3(2iA-5B)\tan^{\frac{5}{2}}(c+}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d} + \frac{(iA-B)\tan^{\frac{9}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+2iB)\tan^{\frac{7}{2}}(c+}{4ad(a+ia\tan(c+}$$

$$= \frac{15(2iA-5B)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d} + \frac{(iA-B)\tan^{\frac{9}{2}}(c}{6d(a+ia\tan(c}$$

$$= \frac{15(2iA-5B)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d} + \frac{(iA-B)\tan^{\frac{9}{2}}(c}{6d(a+ia\tan(c}$$

$$= \frac{15(2iA-5B)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d} + \frac{(iA-B)\tan^{\frac{9}{2}}(c}{6d(a+ia\tan(c}$$

$$= \frac{15(2iA-5B)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{7(4A+11iB)\tan^{\frac{3}{2}}(c+dx)}{24a^3d} + \frac{(iA-B)\tan^{\frac{9}{2}}(c}{6d(a+ia\tan(c}$$

$$= -\frac{((28-30i)A+(75+77i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} + \frac{((2}{}$$

$$= \frac{\left(\frac{1}{16}+\frac{i}{16}\right)((29+i)A+(1+76i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d} - \frac{\left(\frac{1}{16}+\frac{i}{16}\right)}{}$$

Mathematica [A] time = 4.99308, size = 300, normalized size = 0.76

$$\frac{\sec^3(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(3(-\sin(3c)+i\cos(3c))\sqrt{\sin(2(c+dx))}\left(((30-28i)A+(77+7\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(9/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (Sec[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x])*(3*(((30 - 2
8*I)*A + (77 + 75*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + (1 + I)*((-29
 + I)*A + (1 - 76*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d
*x)]]])*(I*Cos[3*c] - Sin[3*c])*Sqrt[Sin[2*(c + d*x)]] + (I*Cos[3*d*x] + Si
n[3*d*x])*(33*A + (69*I)*B + 2*(90*A + (241*I)*B)*Cos[2*(c + d*x)] + (147*A
 + (349*I)*B)*Cos[4*(c + d*x)] + (194*I)*A*Sin[2*(c + d*x)] - 502*B*Sin[2*(
c + d*x)] + (145*I)*A*Sin[4*(c + d*x)] - 347*B*Sin[4*(c + d*x)])*Tan[c + d*
x]))/(96*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Ta
n[c + d*x])^3)
```

Maple [A] time = 0.057, size = 404, normalized size = 1.

$$\frac{\frac{2i}{3}B}{a^3d}(\tan(dx+c))^{\frac{3}{2}}-6\frac{B\sqrt{\tan(dx+c)}}{a^3d}+\frac{2iA}{a^3d}\sqrt{\tan(dx+c)}+\frac{\frac{35i}{8}B}{a^3d(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{5}{2}}+\frac{5A}{2a^3d(\tan(dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(9/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 2/3*I/d/a^3*B*tan(d*x+c)^(3/2)-6/d/a^3*B*tan(d*x+c)^(1/2)+2*I/d/a^3*A*tan(d
*x+c)^(1/2)+35/8*I/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(5/2)+5/2/d/a^3/(tan
(d*x+c)-I)^3*A*tan(d*x+c)^(5/2)+91/12/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(
3/2)-49/12*I/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*A-7/4/d/a^3/(tan(d*x+c
)-I)^3*A*tan(d*x+c)^(1/2)-27/8*I/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(1/2)-
29/4/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)
))*A-19*I/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^
(1/2)))*B+1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+
I*2^(1/2)))*A-1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^
(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(9/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.98916, size = 2095, normalized size = 5.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(9/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] -1/96*(3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((I*A^
2 + 2*A*B - I*B^2)/(a^6*d^2))*log(2*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sq
rt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*
A*B - I*B^2)/(a^6*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*
c)/(I*A + B)) - 3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*s
qrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*log(-2*((a^3*d*e^(2*I*d*x + 2*I*c) +
 a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((
I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*
d*x - 2*I*c)/(I*A + B)) - 3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x +
 6*I*c))*sqrt((-841*I*A^2 + 4408*A*B + 5776*I*B^2)/(a^6*d^2))*log(1/8*((a^3
*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) + 1))*sqrt((-841*I*A^2 + 4408*A*B + 5776*I*B^2)/(a^6*d^2)) + 29
*A + 76*I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 3*(a^3*d*e^(8*I*d*x + 8*I*c) +
 a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((-841*I*A^2 + 4408*A*B + 5776*I*B^2)/(a^6*
d^2))*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-841*I*A^2 + 4408*A*B + 5776*I*
B^2)/(a^6*d^2)) - 29*A - 76*I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 2*((146*I*
A - 348*B)*e^(8*I*d*x + 8*I*c) + (187*I*A - 492*B)*e^(6*I*d*x + 6*I*c) + (3
3*I*A - 69*B)*e^(4*I*d*x + 4*I*c) + (-7*I*A + 10*B)*e^(2*I*d*x + 2*I*c) + I
*A - B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(a^3*
d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(9/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.34413, size = 284, normalized size = 0.72

$$-\frac{(i+1)\sqrt{2}(-iA-B)\arctan\left(\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}+\frac{(i-1)\sqrt{2}(-29iA+76B)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx}\right.}{16a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(9/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] -(1/16*I + 1/16)*sqrt(2)*(-I*A - B)*arctan((1/2*I - 1/2)*sqrt(2)*sqrt(tan(d
*x + c)))/(a^3*d) + (1/16*I - 1/16)*sqrt(2)*(-29*I*A + 76*B)*arctan(-(1/2*I
 + 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^3*d) + 1/24*(60*A*tan(d*x + c)^(5/2)
 + 105*I*B*tan(d*x + c)^(5/2) - 98*I*A*tan(d*x + c)^(3/2) + 182*B*tan(d*x +
 c)^(3/2) - 42*A*sqrt(tan(d*x + c)) - 81*I*B*sqrt(tan(d*x + c)))/(a^3*d*(ta
n(d*x + c) - I)^3) - 1/3*(-2*I*B*a^6*d^2*tan(d*x + c)^(3/2) - 6*I*A*a^6*d^2
*sqrt(tan(d*x + c)) + 18*B*a^6*d^2*sqrt(tan(d*x + c)))/(a^9*d^3)
```

3.147 $\int \frac{\tan^{\frac{7}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=364

$$-\frac{7(-4B+iA)\tan^{\frac{3}{2}}(c+dx)}{24d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+6i)A-(29+i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d}-\frac{((5-7i)A+(28+30i)}{}$$

```
[Out] ((-1/16 - I/16)*((1 + 6*I)*A - (29 + I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]])/(Sqrt[2]*a^3*d) - (((5 - 7*I)*A + (28 + 30*I)*B)*ArcTan[1 + Sqrt[2]
*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^3*d) + ((1/32 + I/32)*((6 + I)*A + (1 +
 29*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*
d) - ((1/32 + I/32)*((6 + I)*A + (1 + 29*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) + (5*(A + (6*I)*B)*Sqrt[Tan[c + d*x
]])/(8*a^3*d) + ((I*A - B)*Tan[c + d*x]^(7/2))/(6*d*(a + I*a*Tan[c + d*x])^
3) + ((2*A + (5*I)*B)*Tan[c + d*x]^(5/2))/(12*a*d*(a + I*a*Tan[c + d*x])^2)
 - (7*(I*A - 4*B)*Tan[c + d*x]^(3/2))/(24*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.771327, antiderivative size = 364, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{7(-4B+iA)\tan^{\frac{3}{2}}(c+dx)}{24d\left(a^3+ia^3\tan(c+dx)\right)}-\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+6i)A-(29+i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d}-\frac{((5-7i)A+(28+30i)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(7/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```



```
[Out] ((-1/16 - I/16)*((1 + 6*I)*A - (29 + I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]])/(Sqrt[2]*a^3*d) - (((5 - 7*I)*A + (28 + 30*I)*B)*ArcTan[1 + Sqrt[2]
*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^3*d) + ((1/32 + I/32)*((6 + I)*A + (1 +
 29*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*
d) - ((1/32 + I/32)*((6 + I)*A + (1 + 29*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) + (5*(A + (6*I)*B)*Sqrt[Tan[c + d*x
]])/(8*a^3*d) + ((I*A - B)*Tan[c + d*x]^(7/2))/(6*d*(a + I*a*Tan[c + d*x])^
3) + ((2*A + (5*I)*B)*Tan[c + d*x]^(5/2))/(12*a*d*(a + I*a*Tan[c + d*x])^2)
 - (7*(I*A - 4*B)*Tan[c + d*x]^(3/2))/(24*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{7}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\tan^{\frac{5}{2}}(c+dx)\left(\frac{7}{2}a(iA-B)+\frac{1}{2}a(A+13iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(2A+5iB)\tan^{\frac{5}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\tan^{\frac{3}{2}}(c+dx)\left(-5a^2(2A+5iB\right.}{a+ia\tan}}{24}$$

$$= \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(2A+5iB)\tan^{\frac{5}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} - \frac{7(iA-4B)\tan^{\frac{3}{2}}(c+d}{24d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{5(A+6iB)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(2A+5iB)\tan^{\frac{5}{2}}(c+dx}{12ad(a+ia\tan(c+dx)}$$

$$= \frac{5(A+6iB)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(2A+5iB)\tan^{\frac{5}{2}}(c+dx}{12ad(a+ia\tan(c+dx)}$$

$$= \frac{5(A+6iB)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(2A+5iB)\tan^{\frac{5}{2}}(c+dx}{12ad(a+ia\tan(c+dx)}$$

$$= \frac{5(A+6iB)\sqrt{\tan(c+dx)}}{8a^3d} + \frac{(iA-B)\tan^{\frac{7}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(2A+5iB)\tan^{\frac{5}{2}}(c+dx}{12ad(a+ia\tan(c+dx)}$$

$$= \frac{((5+7i)A-(28-30i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} - \frac{((5+7i)}{}$$

$$= \frac{((5-7i)A+(28+30i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d} - \frac{((5-7i)A+(28+3}{}$$

Mathematica [A] time = 3.41184, size = 286, normalized size = 0.79

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{2}{3}\tan(c+dx)(\cos(3dx)-i\sin(3dx))((9A+33iB)\cos(c+dx)+2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(7/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x])*((-I)*(((7 +
 5*I)*A - (30 - 28*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + (1 - I)*((6
```

```
+ I)*A + (1 + 29*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*
x)]]]])*Sec[c + d*x]*(Cos[3*c] + I*Sin[3*c])*Sqrt[Sin[2*(c + d*x)]] + (2*(Co
s[3*d*x] - I*Sin[3*d*x])*((9*A + (33*I)*B)*Cos[c + d*x] + 21*(A + (7*I)*B)*
Cos[3*(c + d*x)] + (2*I)*(19*A + (97*I)*B + (19*A + (145*I)*B)*Cos[2*(c + d
*x)])*Sin[c + d*x])*Tan[c + d*x])/3))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x
])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3)
```

Maple [A] time = 0.06, size = 369, normalized size = 1.

$$\frac{2\,iB}{a^3d}\sqrt{\tan\left(dx+c\right)}-\frac{\frac{9\,i}{8}A}{a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}+\frac{5\,B}{2\,a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}-\frac{19\,A}{12\,a^3d\left(\tan\left(dx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 2*I/d/a^3*B*tan(d*x+c)^(1/2)-9/8*I/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(5/2
)+5/2/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(5/2)-19/12/d/a^3/(tan(d*x+c)-I)^
3*tan(d*x+c)^(3/2)*A-49/12*I/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*B-7/4/
d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(1/2)+5/8*I/d/a^3/(tan(d*x+c)-I)^3*A*ta
n(d*x+c)^(1/2)-29/4/d/a^3*B/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(
2^(1/2)-I*2^(1/2)))+3/2*I/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/
2)/(2^(1/2)-I*2^(1/2)))*A+1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+
c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A+1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(
d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.79629, size = 1860, normalized size = 5.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*
log(1/8*((16*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6
*d^2)) + 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B))
- 3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(
1/8*((-16*I*a^3*d*e^(2*I*d*x + 2*I*c) - 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^
2)) + 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3
*a^3*d*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)
*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6
*d^2)) + 6*I*A - 29*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 3*a^3*d*sqrt((36*I*A
^2 - 348*A*B - 841*I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*((a^3*d*e^
(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) + 1))*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6*d^2)) - 6*I*A + 29*
B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 2*(2*(10*A + 73*I*B)*e^(6*I*d*x + 6*I*c)
 + (14*A + 41*I*B)*e^(4*I*d*x + 4*I*c) - (5*A + 8*I*B)*e^(2*I*d*x + 2*I*c)
+ A + I*B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^
(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(7/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.26151, size = 223, normalized size = 0.61

$$\frac{(i-1)\sqrt{2}(6A+29iB)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}+\frac{(i+1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] (1/16*I - 1/16)*sqrt(2)*(6*A + 29*I*B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(ta
n(d*x + c)))/(a^3*d) + (1/16*I + 1/16)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1
/2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^3*d) + 2*I*B*sqrt(tan(d*x + c))/(a^3*d)
+ 1/24*(-27*I*A*tan(d*x + c)^(5/2) + 60*B*tan(d*x + c)^(5/2) - 38*A*tan(d*x
 + c)^(3/2) - 98*I*B*tan(d*x + c)^(3/2) + 15*I*A*sqrt(tan(d*x + c)) - 42*B*
sqrt(tan(d*x + c)))/(a^3*d*(tan(d*x + c) - I)^3)
```

3.148 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=307

$$\frac{(2A+(5-7i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}-\frac{(2A+(5-7i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^3d}-\frac{(2A-(5+7i)B)\log\left(t\right.}{}$$

```
[Out] ((2*A + (5 - 7*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^
3*d) - ((2*A + (5 - 7*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqr
t[2]*a^3*d) - ((2*A - (5 + 7*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((2*A - (5 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((I*A - B)*Tan[c + d*x]
^(5/2))/(6*d*(a + I*a*Tan[c + d*x])^3) + ((A + (4*I)*B)*Tan[c + d*x]^(3/2))
/(12*a*d*(a + I*a*Tan[c + d*x])^2) + (5*B*Sqrt[Tan[c + d*x]])/(8*d*(a^3 + I
*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.638102, antiderivative size = 307, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3595, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(2A+(5-7i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}-\frac{(2A+(5-7i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^3d}-\frac{(2A-(5+7i)B)\log\left(t\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```



```
[Out] ((2*A + (5 - 7*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^
3*d) - ((2*A + (5 - 7*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqr
t[2]*a^3*d) - ((2*A - (5 + 7*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((2*A - (5 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((I*A - B)*Tan[c + d*x]
^(5/2))/(6*d*(a + I*a*Tan[c + d*x])^3) + ((A + (4*I)*B)*Tan[c + d*x]^(3/2))
/(12*a*d*(a + I*a*Tan[c + d*x])^2) + (5*B*Sqrt[Tan[c + d*x]])/(8*d*(a^3 + I
*a^3*Tan[c + d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
```

```
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\tan^{\frac{3}{2}}(c+dx)\left(\frac{5}{2}a(iA-B)-\frac{1}{2}a(A-11iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+4iB)\tan^{\frac{3}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{\sqrt{\tan(c+dx)}\left(-3a^2(A+4iB)-\right.}{a+ia\tan}}{24a}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+4iB)\tan^{\frac{3}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} + \frac{5B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+4iB)\tan^{\frac{3}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} + \frac{5B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+4iB)\tan^{\frac{3}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} + \frac{5B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(A+4iB)\tan^{\frac{3}{2}}(c+dx)}{12ad(a+ia\tan(c+dx))^2} + \frac{5B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= -\frac{(2A-(5+7i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} + \frac{(2A-(5+7i)B}{}$$

$$= \frac{(2A+(5-7i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d} - \frac{(2A+(5-7i)B)\tan^{-1}\left(1+\right.}{16\sqrt{2}a^3d}$$

Mathematica [A] time = 2.59742, size = 254, normalized size = 0.83

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{4}{3}\sin(c+dx)(\cos(3dx)-i\sin(3dx))((A+19iB)\sin(2(c+dx))+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*(((2*A + (5 - 7*I)*B)*ArcSin[Cos[
c + d*x] - Sin[c + d*x]] + (1 - I)*((1 + I)*A + (1 - 6*I)*B)*Log[Cos[c + d*
x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(Cos[3*c] + I*Sin
[3*c])*Sqrt[Sin[2*(c + d*x)]] + (4*(Cos[3*d*x] - I*Sin[3*d*x])*Sin[c + d*x]
*((3*I)*A - 6*B + 3*((-I)*A + 7*B)*Cos[2*(c + d*x)] + (A + (19*I)*B)*Sin[2*
(c + d*x)]))/3)*(A + B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x
])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3)
```

Maple [A] time = 0.057, size = 323, normalized size = 1.1

$$\frac{-\frac{9i}{8}B}{a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}-\frac{A}{4\,a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}-\frac{19\,B}{12\,a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -9/8*I/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(5/2)-1/4/d/a^3/(tan(d*x+c)-I)^3
*A*tan(d*x+c)^(5/2)-19/12/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(3/2)+1/12*I/
d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*A+5/8*I/d/a^3/(tan(d*x+c)-I)^3*B*ta
n(d*x+c)^(1/2)-1/4/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(
1/2)-I*2^(1/2)))*A+3/2*I/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2
)/(2^(1/2)-I*2^(1/2)))*B-1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^
(1/2)/(2^(1/2)+I*2^(1/2)))*A+1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d
*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

[Out] Exception raised: RuntimeError

Fricas [B] time = 1.69918, size = 1778, normalized size = 5.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*l
og(2*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) + (A -
I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*a^3*d*sqrt((I
*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-2*((a^3*d*e^(2*I*
d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x + 2*
I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3*a^3*d*sqrt((-I*A^2 - 12*A*B + 36*
I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*((a^3*d*e^(2*I*d*x + 2*I*c) +
 a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((
-I*A^2 - 12*A*B + 36*I*B^2)/(a^6*d^2)) + A - 6*I*B)*e^(-2*I*d*x - 2*I*c)/(a
^3*d)) - 3*a^3*d*sqrt((-I*A^2 - 12*A*B + 36*I*B^2)/(a^6*d^2))*e^(6*I*d*x +
6*I*c)*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 12*A*B + 36*I*B^2)/(a
^6*d^2)) - A + 6*I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 2*((-2*I*A + 20*B)*e^
(6*I*d*x + 6*I*c) + (I*A + 14*B)*e^(4*I*d*x + 4*I*c) + (2*I*A - 5*B)*e^(2*I
*d*x + 2*I*c) - I*A + B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) + 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.21076, size = 182, normalized size = 0.59

$$-\frac{(i+1)\sqrt{2}(A-6iB)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}+\frac{(i-1)\sqrt{2}(A-iB)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] -(1/16*I + 1/16)*sqrt(2)*(A - 6*I*B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(
d*x + c)))/(a^3*d) + (1/16*I - 1/16)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2
)*sqrt(2)*sqrt(tan(d*x + c)))/(a^3*d) - 1/24*(6*A*tan(d*x + c)^(5/2) + 27*I
*B*tan(d*x + c)^(5/2) - 2*I*A*tan(d*x + c)^(3/2) + 38*B*tan(d*x + c)^(3/2)
- 15*I*B*sqrt(tan(d*x + c)))/(a^3*d*(tan(d*x + c) - I)^3)
```

3.149 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=309

$$\frac{(2B+(1+i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}-\frac{(2B+(1+i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^3d}+\frac{(A-2iB)\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx)\right)}$$

```
[Out] (((1 + I)*A + 2*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^3*
d) - (((1 + I)*A + 2*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]
*a^3*d) - (((-1 + I)*A + 2*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c +
d*x]])/(32*Sqrt[2]*a^3*d) + (((-1 + I)*A + 2*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c
+ d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((I*A - B)*Tan[c + d*x]^(3/2)
)/(6*d*(a + I*a*Tan[c + d*x])^3) + ((I/4)*B*Sqrt[Tan[c + d*x]])/(a*d*(a + I
*a*Tan[c + d*x])^2) + ((A - (2*I)*B)*Sqrt[Tan[c + d*x]])/(8*d*(a^3 + I*a^3*
Tan[c + d*x]))
```

Rubi [A] time = 0.627202, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(2B+(1+i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}-\frac{(2B+(1+i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^3d}+\frac{(A-2iB)\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] (((1 + I)*A + 2*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]*a^3*
d) - (((1 + I)*A + 2*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[2]
*a^3*d) - (((-1 + I)*A + 2*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c +
d*x]])/(32*Sqrt[2]*a^3*d) + (((-1 + I)*A + 2*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c
+ d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((I*A - B)*Tan[c + d*x]^(3/2)
)/(6*d*(a + I*a*Tan[c + d*x])^3) + ((I/4)*B*Sqrt[Tan[c + d*x]])/(a*d*(a + I
*a*Tan[c + d*x])^2) + ((A - (2*I)*B)*Sqrt[Tan[c + d*x]])/(8*d*(a^3 + I*a^3*
Tan[c + d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\sqrt{\tan(c+dx)}\left(\frac{3}{2}a(iA-B)-\frac{3}{2}a(A-3iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iB\sqrt{\tan(c+dx)}}{4ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{-3ia^2B-3a^2(2iA+3B)\tan(}{\sqrt{\tan(c+dx)}(a+ia\tan(c+}}{24a^4}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iB\sqrt{\tan(c+dx)}}{4ad(a+ia\tan(c+dx))^2} + \frac{(A-2iB)\sqrt{\tan(c+d}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iB\sqrt{\tan(c+dx)}}{4ad(a+ia\tan(c+dx))^2} + \frac{(A-2iB)\sqrt{\tan(c+d}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iB\sqrt{\tan(c+dx)}}{4ad(a+ia\tan(c+dx))^2} + \frac{(A-2iB)\sqrt{\tan(c+d}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{iB\sqrt{\tan(c+dx)}}{4ad(a+ia\tan(c+dx))^2} + \frac{(A-2iB)\sqrt{\tan(c+d}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= -\frac{((-1+i)A+2B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} + \frac{((-1+i)A+2}{}$$

$$= \frac{((1+i)A+2B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d} - \frac{((1+i)A+2B)\tan^{-1}\left(1+\sqrt{\right.}}{16\sqrt{2}a^3d}$$

Mathematica [A] time = 3.77691, size = 274, normalized size = 0.89

$$\frac{e^{-4i(c+dx)}\sqrt{\tan(c+dx)}\csc(c+dx)(\cos(3(c+dx))-i\sin(3(c+dx)))\left(\left(-2e^{2i(c+dx)}-e^{4i(c+dx)}+2e^{6i(c+dx)}+1\right)\left(-iA\left(1+2\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (((1 - 2*E^((2*I)*(c + d*x)) - E^((4*I)*(c + d*x)) + 2*E^((6*I)*(c + d*x)))
*(B - B*E^((2*I)*(c + d*x)) - I*A*(1 + 2*E^((2*I)*(c + d*x)))) - 3*B*E^((6*
I)*(c + d*x))*Sqrt[-1 + E^((4*I)*(c + d*x))]*ArcTan[Sqrt[-1 + E^((4*I)*(c +
 d*x))]] + 6*(I*A + B)*E^((6*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*S
```

```
qrt[1 + E^((2*I)*(c + d*x))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E
^((2*I)*(c + d*x)))]])*Csc[c + d*x]*(Cos[3*(c + d*x)] - I*Sin[3*(c + d*x)])
*Sqrt[Tan[c + d*x]])/(96*a^3*d*E^((4*I)*(c + d*x)))
```

Maple [A] time = 0.05, size = 278, normalized size = 0.9

$$-\frac{B}{4\,a^3d\,(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{5}{2}}-\frac{\frac{i}{8}A}{a^3d\,(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{5}{2}}-\frac{5\,A}{12\,a^3d\,(\tan(dx+c)-i)^3}(\tan(dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -1/4/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(5/2)-1/8*I/d/a^3/(tan(d*x+c)-I)^3
*A*tan(d*x+c)^(5/2)-5/12/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*A+1/12*I/d
/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*B+1/8*I/d/a^3/(tan(d*x+c)-I)^3*A*tan
(d*x+c)^(1/2)-1/4/d/a^3*B/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^
(1/2)-I*2^(1/2)))-1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)
/(2^(1/2)+I*2^(1/2)))*A-1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(
1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.61822, size = 1713, normalized size = 5.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] -1/96*(3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)
*log(1/8*((16*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^
6*d^2)) + 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B))
 - 3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log
(1/8*((-16*I*a^3*d*e^(2*I*d*x + 2*I*c) - 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d
^2)) + 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) -
24*a^3*d*sqrt(-1/64*I*B^2/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*(8*(a^3*d*
e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1))*sqrt(-1/64*I*B^2/(a^6*d^2)) + B)*e^(-2*I*d*x - 2*I*c)/(a^3*d
)) + 24*a^3*d*sqrt(-1/64*I*B^2/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*(8*(
a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) + 1))*sqrt(-1/64*I*B^2/(a^6*d^2)) - B)*e^(-2*I*d*x - 2*I*c)/
(a^3*d)) - 2*(2*(2*A - I*B)*e^(6*I*d*x + 6*I*c) + (4*A + I*B)*e^(4*I*d*x +
4*I*c) - (A - 2*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.26051, size = 177, normalized size = 0.57

$$-\frac{(i+1)\sqrt{2}B\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16\,a^3d}+\frac{(i-1)\sqrt{2}(i\,A+B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16\,a^3d}-\frac{3i\,A\,t}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] -(1/16*I + 1/16)*sqrt(2)*B*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(d*x + c)))
/(a^3*d) + (1/16*I - 1/16)*sqrt(2)*(I*A + B)*arctan(-(1/2*I - 1/2)*sqrt(2)*
sqrt(tan(d*x + c)))/(a^3*d) - 1/24*(3*I*A*tan(d*x + c)^(5/2) + 6*B*tan(d*x
+ c)^(5/2) + 10*A*tan(d*x + c)^(3/2) - 2*I*B*tan(d*x + c)^(3/2) - 3*I*A*sqr
t(tan(d*x + c)))/(a^3*d*(tan(d*x + c) - I)^3)
```

3.150 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=317

$$\frac{\left(\frac{1}{16}+\frac{i}{16}\right)(B+(1+i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d}-\frac{\left(\frac{1}{16}+\frac{i}{16}\right)(B+(1+i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}a^3d}+\frac{(2iA}{}$$

```
[Out] ((1/16 + I/16)*((1 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqr
t[2]*a^3*d) - ((1/16 + I/16)*((1 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*a^3*d) + (((2*I)*A + (1 - I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) - (((2*I)*A + (1 - I)*B)*Log
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((I*A
 - B)*Sqrt[Tan[c + d*x]])/(6*d*(a + I*a*Tan[c + d*x])^3) + ((I*A + 2*B)*Sqr
t[Tan[c + d*x]])/(12*a*d*(a + I*a*Tan[c + d*x])^2) + (B*Sqrt[Tan[c + d*x]])
/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.624298, antiderivative size = 317, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3595, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\frac{1}{16}+\frac{i}{16}\right)(B+(1+i)A)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d}-\frac{\left(\frac{1}{16}+\frac{i}{16}\right)(B+(1+i)A)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}a^3d}+\frac{(2iA}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] ((1/16 + I/16)*((1 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqr
t[2]*a^3*d) - ((1/16 + I/16)*((1 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*a^3*d) + (((2*I)*A + (1 - I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) - (((2*I)*A + (1 - I)*B)*Log
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((I*A
 - B)*Sqrt[Tan[c + d*x]])/(6*d*(a + I*a*Tan[c + d*x])^3) + ((I*A + 2*B)*Sqr
t[Tan[c + d*x]])/(12*a*d*(a + I*a*Tan[c + d*x])^2) + (B*Sqrt[Tan[c + d*x]])
/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(iA-B)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} - \frac{\int \frac{\frac{1}{2}a(iA-B)-\frac{1}{2}a(5A-7iB)\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(iA+2B)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} - \frac{\int \frac{3ia^2A-3a^2(A-2iB)\tan(c+}{\sqrt{\tan(c+dx)}(a+ia\tan(c+d}}{24a^4}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(iA+2B)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(iA+2B)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(iA+2B)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(iA+2B)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{B\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+dx\right.}$$

$$= \frac{(2iA+(1-i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} - \frac{(2iA+(1-i)B)\,\mathrm{lo}}{}$$

$$= \frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+i)A+B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d} - \frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+i)A+}{}$$

Mathematica [A] time = 3.3741, size = 272, normalized size = 0.86

$$\frac{e^{-4i(c+dx)}\sec(c+dx)(\cos(3(c+dx))-i\sin(3(c+dx)))\left(\left(-2e^{2i(c+dx)}+e^{4i(c+dx)}+2e^{6i(c+dx)}-1\right)\left(Ae^{2i(c+dx)}+A-2iBe^{2i(c+d}\right.\right.}{96a^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (((A + I*B + A*E^((2*I)*(c + d*x)) - (2*I)*B*E^((2*I)*(c + d*x)))*(-1 - 2*E
^((2*I)*(c + d*x)) + E^((4*I)*(c + d*x)) + 2*E^((6*I)*(c + d*x))) - 3*A*E^(
(6*I)*(c + d*x))*Sqrt[-1 + E^((4*I)*(c + d*x))]*ArcTan[Sqrt[-1 + E^((4*I)*(
c + d*x))]] - 6*(A - I*B)*E^((6*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))
```

```
]*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1
+ E^((2*I)*(c + d*x)))]])*Sec[c + d*x]*(Cos[3*(c + d*x)] - I*Sin[3*(c + d*x
)]))/(96*a^3*d*E^((4*I)*(c + d*x))*Sqrt[Tan[c + d*x]])
```

Maple [A] time = 0.066, size = 278, normalized size = 0.9

$$\frac{-\frac{i}{8}B}{a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}-\frac{5\,B}{12\,a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}-\frac{\frac{i}{12}A}{a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -1/8*I/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(5/2)-5/12/d/a^3/(tan(d*x+c)-I)^
3*B*tan(d*x+c)^(3/2)-1/12*I/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*A+1/8*I
/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(1/2)-1/4/d/a^3/(tan(d*x+c)-I)^3*A*tan
(d*x+c)^(1/2)-1/4/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1
/2)-I*2^(1/2)))*A+1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(
2^(1/2)+I*2^(1/2)))*A-1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(
1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.61481, size = 1670, normalized size = 5.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] -1/96*(3*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*
log(2*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) + (A -
 I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*a^3*d*sqrt((
I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-2*((a^3*d*e^(2*I
*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) + 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x + 2
*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 24*a^3*d*sqrt(-1/64*I*A^2/(a^6*d^2
))*e^(6*I*d*x + 6*I*c)*log(1/8*(8*(a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt(
(-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(-1/64*I*A^2/(a
^6*d^2)) + A)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 24*a^3*d*sqrt(-1/64*I*A^2/(a^
6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*(8*(a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)
*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(-1/64*I*
A^2/(a^6*d^2)) - A)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 2*((2*I*A + 4*B)*e^(6*I
*d*x + 6*I*c) + (5*I*A + 4*B)*e^(4*I*d*x + 4*I*c) + (4*I*A - B)*e^(2*I*d*x
+ 2*I*c) + I*A - B)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
+ 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.21718, size = 177, normalized size = 0.56

$$-\frac{(i+1)\ \sqrt{2}A\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{16\,a^3d}-\frac{(i-1)\ \sqrt{2}(A-i\,B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\ \sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{16\,a^3d}-\frac{3i\,B\,\mathrm{ta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] -(1/16*I + 1/16)*sqrt(2)*A*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(d*x + c)))
/(a^3*d) - (1/16*I - 1/16)*sqrt(2)*(A - I*B)*arctan(-(1/2*I - 1/2)*sqrt(2)*
sqrt(tan(d*x + c)))/(a^3*d) - 1/24*(3*I*B*tan(d*x + c)^(5/2) + 2*I*A*tan(d*
x + c)^(3/2) + 10*B*tan(d*x + c)^(3/2) + 6*A*sqrt(tan(d*x + c)) - 3*I*B*sqr
t(tan(d*x + c)))/(a^3*d*(tan(d*x + c) - I)^3)
```

3.151 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=315

$$-\frac{((7-5i)A-2iB)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}+\frac{((7-5i)A-2iB)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^3d}-\frac{((7+5i)A-2iB)\log}{}$$

```
[Out] -((((7 - 5*I)*A - (2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[
2]*a^3*d) + (((7 - 5*I)*A - (2*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(16*Sqrt[2]*a^3*d) - (((7 + 5*I)*A - (2*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + (((7 + 5*I)*A - (2*I)*B)*Log[
1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((A +
I*B)*Sqrt[Tan[c + d*x]])/(6*d*(a + I*a*Tan[c + d*x])^3) + ((4*A + I*B)*Sqrt
[Tan[c + d*x]])/(12*a*d*(a + I*a*Tan[c + d*x])^2) + (5*A*Sqrt[Tan[c + d*x]]
)/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.640067, antiderivative size = 315, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{((7-5i)A-2iB)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}+\frac{((7-5i)A-2iB)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{16\sqrt{2}a^3d}-\frac{((7+5i)A-2iB)\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3),x]
```



```
[Out] -((((7 - 5*I)*A - (2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*Sqrt[
2]*a^3*d) + (((7 - 5*I)*A - (2*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(16*Sqrt[2]*a^3*d) - (((7 + 5*I)*A - (2*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + (((7 + 5*I)*A - (2*I)*B)*Log[
1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a^3*d) + ((A +
I*B)*Sqrt[Tan[c + d*x]])/(6*d*(a + I*a*Tan[c + d*x])^3) + ((4*A + I*B)*Sqrt
[Tan[c + d*x]])/(12*a*d*(a + I*a*Tan[c + d*x])^2) + (5*A*Sqrt[Tan[c + d*x]]
)/(8*d*(a^3 + I*a^3*Tan[c + d*x]))
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3}\,dx = \frac{(A+iB)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{\int \frac{\frac{1}{2}a(11A-iB)-\frac{5}{2}a(iA-B)\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(4A+iB)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{\int \frac{3a^2(6A-iB)-3a^2(4iA-B)\,\mathrm{t}}{\sqrt{\tan(c+dx)}(a+ia\tan(}}{24a^4}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(4A+iB)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{5A\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(4A+iB)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{5A\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(4A+iB)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{5A\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{6d(a+ia\tan(c+dx))^3} + \frac{(4A+iB)\sqrt{\tan(c+dx)}}{12ad(a+ia\tan(c+dx))^2} + \frac{5A\sqrt{\tan(c+dx)}}{8d\left(a^3+ia^3\tan(c+d\right.}$$

$$= -\frac{((7+5i)A-2iB)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} + \frac{((7+5i)A-2}{}$$

$$= -\frac{((7-5i)A-2iB)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d} + \frac{((7-5i)A-2iB)\tan^{-1}\left(1\right.}{16\sqrt{2}a^3}$$

Mathematica [A] time = 2.9499, size = 258, normalized size = 0.82

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{4}{3}\sin(c+dx)(\cos(3dx)-i\sin(3dx))((-B+19iA)\sin(2(c+dx))\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3
),x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((((5 + 7*I)*A + 2*B)*ArcSin[Cos[
c + d*x] - Sin[c + d*x]] - (1 + I)*((1 + 6*I)*A + (1 - I)*B)*Log[Cos[c + d*
x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(I*Cos[3*c] - Sin
[3*c])*Sqrt[Sin[2*(c + d*x)]] + (4*(Cos[3*d*x] - I*Sin[3*d*x])*Sin[c + d*x]
*(6*A + (3*I)*B + 3*(7*A + I*B)*Cos[2*(c + d*x)] + ((19*I)*A - B)*Sin[2*(c
+ d*x)]))/3)*(A + B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*
Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3)
```

Maple [A] time = 0.068, size = 323, normalized size = 1.

$$\frac{-\frac{5i}{8}A}{a^3d(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{5}{2}}-\frac{19A}{12a^3d(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{3}{2}}-\frac{\frac{i}{12}B}{a^3d(\tan(dx+c)-i)^3}(\tan(dx+c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -5/8*I/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(5/2)-19/12/d/a^3/(tan(d*x+c)-I)
^3*tan(d*x+c)^(3/2)*A-1/12*I/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*B+9/8*
I/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(1/2)-1/4/d/a^3/(tan(d*x+c)-I)^3*B*ta
n(d*x+c)^(1/2)-3/2*I/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2
^(1/2)-I*2^(1/2)))*A-1/4/d/a^3*B/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1
/2)/(2^(1/2)-I*2^(1/2)))+1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c
)^(1/2)/(2^(1/2)+I*2^(1/2)))*A+1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d
*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.95843, size = 1820, normalized size = 5.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*
log(1/8*((16*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6
*d^2)) + 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B))
- 3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(
1/8*((-16*I*a^3*d*e^(2*I*d*x + 2*I*c) - 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^
2)) + 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3
*a^3*d*sqrt((36*I*A^2 + 12*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(
1/8*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/
(e^(2*I*d*x + 2*I*c) + 1))*sqrt((36*I*A^2 + 12*A*B - I*B^2)/(a^6*d^2)) + 6*
I*A + B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 3*a^3*d*sqrt((36*I*A^2 + 12*A*B -
I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*c)
+ a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(
(36*I*A^2 + 12*A*B - I*B^2)/(a^6*d^2)) - 6*I*A - B)*e^(-2*I*d*x - 2*I*c)/(a
^3*d)) + 2*(2*(10*A + I*B)*e^(6*I*d*x + 6*I*c) + (26*A + 5*I*B)*e^(4*I*d*x
+ 4*I*c) + (7*A + 4*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: TypeError
```

Giac [A] time = 1.20348, size = 185, normalized size = 0.59

$$-\frac{(i+1)\sqrt{2}(6iA+B)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}+\frac{(i-1)\sqrt{2}(-iA-B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c}\right.}{16a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] -(1/16*I + 1/16)*sqrt(2)*(6*I*A + B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(tan(
d*x + c)))/(a^3*d) + (1/16*I - 1/16)*sqrt(2)*(-I*A - B)*arctan(-(1/2*I - 1/
2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^3*d) - 1/24*(15*I*A*tan(d*x + c)^(5/2) +
38*A*tan(d*x + c)^(3/2) + 2*I*B*tan(d*x + c)^(3/2) - 27*I*A*sqrt(tan(d*x +
c)) + 6*B*sqrt(tan(d*x + c)))/(a^3*d*(tan(d*x + c) - I)^3)
```

3.152 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=364

$$\frac{((30+28i)A-(7-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((1+29i)A-(6+i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}a^3d}$$

```
[Out] (((30 + 28*I)*A - (7 - 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*
Sqrt[2]*a^3*d) - ((1/16 - I/16)*((1 + 29*I)*A - (6 + I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^3*d) - ((1/32 - I/32)*((29 + I)*A + (1 +
 6*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d
) + ((1/32 - I/32)*((29 + I)*A + (1 + 6*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c +
d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) - (5*(6*A + I*B))/(8*a^3*d*Sqrt[Tan[
c + d*x]]) + (A + I*B)/(6*d*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3) +
(5*A + (2*I)*B)/(12*a*d*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2) + (7*(
4*A + I*B))/(24*d*Sqrt[Tan[c + d*x]]*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.804328, antiderivative size = 364, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{((30+28i)A-(7-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((1+29i)A-(6+i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3),x]
```


```
[Out] (((30 + 28*I)*A - (7 - 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(16*
Sqrt[2]*a^3*d) - ((1/16 - I/16)*((1 + 29*I)*A - (6 + I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^3*d) - ((1/32 - I/32)*((29 + I)*A + (1 +
 6*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d
) + ((1/32 - I/32)*((29 + I)*A + (1 + 6*I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan[c +
d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) - (5*(6*A + I*B))/(8*a^3*d*Sqrt[Tan[
c + d*x]]) + (A + I*B)/(6*d*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3) +
(5*A + (2*I)*B)/(12*a*d*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^2) + (7*(
4*A + I*B))/(24*d*Sqrt[Tan[c + d*x]]*(a^3 + I*a^3*Tan[c + d*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
```

```
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx = \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{\int \frac{\frac{1}{2}a(13A+iB)-\frac{7}{2}a(iA-B)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{5A+2iB}{12ad\sqrt{\tan(c+dx)}(a+ia\tan(c+dx$$

$$= \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{5A+2iB}{12ad\sqrt{\tan(c+dx)}(a+ia\tan(c+dx$$

$$= -\frac{5(6A+iB)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{}{12ad\sqrt{\tan(c}$$

$$= -\frac{5(6A+iB)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{}{12ad\sqrt{\tan(c}$$

$$= -\frac{5(6A+iB)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{}{12ad\sqrt{\tan(c}$$

$$= -\frac{5(6A+iB)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^3} + \frac{}{12ad\sqrt{\tan(c}$$

$$= -\frac{((30-28i)A+(7+5i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} + \frac{((30}{}$$

$$= \frac{((30+28i)A-(7-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{16\sqrt{2}a^3d} - \frac{((30+28i)A-(7}{}$$

Mathematica [A] time = 3.14356, size = 278, normalized size = 0.76

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{2}{3}(\cos(3dx)-i\sin(3dx))((49A+19iB)\cos(c+dx)-(145A+19\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3
),x]
```

[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((2*(Cos[3*d*x] - I*Sin[3*d*x])*((49*A + (19*I)*B)*Cos[c + d*x] - (145*A + (19*I)*B)*Cos[3*(c + d*x)] + 6*((-19*I)*A + 2*B + 7*((-7*I)*A + B)*Cos[2*(c + d*x)])*Sin[c + d*x]))/3 + (((28 - 30*I)*A + (5 + 7*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((29 + I)*A + (1 + 6*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(I*Cos[3*c] - Sin[3*c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^3)

Maple [A] time = 0.058, size = 368, normalized size = 1.

$$-\frac{7A}{4a^3d(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{5}{2}}-\frac{\frac{5i}{8}B}{a^3d(\tan(dx+c)-i)^3}(\tan(dx+c))^{\frac{5}{2}}+\frac{\frac{49i}{12}A}{a^3d(\tan(dx+c)-i)^3}(\tan(dx+c)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x)

[Out] -7/4/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(5/2)-5/8*I/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(5/2)+49/12*I/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*A-19/12/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(3/2)+9/8*I/d/a^3/(tan(d*x+c)-I)^3*B*tan(d*x+c)^(1/2)+5/2/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(1/2)-3/2*I/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*B-29/4/d/a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*A+1/4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2)))*B-2/d/a^3*A/tan(d*x+c)^(1/2)

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x, algorithm="maxima")

[Out] Exception raised: RuntimeError

Fricas [B] time = 2.09988, size = 2071, normalized size = 5.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((I*A^2
 + 2*A*B - I*B^2)/(a^6*d^2))*log(2*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*A^2 + 2*A
*B - I*B^2)/(a^6*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c
)/(I*A + B)) - 3*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))*sq
rt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*log(-2*((a^3*d*e^(2*I*d*x + 2*I*c) +
a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I
*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d
*x - 2*I*c)/(I*A + B)) + 3*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x +
6*I*c))*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2))*log(1/8*((a^3*d*e
^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
 2*I*c) + 1))*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2)) + 29*A + 6*
I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 3*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e
^(6*I*d*x + 6*I*c))*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2))*log(-
1/8*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/
(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2)
) - 29*A - 6*I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 2*((-146*I*A + 20*B)*e^(8
*I*d*x + 8*I*c) + (-105*I*A + 6*B)*e^(6*I*d*x + 6*I*c) + (49*I*A - 19*B)*e^
(4*I*d*x + 4*I*c) + (9*I*A - 6*B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt((-I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(a^3*d*e^(8*I*d*x + 8*I
*c) - a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.2536, size = 225, normalized size = 0.62

$$-\frac{(i+1)\sqrt{2}(29A+6iB)\arctan\left(\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}-\frac{(i+1)\sqrt{2}(iA+B)\arctan\left(\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan(dx+c)}\right)}{16a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] -(1/16*I + 1/16)*sqrt(2)*(29*A + 6*I*B)*arctan((1/2*I + 1/2)*sqrt(2)*sqrt(t
an(d*x + c)))/(a^3*d) - (1/16*I + 1/16)*sqrt(2)*(I*A + B)*arctan((1/2*I - 1
/2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^3*d) - 2*A/(a^3*d*sqrt(tan(d*x + c))) -
1/24*(42*I*A*tan(d*x + c)^(5/2) - 15*B*tan(d*x + c)^(5/2) + 98*A*tan(d*x +
c)^(3/2) + 38*I*B*tan(d*x + c)^(3/2) - 60*I*A*sqrt(tan(d*x + c)) + 27*B*sqr
t(tan(d*x + c)))/(a^3*d*(-I*tan(d*x + c) - 1)^3)
```

3.153 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=393

$$\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((76+i)A+(1+29i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((76+i)A+(1+29i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c\right.}{\sqrt{2}a^3d}$$

```
[Out] ((1/16 - I/16)*((76 + I)*A + (1 + 29*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]])/(Sqrt[2]*a^3*d) - ((1/16 - I/16)*((76 + I)*A + (1 + 29*I)*B)*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^3*d) + (((77 + 75*I)*A - (30 -
 28*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a
^3*d) - ((1/32 - I/32)*((1 + 76*I)*A - (29 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) - (7*(11*A + (4*I)*B))/(24*a^3*
d*Tan[c + d*x]^(3/2)) + (15*((5*I)*A - 2*B))/(8*a^3*d*Sqrt[Tan[c + d*x]]) +
 (A + I*B)/(6*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3) + (2*A + I*B)/
(4*a*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2) + (3*(5*A + (2*I)*B))/(
8*d*Tan[c + d*x]^(3/2)*(a^3 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.860597, antiderivative size = 393, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((76+i)A+(1+29i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d}-\frac{\left(\frac{1}{16}-\frac{i}{16}\right)((76+i)A+(1+29i)B)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c\right.}{\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^3),x]
```


```
[Out] ((1/16 - I/16)*((76 + I)*A + (1 + 29*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]])/(Sqrt[2]*a^3*d) - ((1/16 - I/16)*((76 + I)*A + (1 + 29*I)*B)*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*a^3*d) + (((77 + 75*I)*A - (30 -
 28*I)*B)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(32*Sqrt[2]*a
^3*d) - ((1/32 - I/32)*((1 + 76*I)*A - (29 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(Sqrt[2]*a^3*d) - (7*(11*A + (4*I)*B))/(24*a^3*
d*Tan[c + d*x]^(3/2)) + (15*((5*I)*A - 2*B))/(8*a^3*d*Sqrt[Tan[c + d*x]]) +
 (A + I*B)/(6*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3) + (2*A + I*B)/
(4*a*d*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2) + (3*(5*A + (2*I)*B))/(
```

```
8*d*Tan[c + d*x]^(3/2)*(a^3 + I*a^3*Tan[c + d*x]))
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx = \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3} + \frac{\int \frac{\frac{3}{2}a(5A+iB)-\frac{9}{2}a(iA-B)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3} + \frac{2A+iB}{4ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}$$

$$= \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3} + \frac{2A+iB}{4ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}$$

$$= -\frac{7(11A+4iB)}{24a^3d\tan^{\frac{3}{2}}(c+dx)} + \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3} + \frac{}{4ad\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{7(11A+4iB)}{24a^3d\tan^{\frac{3}{2}}(c+dx)} + \frac{15(5iA-2B)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+}$$

$$= -\frac{7(11A+4iB)}{24a^3d\tan^{\frac{3}{2}}(c+dx)} + \frac{15(5iA-2B)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+}$$

$$= -\frac{7(11A+4iB)}{24a^3d\tan^{\frac{3}{2}}(c+dx)} + \frac{15(5iA-2B)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+}$$

$$= -\frac{7(11A+4iB)}{24a^3d\tan^{\frac{3}{2}}(c+dx)} + \frac{15(5iA-2B)}{8a^3d\sqrt{\tan(c+dx)}} + \frac{A+iB}{6d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+}$$

$$= \frac{((77+75i)A-(30-28i)B)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{32\sqrt{2}a^3d} - \frac{((77-}{}$$

$$= \frac{\left(\frac{1}{16}-\frac{i}{16}\right)((76+i)A+(1+29i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}a^3d} - \frac{\left(\frac{1}{16}-\frac{i}{16}\right)(}{}$$

Mathematica [A] time = 4.01906, size = 306, normalized size = 0.78

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{1}{3}\csc(c+dx)(\cos(3dx)-i\sin(3dx))(-2(241A+90iB)\cos(2(c+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^3
),x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((1 - I)*(((76 + I)*A + (1 + 29*I
)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] + ((-1 - 76*I)*A + (29 + I)*B)*Log
[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*Sec[c + d*x]*(Cos[3
*c] + I*Sin[3*c])*Sqrt[Sin[2*(c + d*x)]] + (Csc[c + d*x]*(Cos[3*d*x] - I*Si
n[3*d*x])*(69*A + (33*I)*B - 2*(241*A + (90*I)*B)*Cos[2*(c + d*x)] + (349*A
 + (147*I)*B)*Cos[4*(c + d*x)] - (502*I)*A*Sin[2*(c + d*x)] + 194*B*Sin[2*(
c + d*x)] + (347*I)*A*Sin[4*(c + d*x)] - 145*B*Sin[4*(c + d*x)]))/3)*(A + B
*Tan[c + d*x]))/(32*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*
(a + I*a*Tan[c + d*x])^3)
```

Maple [A] time = 0.062, size = 403, normalized size = 1.

$$\frac{\frac{27i}{8}A}{a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}-\frac{7B}{4a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+c\right)\right)^{\frac{5}{2}}+\frac{91A}{12a^3d\left(\tan\left(dx+c\right)-i\right)^3}\left(\tan\left(dx+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 27/8*I/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(5/2)-7/4/d/a^3/(tan(d*x+c)-I)^3
*B*tan(d*x+c)^(5/2)+91/12/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*A+49/12*I
/d/a^3/(tan(d*x+c)-I)^3*tan(d*x+c)^(3/2)*B+5/2/d/a^3/(tan(d*x+c)-I)^3*B*tan
(d*x+c)^(1/2)-35/8*I/d/a^3/(tan(d*x+c)-I)^3*A*tan(d*x+c)^(1/2)-29/4/d/a^3*B
/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))+19*I/d/
a^3/(2^(1/2)-I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)-I*2^(1/2)))*A-1/
4*I/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1/2))
)*A-1/4/d/a^3/(2^(1/2)+I*2^(1/2))*arctan(2*tan(d*x+c)^(1/2)/(2^(1/2)+I*2^(1
/2)))*B+6*I/d/a^3/tan(d*x+c)^(1/2)*A-2/d/a^3/tan(d*x+c)^(1/2)*B-2/3/d/a^3*A
/tan(d*x+c)^(3/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.29068, size = 2407, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] -1/96*(3*(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d
*e^(6*I*d*x + 6*I*c))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*log(1/8*((16
*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) + 16*
(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*(a^3*d*e
^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I
*c))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*log(1/8*((-16*I*a^3*d*e^(2*I*
d*x + 2*I*c) - 16*I*a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) + 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) + 16*(A - I*B)*e^(2*I
*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3*(a^3*d*e^(10*I*d*x + 10*
I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((5776*
I*A^2 - 4408*A*B - 841*I*B^2)/(a^6*d^2))*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*
c) + a^3*d)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sq
rt((5776*I*A^2 - 4408*A*B - 841*I*B^2)/(a^6*d^2)) + 76*I*A - 29*B)*e^(-2*I*
d*x - 2*I*c)/(a^3*d)) - 3*(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x
 + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((5776*I*A^2 - 4408*A*B - 841*I*
B^2)/(a^6*d^2))*log(1/8*((a^3*d*e^(2*I*d*x + 2*I*c) + a^3*d)*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((5776*I*A^2 - 4408*A*B
- 841*I*B^2)/(a^6*d^2)) - 76*I*A + 29*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 2*
(2*(174*A + 73*I*B)*e^(10*I*d*x + 10*I*c) - (144*A + 41*I*B)*e^(8*I*d*x + 8
*I*c) - (423*A + 154*I*B)*e^(6*I*d*x + 6*I*c) + (79*A + 40*I*B)*e^(4*I*d*x
+ 4*I*c) + (11*A + 8*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt((-I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)))/(a^3*d*e^(10*I*d*x + 10*I*c) -
2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.22248, size = 246, normalized size = 0.63

$$\frac{(i-1)\sqrt{2}(iA+B)\arctan\left(-\left(\frac{1}{2}i-\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}{16\,a^3d}-\frac{(i-1)\sqrt{2}(76\,A+29i\,B)\arctan\left(-\left(\frac{1}{2}i+\frac{1}{2}\right)\sqrt{2}\sqrt{\tan\left(dx+\right.}\right.}{16\,a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] (1/16*I - 1/16)*sqrt(2)*(I*A + B)*arctan(-(1/2*I - 1/2)*sqrt(2)*sqrt(tan(d*
x + c)))/(a^3*d) - (1/16*I - 1/16)*sqrt(2)*(76*A + 29*I*B)*arctan(-(1/2*I +
 1/2)*sqrt(2)*sqrt(tan(d*x + c)))/(a^3*d) - 1/24*(225*A*tan(d*x + c)^4 + 90
*I*B*tan(d*x + c)^4 - 598*I*A*tan(d*x + c)^3 + 242*B*tan(d*x + c)^3 - 489*A
*tan(d*x + c)^2 - 204*I*B*tan(d*x + c)^2 + 96*I*A*tan(d*x + c) - 48*B*tan(d
*x + c) - 16*A)/((-I*tan(d*x + c)^(3/2) - sqrt(tan(d*x + c)))^3*a^3*d)
```

3.154 $\int \tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=200

$$\frac{(-1)^{3/4}\sqrt{a}(7B+4iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}+\frac{(4A-iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{(1+i)\sqrt{a}(B+iA)\tanh}{d}$$

```
[Out] ((-1)^(3/4)*Sqrt[a]*((4*I)*A + 7*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(4*d) + ((1 + I)*Sqrt[a]*(I*A + B)*Arc
Tanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d +
((4*A - I*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(4*d) + (B*Tan[
c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(2*d)
```

Rubi [A] time = 0.680083, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(-1)^{3/4}\sqrt{a}(7B+4iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}+\frac{(4A-iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{(1+i)\sqrt{a}(B+iA)\tanh}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((-1)^(3/4)*Sqrt[a]*((4*I)*A + 7*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(4*d) + ((1 + I)*Sqrt[a]*(I*A + B)*Arc
Tanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d +
((4*A - I*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(4*d) + (B*Tan[
c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(2*d)
```


Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
```

```
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{B\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{2d} + \frac{\int \sqrt{\tan(c+dx)}\sqrt{a+}}{}$$

$$= \frac{(4A-iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{B\tan^{\frac{3}{2}}(c+}{}$$

$$= \frac{(4A-iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{B\tan^{\frac{3}{2}}(c+}{}$$

$$= \frac{(4A-iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{B\tan^{\frac{3}{2}}(c+}{}$$

$$= \frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(4A-iB)\sqrt{}}{}$$

$$= \frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(4A-iB)\sqrt{}}{}$$

$$= -\frac{\sqrt[4]{-1}\sqrt{a}(4A-7iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d} + \frac{(1+i)\sqrt{a}}{}$$

Mathematica [F] time = 10.1308, size = 0, normalized size = 0.

$$\int \tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
),x]
```

```
[Out] Integrate[Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
), x]
```

Maple [B] time = 0.073, size = 838, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/8/d*(a*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^(1/2)*(4*I*A*2^(1/2)*(I*a)^(1/
2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3
*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-4*I*B*2^(1/2)*(I*a)^(1/2)*ln(-(
-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d
*x+c))/(tan(d*x+c)+I))*a-6*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)
^(1/2)*(I*a)^(1/2)*tan(d*x+c)-7*I*B*(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*tan(d*x+
c)*a+4*B*2^(1/2)*(I*a)^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+4*B*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)^2-
8*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)-4*I*A*
(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a+4*A*2^(1/2)*(I*a)^(1/2)*ln(-(-2*2^(1/2)*(-
I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d
*x+c)+I))*a+8*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1
/2)*tan(d*x+c)+4*A*(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*tan(d*x+c)*a-2*B*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)-7*B*(-I*a)^(1/2)*ln(
1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a
)/(I*a)^(1/2))*a)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(I*a)^(1/2)/(-tan(d
*x+c)+I)/(-I*a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\tan(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*tan(d*x + c)^(3/2
), x)
```

Fricas [B] time = 1.96178, size = 2155, normalized size = 10.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((4*A - 3*I*B)*e^(2*I*d*x + 2*I*c) + 4*A + I*B)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) + 1))*e^(I*d*x + I*c) + (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-16*I*A^2 - 56*
A*B + 49*I*B^2)*a/d^2)*log((sqrt(2)*((4*I*A + 7*B)*e^(2*I*d*x + 2*I*c) + 4*
I*A + 7*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*I*d*sqrt((-16*I*A^2 - 56
*A*B + 49*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(4*I*A +
7*B)) - (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-16*I*A^2 - 56*A*B + 49*I*B^2)*a/
d^2)*log((sqrt(2)*((4*I*A + 7*B)*e^(2*I*d*x + 2*I*c) + 4*I*A + 7*B)*sqrt(a/
(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) + 1))*e^(I*d*x + I*c) - 2*I*d*sqrt((-16*I*A^2 - 56*A*B + 49*I*B^2)*a
/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(4*I*A + 7*B)) - 4*(d*e^(2*
I*d*x + 2*I*c) + d)*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*(
(I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c
) + I*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2
*I*d*x - 2*I*c)/(I*A + B)) + 4*(d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-2*I*A^2 -
 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A
+ B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*d*sqrt((-2*I*A^2 - 4*A*B + 2*I
*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(2*
I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*tan(d*x+c)**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.35899, size = 378, normalized size = 1.89

$$-\frac{2\left((i\,a\tan\left(dx+c\right)+a)^2+2\left(-i\,a\tan\left(dx+c\right)-a\right)a+a^2\right)\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^2}\sqrt{i\,a\tan\left(dx+c\right)+a}B\left(\frac{}{\sqrt{(i}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] -1/2*(2*((I*a*tan(d*x + c) + a)^2 + 2*(-I*a*tan(d*x + c) - a)*a + a^2)*sqrt
(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B*((-I*(I*
a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2 - 2*(I*a*t
an(d*x + c) + a)*a^3 + a^4) + 1) - ((a*tan(d*x + c) - I*a)*a + I*a^2)*sqrt(
-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*((-I*(I*a*tan(d
*x + c) + a)*a + I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x
+ c) + a)*a^3 + a^4) + 1))/(((a*tan(d*x + c) - I*a)*a^2 + 2*I*a^3)*d)
```

3.155 $\int \sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=152

$$-\frac{(-1)^{3/4}\sqrt{a}(2A-iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{B\sqrt{\tan(c+dx)}\sqrt{a+ia}}{d}$$

```
[Out] -(((-1)^(3/4)*Sqrt[a]*(2*A - I*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d
*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d) - ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[
((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d + (B*Sq
rt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.488668, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}\sqrt{a}(2A-iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{B\sqrt{\tan(c+dx)}\sqrt{a+ia}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((-1)^(3/4)*Sqrt[a]*(2*A - I*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d
*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d) - ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[
((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d + (B*Sq
rt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```


Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
```

```
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{B\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + \frac{\int \frac{\sqrt{a+ia\tan(c+dx)}\left(-\frac{aB}{2}\right.}{\sqrt{\tan}}}{}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + (-iA-B)\int \frac{\sqrt{a+i}}{\sqrt{\mathrm{ta}}}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{\left(2a^2(A-iB)\right)\mathrm{Subst}}{}$$

$$= -\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{B\sqrt{\tan(c}}{}$$

$$= -\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{B\sqrt{\tan(c}}{}$$

$$= -\frac{\sqrt[4]{-1}\sqrt{a}(2iA+B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{(1+i)\sqrt{a}(}{}$$

Mathematica [B] time = 4.19985, size = 560, normalized size = 3.68

$$-\frac{e^{-i(c+dx)}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\sqrt{a+ia\tan(c+dx)}\left(8(B+iA)\left(1+e^{2i(c+dx)}\right)\log\left(\sqrt{-1+e^{2i(c+dx)}}+e^{i(c+dx)}\right)-i\sqrt{2}(2A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
),x]
```

```
[Out] -(Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[((-I)*(-1 + E^((2*I)
*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*(-8*B*E^(I*(c + d*x))*Sqrt[-1 + E^
((2*I)*(c + d*x))] + 8*(I*A + B)*(1 + E^((2*I)*(c + d*x)))*Log[E^(I*(c + d*
x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] - I*Sqrt[2]*(2*A - I*B)*(1 + E^((2*I)
*(c + d*x)))*Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt
[-1 + E^((2*I)*(c + d*x))]] + (2*I)*Sqrt[2]*A*Log[1 - 3*E^((2*I)*(c + d*x))
 + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] + Sqrt[2]*B*Lo
g[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*
```

```
(c + d*x))]] + (2*I)*Sqrt[2]*A*E^((2*I)*(c + d*x))*Log[1 - 3*E^((2*I)*(c +
d*x)) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] + Sqrt[2]
*B*E^((2*I)*(c + d*x))*Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*E^(I*(c +
d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[a + I*a*Tan[c + d*x]])/(4*Sqrt[
2]*d*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[Sec[c + d*x]])
```

Maple [B] time = 0.042, size = 713, normalized size = 4.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*(I*B*(I*a)^(1/2)*2^(1/2)
*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a
*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+2*I*A*ln(1/2*(2*I*a*tan(d*x+c)+2*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1
/2)*tan(d*x+c)*a+I*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a-A*(I
*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-I*B*ln(1/2*(2*I*
a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(
1/2))*(-I*a)^(1/2)*a-2*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)+B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a+B*(I*a)^(1/2)*
2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+
I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+2*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+2*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*
tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)
*a)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(I*a)^(1/2)/(-tan(d*x+c)+I)/(-I*a
)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*sqrt(tan(d*x + c)
), x)
```

Fricas [B] time = 1.91029, size = 1847, normalized size = 12.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/2*(2*sqrt(2)*B*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*
I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + d*sqrt((4*I*A^2 + 4*
A*B - I*B^2)*a/d^2)*log((sqrt(2)*((2*I*A + B)*e^(2*I*d*x + 2*I*c) + 2*I*A +
 B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^
(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*d*sqrt((4*I*A^2 + 4*A*B - I*B^2
)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(2*I*A + B)) - d*sqrt((4
*I*A^2 + 4*A*B - I*B^2)*a/d^2)*log((sqrt(2)*((2*I*A + B)*e^(2*I*d*x + 2*I*c
) + 2*I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*d*sqrt((4*I*A^2 + 4*
A*B - I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(2*I*A + B))
- d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*
d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d
*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + d*sqrt((2*I*A
^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A
 + B)) + d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*
e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - d*sqrt
((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*
c)/(I*A + B)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.29197, size = 313, normalized size = 2.06

$$\frac{2\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^{2}}\sqrt{i\,a\tan\left(dx+c\right)+a}Ba\left(\frac{-i\left(i\,a\tan(dx+c)+a\right)a+i\,a^{2}}{\sqrt{\left(i\,a\tan(dx+c)+a\right)^{2}a^{2}-2\left(i\,a\tan(dx+c)+a\right)a^{3}+a^{4}}}+1\right)\tan\left(dx+c\right)+\sqrt{}\cdots}{2\left(\left(a\tan\left(dx+c\right)-i\,a\right)a+2\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] 1/2*(2*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)
*B*a*((-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a
^2 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1)*tan(d*x + c) + sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*a*((-I*(I*a*tan(d*x + c)
 + a)*a + I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) +
a)*a^3 + a^4) + 1))/(((a*tan(d*x + c) - I*a)*a + 2*I*a^2)*d)
```

3.156 $\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=112

$$-\frac{(1+i)\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2(-1)^{3/4}\sqrt{a}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

```
[Out] (-2*(-1)^(3/4)*Sqrt[a]*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - ((1 + I)*Sqrt[a]*(I*A + B)*ArcTanh[((1 + I)*S
qrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d
```

Rubi [A] time = 0.323059, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.184, Rules used = {3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(1+i)\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2(-1)^{3/4}\sqrt{a}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```

```
[Out] (-2*(-1)^(3/4)*Sqrt[a]*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - ((1 + I)*Sqrt[a]*(I*A + B)*ArcTanh[((1 + I)*S
qrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
```

```
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = -\left((-A+iB)\int \frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{\tan(c+dx)}}\,dx\right) + \frac{(iB)\int \frac{(a-ia\tan(c+dx))\sqrt{a+ia\tan}}{\sqrt{\tan(c+dx)}}}{a}$$

$$= \frac{(iaB)\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+iax}}\,dx, x, \tan(c+dx)\right)}{d} - \frac{\left(2a^2(iA+B)\right)\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(2iaB)\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{a+iax}}\right.}{c}$$

$$= -\frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(2iaB)\,\mathrm{Subst}\left(\int \frac{1}{1-iax^2}\right.}{d}$$

$$= -\frac{2(-1)^{3/4}\sqrt{a}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\right.}{d}$$

Mathematica [B] time = 3.9432, size = 238, normalized size = 2.12

$$\frac{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\cos(c+dx)\sqrt{a+ia\tan(c+dx)}\left(4(A-iB)\log\left(\sqrt{-1+e^{2i(c+dx)}}+e^{i(c+dx)}\right)+i\sqrt{2}B\left(\log\left(-2\sqrt{2}e^{i(c+dx)}\sqrt{-1}\right.\right.\right.}{2d\sqrt{-1+e^{2i(c+dx)}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*
x]],x]
```

```
[Out] (Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*Cos[c +
d*x]*(4*(A - I*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] + I
*Sqrt[2]*B*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[
-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*E^(I
*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]))*Sqrt[a + I*a*Tan[c + d*x]])/(
2*d*Sqrt[-1 + E^((2*I)*(c + d*x))])
```

Maple [B] time = 0.061, size = 498, normalized size = 4.5

$$\frac{a}{2d(-\tan(dx+c)+i)}\sqrt{a(1+i\tan(dx+c))}\sqrt{\tan(dx+c)}\left(iA\sqrt{ia}\sqrt{2}\ln\left(\frac{1}{\tan(dx+c)+i}\left(2\sqrt{2}\sqrt{-ia}\sqrt{a\tan(dx+c)}(1\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 1/2/d*(a*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^(1/2)*a*(I*A*(I*a)^(1/2)*2^(1/2
)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-I*a+3*a*
tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)-2*I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*
tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)
*tan(d*x+c)-I*B*(I*a)^(1/2)*2^(1/2)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)-I*a+3*a*tan(d*x+c))/(tan(d*x+c)+I))+B*(I*a)^(1/2)
*2^(1/2)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-I
*a+3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)+A*(I*a)^(1/2)*2^(1/2)*ln((2*2
^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-I*a+3*a*tan(d*x+c
))/(tan(d*x+c)+I))-2*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*
x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2))/(a*tan(d*x+c)*(1+I*t
an(d*x+c)))^(1/2)/(I*a)^(1/2)/(-tan(d*x+c)+I)/(-I*a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.84494, size = 1516, normalized size = 13.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/2*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I
*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*d*sqrt((-2
*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/
```

```
(I*A + B)) - 1/2*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*
A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) -
 I*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*
d*x - 2*I*c)/(I*A + B)) - 1/2*sqrt(4*I*B^2*a/d^2)*log((sqrt(2)*(B*e^(2*I*d*
x + 2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I
*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt(4*I*B^2*a/d^2)
*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/B) + 1/2*sqrt(4*I*B^2*a/d^2)*l
og((sqrt(2)*(B*e^(2*I*d*x + 2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
 - I*sqrt(4*I*B^2*a/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/B)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)}{\sqrt{\tan\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))/sqrt(tan(c + d*x
)), x)
```

Giac [A] time = 1.48671, size = 189, normalized size = 1.69

$$\frac{-(i+1)\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^2}\left(i\,a\tan\left(dx+c\right)+a\right)a^2+\left((2i-2)\left(i\,a\tan\left(dx+c\right)+a\right)a-(2i-2)\,a^2\right)\sqrt{-2\,(i\,a}}{2\left(\left(i\,a\tan\left(dx+c\right)+a\right)^2a-3\left(i\,a\tan\left(dx+c\right)+a\right)a^2+2\,a^3\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="giac")
```

```
[Out] 1/2*(-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)*a^2 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a - (2*I - 2)*a^2)*sqrt(-2*(I*a
*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*x
+ c) + a)^2*a - 3*(I*a*tan(d*x + c) + a)*a^2 + 2*a^3)*d)
```

3.157 $\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=90

$$\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

```
[Out] ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[
c + d*x]])
```

Rubi [A] time = 0.186093, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3598, 12, 3544, 205}

$$\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```

```
[Out] ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[
c + d*x]])
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{2\int \frac{a(iA+B)\sqrt{a+ia\tan(c+dx)}}{2\sqrt{\tan(c+dx)}}\,dx}{a}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + (iA+B)\int \frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{\tan(c+dx)}}\,dx$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{\left(2a^2(A-iB)\right)\text{Subst}\left(\int \frac{1}{-ia-2a^2x^2}\,dx, x, \frac{\sqrt{\text{ta}}}{\sqrt{a+i}}\right.}{d}$$

$$= \frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

Mathematica [A] time = 6.10355, size = 156, normalized size = 1.73

$$\frac{(A-iB)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} - \frac{2A\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3
/2),x]
```

```
[Out] ((A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 +
 E^((2*I)*(c + d*x))]]*Sqrt[a + I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x))*Sqrt[
((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]) - (2*A*Sqrt[a
 + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.045, size = 434, normalized size = 4.8

$$\frac{1}{2d(-\tan(dx+c)+i)}\sqrt{a(1+i\tan(dx+c))}\left(iB\sqrt{2}\ln\left(-\frac{1}{\tan(dx+c)+i}\left(-2\sqrt{2}\sqrt{-ia}\sqrt{a\tan(dx+c)(1+i\tan(dx+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] 1/2/d*(a*(1+I*tan(d*x+c)))^(1/2)*(I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*t
an(d*x+c)^2*a+I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*t
an(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-A*2^(1/2
)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*
a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*
a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x
+c)+I))*tan(d*x+c)*a-4*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)+4*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c))/tan(d
*x+c)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)/(-I*a)^(1
/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.74272, size = 1157, normalized size = 12.86

$$\frac{\sqrt{2}\left(-4i\,Ae^{(2i\,dx+2i\,c)}-4i\,A\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}+\left(de^{(2i\,dx+2i\,c)}-d\right)\sqrt{\frac{\left(2i\,A^2+4\,AB-2i\,B^2\right)a}{d^2}}\log\left(\left(\frac{\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2}\right.}{}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(-4*I*A*e^(2*I*d*x + 2*I*c) - 4*I*A)*sqrt(a/(e^(2*I*d*x + 2*I*
c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*
d*x + I*c) + (d*e^(2*I*d*x + 2*I*c) - d)*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a
/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
+ 1))*e^(I*d*x + I*c) + d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*
x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - (d*e^(2*I*d*x + 2*I*c) - d)*s
qrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x +
 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - d*sqrt((2*I*A^2 +
4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)
))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)}{\tan^{\frac{3}{2}}\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))/tan(c + d*x)**(3
/2), x)
```

Giac [B] time = 1.44058, size = 216, normalized size = 2.4

$$\frac{-(i+1)\,\sqrt{-2\,(i\,a\tan{(dx+c)}+a)a+2\,a^2}(i\,a\tan{(dx+c)}+a)a^3+\left((2i-2)\,(i\,a\tan{(dx+c)}+a)a^2-(2i-2)\,a^3\right)\sqrt{-2}}{\left(-2i\,(i\,a\tan{(dx+c)}+a)^3a+8i\,(i\,a\tan{(dx+c)}+a)^2a^2-10i\,(i\,a\tan{(dx+c)}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="giac")
```

```
[Out] (-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*
a^3 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a^2 - (2*I - 2)*a^3)*sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/((-2*I*(I*a*tan(d
*x + c) + a)^3*a + 8*I*(I*a*tan(d*x + c) + a)^2*a^2 - 10*I*(I*a*tan(d*x + c
) + a)*a^3 + 4*I*a^4)*d)
```

3.158 $\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=135

$$-\frac{2(3B+iA)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}+\frac{(1+i)\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] ((1 + I)*Sqrt[a]*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Tan[c +
 d*x]^(3/2)) - (2*(I*A + 3*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Sqrt[Tan[c +
 d*x]])
```

Rubi [A] time = 0.342461, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3598, 12, 3544, 205}

$$-\frac{2(3B+iA)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}+\frac{(1+i)\sqrt{a}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] ((1 + I)*Sqrt[a]*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Tan[c +
 d*x]^(3/2)) - (2*(I*A + 3*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Sqrt[Tan[c +
 d*x]])
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(iA+3B)-aA\tan(c+dx)\right)}{\tan^{\frac{3}{2}}(c+dx)}\,dx}{3a}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(iA+3B)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} + \frac{4\int -\frac{3a^2}{}}{}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(iA+3B)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} + (-A+i$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(iA+3B)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} + \frac{\left(2a^2(iA\right.}{}$$

$$= \frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2A\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Mathematica [A] time = 6.45787, size = 174, normalized size = 1.29

$$\frac{(B+iA)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} - \frac{2\sqrt{a+ia\tan(c+dx)}(A\cot(c+dx)+iA+}{3d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5
/2),x]
```

```
[Out] ((I*A + B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 +
 E^((2*I)*(c + d*x))]]*Sqrt[a + I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x))*Sqrt[
((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]) - (2*(I*A + 3
*B + A*Cot[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.043, size = 553, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -1/6/d*(a*(1+I*tan(d*x+c)))^(1/2)/tan(d*x+c)^(3/2)*(3*I*A*2^(1/2)*ln(-(-2*2
^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c
))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-12*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)*tan(d*x+c)^2-3*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d
*x+c)^2*a+3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-8*A*(-I*a)
^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-4*I*A*tan(d*x+c)^2*
(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+3*A*2^(1/2)*ln(-(-2*2^(1
/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/
(tan(d*x+c)+I))*tan(d*x+c)^2*a+12*I*B*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)+4*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)/(-I*a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.81017, size = 1327, normalized size = 9.83

$$\sqrt{2}\Big(4\,(2\,A-3i\,B)e^{(4i\,dx+4i\,c)}+8\,Ae^{(2i\,dx+2i\,c)}+12i\,B\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}-3\,\Big(de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/6*(sqrt(2)*(4*(2*A - 3*I*B)*e^(4*I*d*x + 4*I*c) + 8*A*e^(2*I*d*x + 2*I*c)
 + 12*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 3*(d*e^(4*I*d*x + 4*I*c) -
 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log(
(sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I
*d*x + I*c) + I*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I
*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*
I*d*x + 2*I*c) + d)*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*(
(I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c
) - I*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2
*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c
) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.42187, size = 240, normalized size = 1.78

$$\frac{(i+1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)a^4+\left(-(2i-2)(ia\tan(dx+c)+a)a^3+(2i-2)a^4\right)\sqrt{-2(i}{2\left((ia\tan(dx+c)+a)^4a-5(ia\tan(dx+c)+a)^3a^2+9(ia\tan(dx+c)+a)^2a^3-7(ia\tan(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="giac")
```

```
[Out] 1/2*((I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
a)*a^4 + (-(2*I - 2)*(I*a*tan(d*x + c) + a)*a^3 + (2*I - 2)*a^4)*sqrt(-2*(I
*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*
x + c) + a)^4*a - 5*(I*a*tan(d*x + c) + a)^3*a^2 + 9*(I*a*tan(d*x + c) + a)
^2*a^3 - 7*(I*a*tan(d*x + c) + a)*a^4 + 2*a^5)*d)
```

3.159 $\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=178

$$-\frac{2(5B+iA)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{2(13A-5iB)\sqrt{a+ia\tan(c+dx)}}{15d\sqrt{\tan(c+dx)}}-\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-$$

```
[Out] ((-1 - I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sq
rt[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(5*d*Tan[c
+ d*x]^(5/2)) - (2*(I*A + 5*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*Tan[c + d*
x]^(3/2)) + (2*(13*A - (5*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*Sqrt[Tan[
c + d*x]])
```

Rubi [A] time = 0.535027, antiderivative size = 178, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3598, 12, 3544, 205}

$$-\frac{2(5B+iA)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{2(13A-5iB)\sqrt{a+ia\tan(c+dx)}}{15d\sqrt{\tan(c+dx)}}-\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] ((-1 - I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sq
rt[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(5*d*Tan[c
+ d*x]^(5/2)) - (2*(I*A + 5*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*Tan[c + d*
x]^(3/2)) + (2*(13*A - (5*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*Sqrt[Tan[
c + d*x]])
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(iA+5B)-2aA\tan(c+dx)\right)}{\tan^{\frac{5}{2}}(c+dx)}\,dx}{5a}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{4\int \frac{\sqrt{a+i}}{}}{}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(13A-}{}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(13A-}{}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(13A-}{}$$

$$= -\frac{(1+i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2A\sqrt{a+ia\tan(c+d}}{5d\tan^{\frac{5}{2}}(c+dx)}$$

Mathematica [A] time = 7.41365, size = 211, normalized size = 1.19

$$-\frac{(A-iB)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} - \frac{\csc^2(c+dx)\sqrt{a+ia\tan(c+dx)}((5B+iA}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7
/2),x]
```

```
[Out] -(((A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1
 + E^((2*I)*(c + d*x))]]*Sqrt[a + I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x))*Sqr
t[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))])) - (Csc[c +
 d*x]^2*(-10*A + (5*I)*B + (16*A - (5*I)*B)*Cos[2*(c + d*x)] + (I*A + 5*B)*
Sin[2*(c + d*x)])*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.048, size = 630, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -1/30/d*(a*(1+I*tan(d*x+c)))^(1/2)*(15*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(
1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+
I))*tan(d*x+c)^4*a+15*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*
a-15*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a-20*I*B*tan(d*x+c)
^3*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+15*B*2^(1/2)*ln(-(-2*
2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+
c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-56*I*A*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(
d*x+c)*(1+I*tan(d*x+c)))^(1/2)+52*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)*tan(d*x+c)^3+20*I*B*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)*(1+I*
tan(d*x+c)))^(1/2)-40*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*
tan(d*x+c)^2+12*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-16*A
*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c))/tan(d*x+c)^
(5/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)/(-I*a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.82182, size = 1482, normalized size = 8.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="fricas")
```

```
[Out] 1/30*(sqrt(2)*((68*I*A + 40*B)*e^(6*I*d*x + 6*I*c) - 12*I*A*e^(4*I*d*x + 4*
I*c) + (-20*I*A - 40*B)*e^(2*I*d*x + 2*I*c) + 60*I*A)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e
^(I*d*x + I*c) - 15*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*
e^(2*I*d*x + 2*I*c) - d)*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((sqrt(
2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
 I*c) + d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-
2*I*d*x - 2*I*c)/(I*A + B)) + 15*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x +
4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^
2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c) - d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x +
 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4
*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.44699, size = 265, normalized size = 1.49

$$\frac{(i+1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)a^5+\left(-(2i-2)\,(i\,a\tan(dx+c)+a)a^4+(2i-2)\,a^5\right)\sqrt{-2}}{\left(-2i\,(i\,a\tan(dx+c)+a)^5a+12i\,(i\,a\tan(dx+c)+a)^4a^2-28i\,(i\,a\tan(dx+c)+a)^3a^3+32i\,(i\,a\tan(dx+c)+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="giac")
```

```
[Out] ((I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*a
^5 + (-(2*I - 2)*(I*a*tan(d*x + c) + a)*a^4 + (2*I - 2)*a^5)*sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/((-2*I*(I*a*tan(d
*x + c) + a)^5*a + 12*I*(I*a*tan(d*x + c) + a)^4*a^2 - 28*I*(I*a*tan(d*x +
c) + a)^3*a^3 + 32*I*(I*a*tan(d*x + c) + a)^2*a^4 - 18*I*(I*a*tan(d*x + c)
+ a)*a^5 + 4*I*a^6)*d)
```

3.160 $\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=221

$$\frac{2(31A-7iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7B+iA)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{2(91B+43iA)\sqrt{a+ia\tan(c+dx)}}{105d\sqrt{\tan(c+dx)}}+\frac{(1-i)\sqrt{a}(A$$

```
[Out] ((1 - I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(7*d*Tan[c +
 d*x]^(7/2)) - (2*(I*A + 7*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d*Tan[c + d*x
]^(5/2)) + (2*(31*A - (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(105*d*Tan[c + d
*x]^(3/2)) + (2*((43*I)*A + 91*B)*Sqrt[a + I*a*Tan[c + d*x]])/(105*d*Sqrt[T
an[c + d*x]])
```

Rubi [A] time = 0.713357, antiderivative size = 221, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3598, 12, 3544, 205}

$$\frac{2(31A-7iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2(7B+iA)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{2(91B+43iA)\sqrt{a+ia\tan(c+dx)}}{105d\sqrt{\tan(c+dx)}}+\frac{(1-i)\sqrt{a}(A$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),x]
```


```
[Out] ((1 - I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]])/d - (2*A*Sqrt[a + I*a*Tan[c + d*x]])/(7*d*Tan[c +
 d*x]^(7/2)) - (2*(I*A + 7*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d*Tan[c + d*x
]^(5/2)) + (2*(31*A - (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(105*d*Tan[c + d
*x]^(3/2)) + (2*((43*I)*A + 91*B)*Sqrt[a + I*a*Tan[c + d*x]])/(105*d*Sqrt[T
an[c + d*x]])
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
```

```
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(iA+7B)-3aA\tan(c+dx)\right)}{\tan^{\frac{7}{2}}(c+dx)} dx}{7a}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{4\int \frac{\sqrt{a+i}}{}}{}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2(31A-}{1}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2(31A-}{1}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2(31A-}{1}$$

$$= -\frac{2A\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2(31A-}{1}$$

$$= -\frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2A\sqrt{a+ia\tan(c+d}}{7d\tan^{\frac{7}{2}}(c+dx)}$$

Mathematica [A] time = 9.33774, size = 239, normalized size = 1.08

$$-\frac{i(A-iB)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} - \frac{\csc^3(c+dx)\sqrt{a+ia\tan(c+dx)}(7(2A+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9
/2),x]
```

```
[Out] ((-I)*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt
[-1 + E^((2*I)*(c + d*x))]]*Sqrt[a + I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x))*
Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]) - (Csc[c
 + d*x]^3*(7*(2*A + I*B)*Cos[c + d*x] + (46*A - (7*I)*B)*Cos[3*(c + d*x)] +
```

```
 4*((-20*I)*A - 35*B + ((23*I)*A + 56*B)*Cos[2*(c + d*x)])*Sin[c + d*x])*Sq
rt[a + I*a*Tan[c + d*x]])/(210*d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.043, size = 707, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] 1/210/d*(a*(1+I*tan(d*x+c)))^(1/2)/tan(d*x+c)^(7/2)*(-172*I*A*tan(d*x+c)^4*
(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-364*B*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^4+392*I*B*(-I*a)^(1/2)*tan(d*x+
c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+105*B*2^(1/2)*ln(-(-2*2^(1/2)*(-
I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d
*x+c)+I))*tan(d*x+c)^5*a-296*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*tan(d*x+c)^3-60*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)+105*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+112*B*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^2+105*I*A*2^(1/2)*ln(-
(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(
d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a+72*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)*tan(d*x+c)-84*I*B*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)+136*I*A*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)-105*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c
)^4*a)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)/(-I*a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.82029, size = 1666, normalized size = 7.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="fricas")
```

```
[Out] -1/210*(sqrt(2)*(4*(92*A - 119*I*B)*e^(8*I*d*x + 8*I*c) - 80*(A - 7*I*B)*e^
(6*I*d*x + 6*I*c) + 56*(2*A + I*B)*e^(4*I*d*x + 4*I*c) + 560*(A - I*B)*e^(2
*I*d*x + 2*I*c) + 420*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 105*(d*e^(
8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*
e^(2*I*d*x + 2*I*c) + d)*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt
(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c) + I*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*
e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 105*(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d
*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((
-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I
*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*d*sqrt((-2*I*A^2 - 4
*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B))
)/(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c
) - 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.47909, size = 289, normalized size = 1.31

$$\frac{-(i+1)\sqrt{-2\left(ia\tan\left(dx+c\right)+a\right)a+2a^{2}}(ia\tan\left(dx+c\right)+a)a^{6}+\left((2i-2)\left(ia\tan\left(dx+c\right)+a\right)a^{5}-(2i-2)a^{6}\right)\sqrt{-}}{2\left(\left(ia\tan\left(dx+c\right)+a\right)^{6}a-7\left(ia\tan\left(dx+c\right)+a\right)^{5}a^{2}+20\left(ia\tan\left(dx+c\right)+a\right)^{4}a^{3}-30\left(ia\tan\left(dx+c\right)+a\right)^{3}a^{4}+25\left(ia\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="giac")
```

```
[Out] 1/2*(-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)*a^6 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a^5 - (2*I - 2)*a^6)*sqrt(-2*(I
*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*
x + c) + a)^6*a - 7*(I*a*tan(d*x + c) + a)^5*a^2 + 20*(I*a*tan(d*x + c) + a
)^4*a^3 - 30*(I*a*tan(d*x + c) + a)^3*a^4 + 25*(I*a*tan(d*x + c) + a)^2*a^5
 - 11*(I*a*tan(d*x + c) + a)*a^6 + 2*a^7)*d)
```

3.161 $\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=248

$$\frac{(-1)^{3/4}a^{3/2}(23B+22iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}+\frac{(2+2i)a^{3/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a(7B+6iA)\tan}{}$$

```
[Out] ((-1)^(3/4)*a^(3/2)*((22*I)*A + 23*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(8*d) + ((2 + 2*I)*a^(3/2)*(I*A + B)
*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/
d + (a*(10*A - (9*I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(8*d
) + (a*((6*I)*A + 7*B)*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(12*d
) + ((I/3)*a*B*Tan[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.902085, antiderivative size = 248, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {3594, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(-1)^{3/4}a^{3/2}(23B+22iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}+\frac{(2+2i)a^{3/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a(7B+6iA)\tan}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-1)^(3/4)*a^(3/2)*((22*I)*A + 23*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(8*d) + ((2 + 2*I)*a^(3/2)*(I*A + B)
*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/
d + (a*(10*A - (9*I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(8*d
) + (a*((6*I)*A + 7*B)*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(12*d
) + ((I/3)*a*B*Tan[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
```

```
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{3d} + \frac{1}{3}\int \tan^{\frac{3}{2}}(c+dx$$

$$= \frac{a(6iA+7B)\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{12d} + \frac{iaB\tan}{}$$

$$= \frac{a(10A-9iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{8d} + \frac{a(6iA}{}$$

$$= \frac{a(10A-9iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{8d} + \frac{a(6iA}{}$$

$$= \frac{a(10A-9iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{8d} + \frac{a(6iA}{}$$

$$= \frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{a(10A}{}$$

$$= \frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{a(10A}{}$$

$$= -\frac{\sqrt[4]{-1}a^{3/2}(22A-23iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d} + \frac{(2+}{}$$

Mathematica [A] time = 7.18527, size = 420, normalized size = 1.69

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{\sqrt{2}e^{-i(c+dx)}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\left(\sqrt{2}(22A-23iB)\left(\log\left(-2\sqrt{2}e^{i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}-3e^{2i(c+dx)}+1\right)-\log\left(2\sqrt{2}\right.\right.\right.}{\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+d}}}}\right.}{64d\sec^{\frac{5}{2}}(c+}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (((Sqrt[2]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))
]*(-128*(A - I*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] + S
qrt[2]*(22*A - (23*I)*B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c
 + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)) +
2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]])))/(E^(I*(c + d*x
```

```
))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d
*x)))]]) + (4*Sec[c + d*x]^(5/2)*(Cos[c] - I*Sin[c])*(30*A - (19*I)*B + 5*(6
*A - (7*I)*B)*Cos[2*(c + d*x)] + 2*((6*I)*A + 7*B)*Sin[2*(c + d*x)])*Sqrt[T
an[c + d*x]])/(3*Cos[d*x] + (3*I)*Sin[d*x]))*(a + I*a*Tan[c + d*x])^(3/2)*(
A + B*Tan[c + d*x]))/(64*d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d
*x]))
```

Maple [B] time = 0.062, size = 652, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/48/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*a*(16*I*B*tan(d*x+c)^2*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)+24*I*A*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)+27*I*B*
(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a-54*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)*(-I*a)^(1/2)*(I*a)^(1/2)+28*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*tan(d*x+c)-24*I*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*(I*a)^(1/2
)*2^(1/2)*a-30*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a+60*A*(a*tan(d*x+c)*(1+I*t
an(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)-48*I*(-I*a)^(1/2)*ln(1/2*(2*I*a*
tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/
2))*a+24*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a*(I*a)^(1/2)-48*ln(1/2*(2*I*a
*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1
/2))*a*(-I*a)^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-I*a)^(1/2)/(I*
a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 2.04483, size = 2564, normalized size = 10.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/48*(2*sqrt(2)*(7*(6*A - 7*I*B)*a*e^(4*I*d*x + 4*I*c) + 2*(30*A - 19*I*B)*
a*e^(2*I*d*x + 2*I*c) + 3*(6*A - 7*I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I
*c) + 3*sqrt((-484*I*A^2 - 1012*A*B + 529*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4
*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((22*I*A + 23*B)*a*e^(2*I
*d*x + 2*I*c) + (22*I*A + 23*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((
-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*
I*sqrt((-484*I*A^2 - 1012*A*B + 529*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*
e^(-2*I*d*x - 2*I*c)/((22*I*A + 23*B)*a)) - 3*sqrt((-484*I*A^2 - 1012*A*B +
 529*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*
log((sqrt(2)*((22*I*A + 23*B)*a*e^(2*I*d*x + 2*I*c) + (22*I*A + 23*B)*a)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*I*sqrt((-484*I*A^2 - 1012*A*B + 529*I
*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((22*I*A + 23*B)
*a)) - 24*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c
) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x +
 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-8
*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*
I*c)/((2*I*A + 2*B)*a)) + 24*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d
*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A +
2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c) - I*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c
))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^
(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.3871, size = 412, normalized size = 1.66

$$\left(-2i\left(i\,a\tan\left(dx+c\right)+a\right)^{3}+4i\left(i\,a\tan\left(dx+c\right)+a\right)^{2}a+\left(2\,a\tan\left(dx+c\right)-2i\,a\right)a^{2}\right)\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^{2}}\sqrt{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] 1/2*((-2*I*(I*a*tan(d*x + c) + a)^3 + 4*I*(I*a*tan(d*x + c) + a)^2*a + (2*a
*tan(d*x + c) - 2*I*a)*a^2)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(
I*a*tan(d*x + c) + a)*B*((-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*ta
n(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1) + ((I*a*ta
n(d*x + c) + a)^2*a - (I*a*tan(d*x + c) + a)*a^2)*sqrt(-2*(I*a*tan(d*x + c)
 + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*((-I*(I*a*tan(d*x + c) + a)*a + I*a
^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4)
 + 1))/(((I*a*tan(d*x + c) + a)*a^2 - 2*a^3)*d)
```

3.162 $\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=204

$$-\frac{(-1)^{3/4}a^{3/2}(12A-11iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a(5B+4iA)\sqrt{\tan}}{}$$

```
[Out] -((-1)^(3/4)*a^(3/2)*(12*A - (11*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(4*d) - ((2 + 2*I)*a^(3/2)*(A - I*B
)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])
/d + (a*((4*I)*A + 5*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(4*d
) + ((I/2)*a*B*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.699549, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {3594, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{3/2}(12A-11iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a(5B+4iA)\sqrt{\tan}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((-1)^(3/4)*a^(3/2)*(12*A - (11*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(4*d) - ((2 + 2*I)*a^(3/2)*(A - I*B
)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])
/d + (a*((4*I)*A + 5*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(4*d
) + ((I/2)*a*B*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{2d} + \frac{1}{2}\int \sqrt{\tan(c+}$$

$$= \frac{a(4iA+5B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{iaB\tan}{}$$

$$= \frac{a(4iA+5B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{iaB\tan}{}$$

$$= \frac{a(4iA+5B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{iaB\tan}{}$$

$$= -\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{a(4iA}{}$$

$$= -\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{a(4iA}{}$$

$$= -\frac{\sqrt[4]{-1}a^{3/2}(12iA+11B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d} - \frac{(2+}{}$$

Mathematica [A] time = 5.95936, size = 389, normalized size = 1.91

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{\sqrt{2}e^{-i(c+dx)}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\left(\sqrt{2}(11B+12iA)\left(\log\left(-2\sqrt{2}e^{i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}-3e^{2i(c+dx)}+1\right)-\log\left(2\cdots\right.\right.\right.}{\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+\cdots}}{1+e^{2i(c\cdots}}}}\right.}{32d\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] ((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x])*((Sqrt[2]*Sqrt[((-I)*(-1
 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*((-64*I)*(A - I*B)*Log[
E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] + Sqrt[2]*((12*I)*A + 11*
B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^(
(2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*E^(I*(c + d*
x))*Sqrt[-1 + E^((2*I)*(c + d*x))]])))/(E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*
(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]) + 8*Sqrt[Sec[c
 + d*x]]*(I*Cos[c] + Sin[c])*(Cos[d*x] - I*Sin[d*x])*Sqrt[Tan[c + d*x]]*(4*
A - (5*I)*B + 2*B*Tan[c + d*x])))/(32*d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x]
+ B*Sin[c + d*x]))
```

Maple [B] time = 0.048, size = 565, normalized size = 2.8

$$-\frac{a}{8d}\sqrt{\tan(dx+c)}\sqrt{a(1+i\tan(dx+c))}\left(-4iB\sqrt{ia}\sqrt{-ia}\sqrt{a\tan(dx+c)(1+i\tan(dx+c))}\tan(dx+c)+4iA\sqrt{-ia}\ln\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/8/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*a*(-4*I*B*(I*a)^(1/2)*(-
I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+4*I*A*(-I*a)^(1
/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^
(1/2)+a)/(I*a)^(1/2))*a-8*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^
(1/2)*(I*a)^(1/2)-4*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+5*B
*(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a-10*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
```

```
)*(-I*a)^(1/2)*(I*a)^(1/2)+8*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2)-4*2^(1/2)*l
n(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*t
an(d*x+c))/(tan(d*x+c)+I))*a*(I*a)^(1/2)-8*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2)
)/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*sqrt(tan(d*x +
c)), x)
```

Fricas [B] time = 1.92043, size = 2290, normalized size = 11.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((4*I*A + 7*B)*a*e^(2*I*d*x + 2*I*c) + (4*I*A + 3*B)*a)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt((144*I*A^2 + 264*A*B - 121*I*B^2)*a^
3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((12*I*A + 11*B)*a*e^(2*I*d
*x + 2*I*c) + (12*I*A + 11*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I
*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*sq
rt((144*I*A^2 + 264*A*B - 121*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*
I*d*x - 2*I*c)/((12*I*A + 11*B)*a)) - sqrt((144*I*A^2 + 264*A*B - 121*I*B^2
)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((12*I*A + 11*B)*a*e^(2
*I*d*x + 2*I*c) + (12*I*A + 11*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt
((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) -
```

```
2*sqrt((144*I*A^2 + 264*A*B - 121*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^
(-2*I*d*x - 2*I*c)/((12*I*A + 11*B)*a)) - 4*sqrt((8*I*A^2 + 16*A*B - 8*I*B^
2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*
I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqr
t((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
- 2*I*c)/((2*I*A + 2*B)*a)) + 4*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*
(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*
c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((8*I*A^2 +
 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2
*I*A + 2*B)*a)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.36409, size = 348, normalized size = 1.71

$$\frac{\sqrt{-2\,(i\,a\tan\left(dx+c\right)+a)a+2\,a^2}(i\,a\tan\left(dx+c\right)+a)^2a\left(\frac{-i\,(i\,a\tan(dx+c)+a)a+i\,a^2}{\sqrt{(i\,a\tan(dx+c)+a)^2a^2-2\,(i\,a\tan(dx+c)+a)a^3+a^4}}+1\right)+\left(-2i\,(i\,a\tan\left(dx\right.\right.}{2\left((a\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] 1/2*(sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^2*a*(
(-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2 - 2
*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1) + (-2*I*(I*a*tan(d*x + c) + a)^2 -
(2*a*tan(d*x + c) - 2*I*a)*a)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqr
t(I*a*tan(d*x + c) + a)*B*((-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*
```

```
tan(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1))/(((a*ta
n(d*x + c) - I*a)*a + 2*I*a^2)*d)
```

3.163 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=156

$$-\frac{(-1)^{3/4}a^{3/2}(3B+2iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{(2+2i)a^{3/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{iaB\sqrt{\tan(c+dx)}}{}$$

```
[Out] -(((-1)^(3/4)*a^(3/2)*((2*I)*A + 3*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d) - ((2 + 2*I)*a^(3/2)*(I*A + B)*Ar
cTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d +
 (I*a*B*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.493481, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3594, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{3/2}(3B+2iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{(2+2i)a^{3/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{iaB\sqrt{\tan(c+dx)}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
x]
```

```
[Out] -(((-1)^(3/4)*a^(3/2)*((2*I)*A + 3*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d) - ((2 + 2*I)*a^(3/2)*(I*A + B)*Ar
cTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d +
 (I*a*B*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{iaB\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + \int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a\right.}{}$$

$$= \frac{iaB\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + (2a(A-iB))\int \frac{\sqrt{a+ia\tan}}{\sqrt{\tan(c}}$$

$$= \frac{iaB\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{\left(a^2(2A-3iB)\right)\text{Subst}\left(\int\right.}{2a}$$

$$= -\frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{iaB\sqrt{\tan(c+dx)}}{}$$

$$= -\frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{iaB\sqrt{\tan(c+dx)}}{}$$

$$= \frac{\sqrt[4]{-1}a^{3/2}(2A-3iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{(2+2i)a^{3/2}(iA+B)}{}$$

Mathematica [A] time = 3.24651, size = 221, normalized size = 1.42

$$\frac{ae^{-i(c+dx)}\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(2\sqrt{2}(A-iB)\left(1+e^{2i(c+dx)}\right)\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)+i\left((3B+2iA)\left(1+e^{2i(c+d}\right.\right.\right.}{\sqrt{2}d\sqrt{-1+e^{2i(c+dx)}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c +
d*x]],x]
```

```
[Out] (a*(2*Sqrt[2]*(A - I*B)*(1 + E^((2*I)*(c + d*x)))*ArcTanh[E^(I*(c + d*x))/S
qrt[-1 + E^((2*I)*(c + d*x))]] + I*(Sqrt[2]*B*E^(I*(c + d*x))*Sqrt[-1 + E^(
(2*I)*(c + d*x))] + ((2*I)*A + 3*B)*(1 + E^((2*I)*(c + d*x)))*ArcTanh[(Sqrt
[2]*E^(I*(c + d*x)))/Sqrt[-1 + E^((2*I)*(c + d*x))]]))*Sqrt[Tan[c + d*x]]*S
qrt[a + I*a*Tan[c + d*x]])/(Sqrt[2]*d*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c
 + d*x))])
```

Maple [B] time = 0.059, size = 484, normalized size = 3.1

$$\frac{a}{2d}\sqrt{a\left(1+i\tan\left(dx+c\right)\right)}\sqrt{\tan\left(dx+c\right)}\left(-iB\ln\left(\frac{1}{2}\left(2\,ia\tan\left(dx+c\right)+2\,\sqrt{a\tan\left(dx+c\right)\left(1+i\tan\left(dx+c\right)\right)}\sqrt{ia}+a\right)\frac{1}{\sqrt{ia}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 1/2/d*(a*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^(1/2)*a*(-I*B*ln(1/2*(2*I*a*tan
(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))
*(-I*a)^(1/2)*a+2*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)+I*2^(1/2)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)-I*a+3*a*tan(d*x+c))/(tan(d*x+c)+I))*(I*a)^(1/2)*a+2*A*ln(1/2*(2*I
*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^
(1/2))*(-I*a)^(1/2)*a+2*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan
(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2)-(I*a)^(1/2)*2^(1
/2)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-I*a+3*
a*tan(d*x+c))/(tan(d*x+c)+I))*a+2*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*
(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2))/(I*a)^(
1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.94579, size = 2020, normalized size = 12.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/2*(2*I*sqrt(2)*B*a*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((-4*I*A^2 -
 12*A*B + 9*I*B^2)*a^3/d^2)*d*log((sqrt(2)*((2*I*A + 3*B)*a*e^(2*I*d*x + 2*
I*c) + (2*I*A + 3*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d
*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*I*sqrt((-4*
I*A^2 - 12*A*B + 9*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I
*c)/((2*I*A + 3*B)*a)) + sqrt((-4*I*A^2 - 12*A*B + 9*I*B^2)*a^3/d^2)*d*log(
(sqrt(2)*((2*I*A + 3*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 3*B)*a)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c) - 2*I*sqrt((-4*I*A^2 - 12*A*B + 9*I*B^2)*a^3/d^2)
*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 3*B)*a)) + sqrt((-8*
I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d
*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt
((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
- 2*I*c)/((2*I*A + 2*B)*a)) - sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d
*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(
a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d
^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.52343, size = 209, normalized size = 1.34

$$\frac{-(i+1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)^2a^2+\Big((2i-2)\,(i\,a\tan(dx+c)+a)^2a-(2i-2)\,(i\,a\tan}{2\Big((i\,a\tan(dx+c)+a)^2a-3\,(i\,a\tan(dx+c)+a)a^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="giac")
```

```
[Out] 1/2*(-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)^2*a^2 + ((2*I - 2)*(I*a*tan(d*x + c) + a)^2*a - (2*I - 2)*(I*a*tan(d*x
+ c) + a)*a^2)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x +
 c) + a)*B)/(((I*a*tan(d*x + c) + a)^2*a - 3*(I*a*tan(d*x + c) + a)*a^2 + 2
*a^3)*d)
```

3.164 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=146

$$\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2\sqrt[4]{-1}a^{3/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2aA\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

```
[Out] (2*(-1)^(1/4)*a^(3/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]])/d + ((2 + 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*
Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a
+ I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.483096, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3593, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2\sqrt[4]{-1}a^{3/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2aA\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
x]
```


```
[Out] (2*(-1)^(1/4)*a^(3/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]])/d + ((2 + 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*
Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a
+ I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + 2\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(2iA+B)\right.}{\sqrt{\tan(c+dx)}}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - B\int \frac{(a-ia\tan(c+dx))\sqrt{a+ia\tan(c}}{\sqrt{\tan(c+dx)}}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{\left(4a^3(A-iB)\right)\operatorname{Subst}\left(\int \frac{1}{-ia-2a^2x^2}\,dx, x,\right.}{d}$$

$$= \frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2aA\sqrt{a+ia\tan(c}}{d\sqrt{\tan(c+dx}}$$

$$= \frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2aA\sqrt{a+ia\tan(c}}{d\sqrt{\tan(c+dx}}$$

$$= \frac{2\sqrt[4]{-1}a^{3/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}}{d}$$

Mathematica [A] time = 3.89547, size = 234, normalized size = 1.6

$$\frac{ae^{-\frac{1}{2}i(4c+5dx)}\left(1+e^{2i(c+dx)}\right)^2\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\tan(c+dx)}\sec(c+dx)\left(\cos\left(\frac{dx}{2}\right)+i\sin\left(\frac{dx}{2}\right)\right)\left(2(B+iA)\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\right.}{\sqrt{2}d\sqrt{-1+e^{2i(c+dx)}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(3/2),x]
```

```
[Out] (a*Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(1 + E^((2*I)*(c
 + d*x)))^2*(2*(I*A + B)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*
x))]] - Sqrt[2]*B*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[-1 + E^((2*I)*(c +
 d*x))]] - A*Sqrt[-1 + E^((2*I)*(c + d*x))]*Csc[c + d*x])*Sec[c + d*x]*(Cos
```

```
[(d*x)/2] + I*Sin[(d*x)/2])*Sqrt[Tan[c + d*x]])/(Sqrt[2]*d*E^((I/2)*(4*c +
5*d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))])
```

Maple [B] time = 0.046, size = 521, normalized size = 3.6

$$\frac{a}{2d}\sqrt{a(1+i\tan(dx+c))}\left(4iA\ln\left(\frac{1}{2}\left(2ia\tan(dx+c)+2\sqrt{a\tan(dx+c)(1+i\tan(dx+c))}\sqrt{ia}+a\right)\frac{1}{\sqrt{ia}}\right)\sqrt{-ia}\tan(d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] 1/2/d*(a*(1+I*tan(d*x+c)))^(1/2)*a*(4*I*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*ta
n(d*x+c)*a-I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+2
*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(
1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a+2*I*ln(1/2*(2*I*a*tan(d*x+c)
+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)
^(1/2)*tan(d*x+c)*a-(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x
+c)*a-4*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)-2*
ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2
)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a)/tan(d*x+c)^(1/2)/(I*a)^(1/2)/(
-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.85713, size = 2007, normalized size = 13.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(-4*I*A*a*e^(2*I*d*x + 2*I*c) - 4*I*A*a)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e
^(I*d*x + I*c) + sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(2*I*d*x +
 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2
*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/
(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt((8*I*A^2 + 16*A*B - 8*I*B
^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a))
 - sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*l
og((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/
(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d
*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) - sqrt(-4*I*B
^2*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*(B*a*e^(2*I*d*x + 2*I*
c) + B*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt(-4*I*B^2*a^3/d^2)*d*e^
(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(B*a)) + sqrt(-4*I*B^2*a^3/d^2)*(d*
e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*(B*a*e^(2*I*d*x + 2*I*c) + B*a)*sqrt(
a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt(-4*I*B^2*a^3/d^2)*d*e^(2*I*d*x + 2*I*
c))*e^(-2*I*d*x - 2*I*c)/(B*a)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.53931, size = 236, normalized size = 1.62

$$-\frac{(i-1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)^2a^3+\left((2i+2)(ia\tan(dx+c)+a)^2a^2-(2i+2)(ia\tan(\right.}{2\left((ia\tan(dx+c)+a)^3a-4(ia\tan(dx+c)+a)^2a^2+5(ia\tan(dx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="giac")
```

```
[Out] -1/2*((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)^2*a^3 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^2*a^2 - (2*I + 2)*(I*a*tan(d*
x + c) + a)*a^3)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x
 + c) + a)*B)/(((I*a*tan(d*x + c) + a)^3*a - 4*(I*a*tan(d*x + c) + a)^2*a^2
 + 5*(I*a*tan(d*x + c) + a)*a^3 - 2*a^4)*d)
```

3.165 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=137

$$\frac{(2+2i)a^{3/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(3B+4iA)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}-\frac{2aA\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] ((2 + 2*I)*a^(3/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Tan
[c + d*x]^(3/2)) - (2*a*((4*I)*A + 3*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Sq
rt[Tan[c + d*x]])
```

Rubi [A] time = 0.365525, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$\frac{(2+2i)a^{3/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(3B+4iA)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}-\frac{2aA\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),
x]
```


```
[Out] ((2 + 2*I)*a^(3/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Tan
[c + d*x]^(3/2)) - (2*a*((4*I)*A + 3*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d*Sq
rt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{2}{3}\int\frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(4iA+3B\right.}{\tan^{\frac{3}{2}}(c}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}+\frac{4}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}-(2$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}+\frac{(4}{}$$

$$= \frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2aA\sqrt{a+ia\tan(c}}{3d\tan^{\frac{3}{2}}(c+d}$$

Mathematica [A] time = 5.60928, size = 221, normalized size = 1.61

$$\frac{ae^{-3i(c+dx)}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\left(1+e^{2i(c+dx)}\right)^2(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}\left(e^{i(c+dx)}\sqrt{1-e^{2i(c+dx)}}\left(iA\left(-3+5e^{2i(c+dx)}\right)\right.\right.}{3d\left(1-e^{2i(c+dx)}\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(5/2),x]
```

```
[Out] (a*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*(1 + E
^((2*I)*(c + d*x)))^2*(E^(I*(c + d*x))*Sqrt[1 - E^((2*I)*(c + d*x))]*(3*B*(
-1 + E^((2*I)*(c + d*x))) + I*A*(-3 + 5*E^((2*I)*(c + d*x)))) + 3*(I*A + B)
*(-1 + E^((2*I)*(c + d*x)))^2*ArcSin[E^(I*(c + d*x))])*(-I + Tan[c + d*x])*
Sqrt[a + I*a*Tan[c + d*x]])/(3*d*E^((3*I)*(c + d*x))*(1 - E^((2*I)*(c + d*x
)))^(5/2))
```

Maple [B] time = 0.042, size = 618, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -1/6/d*(a*(1+I*tan(d*x+c)))^(1/2)*a/tan(d*x+c)^(3/2)*(-12*I*B*ln(1/2*(2*I*a
*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1
/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a+3*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-
I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d
*x+c)+I))*tan(d*x+c)^2*a+16*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(
d*x+c)*(1+I*tan(d*x+c)))^(1/2)+12*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+
c)^2*a+6*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a-3*(I*a)^(1/2)*2^(1
/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-
3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+12*B*(I*a)^(1/2)*(-I*a)^(1/2
)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+6*ln(1/2*(2*I*a*tan(d*x+
c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*
a)^(1/2)*tan(d*x+c)^2*a+4*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1
/2)*(I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(
1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.7478, size = 1418, normalized size = 10.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/6*(4*sqrt(2)*((5*A - 3*I*B)*a*e^(4*I*d*x + 4*I*c) + 2*A*a*e^(2*I*d*x + 2*
I*c) - 3*(A - I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 3*sqrt((-8*I*A^
2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*
I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)
*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^
(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-8*I*A^2 - 16*A*B + 8*I*B
^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a))
 + 3*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2
*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*
c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((-8*I*A^
2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/
((2*I*A + 2*B)*a)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.52234, size = 261, normalized size = 1.91

$$\frac{-(i-1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)^2a^4+\left(-(2i+2)(ia\tan(dx+c)+a)^2a^3+(2i+2)(ia\tan\right.}{\left(-2i(ia\tan(dx+c)+a)^4a+10i(ia\tan(dx+c)+a)^3a^2-18i(ia\tan(dx+c)+a)^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="giac")
```

```
[Out] (-(I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^
2*a^4 + (-(2*I + 2)*(I*a*tan(d*x + c) + a)^2*a^3 + (2*I + 2)*(I*a*tan(d*x +
 c) + a)*a^4)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x +
c) + a)*B)/((-2*I*(I*a*tan(d*x + c) + a)^4*a + 10*I*(I*a*tan(d*x + c) + a)^
```

```
3*a^2 - 18*I*(I*a*tan(d*x + c) + a)^2*a^3 + 14*I*(I*a*tan(d*x + c) + a)*a^4
 - 4*I*a^5)*d)
```

3.166 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=181

$$-\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(5B+6iA)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a(9A-10iB)\sqrt{a+ia\tan(c+a}}{15d\sqrt{\tan(c+dx)}}$$

```
[Out] ((-2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(5*d*Ta
n[c + d*x]^(5/2)) - (2*a*((6*I)*A + 5*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*
Tan[c + d*x]^(3/2)) + (4*a*(9*A - (10*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15
*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.550267, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$-\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(5B+6iA)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a(9A-10iB)\sqrt{a+ia\tan(c+a}}{15d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),
x]
```



```
[Out] ((-2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(5*d*Ta
n[c + d*x]^(5/2)) - (2*a*((6*I)*A + 5*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*
Tan[c + d*x]^(3/2)) + (4*a*(9*A - (10*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15
*d*Sqrt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
```

```
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)}+\frac{2}{5}\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(6iA+5B\right.}{\tan^{\frac{5}{2}}(c}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2a(6iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2a(6iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2a(6iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)}-\frac{2a(6iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a}{}$$

$$= -\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2aA\sqrt{a+ia\tan(}}{5d\tan^{\frac{5}{2}}(c+}$$

Mathematica [A] time = 8.64099, size = 237, normalized size = 1.31

$$\frac{a(A-iB)e^{-3i(c+dx)}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\left(1+e^{2i(c+dx)}\right)^2(\tan(c+dx)-i)\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{-1+e^{2i(c+dx)}}}-\frac{a\csc^2(c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(7/2),x]
```

```
[Out] -(a*Csc[c + d*x]^2*(-15*A + (20*I)*B + (21*A - (20*I)*B)*Cos[2*(c + d*x)] +
 ((6*I)*A + 5*B)*Sin[2*(c + d*x)])*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*Sqrt[T
an[c + d*x]]) + (a*(A - I*B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^
((2*I)*(c + d*x)))]*(1 + E^((2*I)*(c + d*x)))^2*ArcTanh[E^(I*(c + d*x))/Sqr
t[-1 + E^((2*I)*(c + d*x))]]*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]]
)/(d*E^((3*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))])
```

Maple [B] time = 0.043, size = 707, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -1/30/d*(a*(1+I*tan(d*x+c)))^(1/2)*a/tan(d*x+c)^(5/2)*(-72*A*(I*a)^(1/2)*(-
I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+60*I*A*ln(1/2
*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(
I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a-15*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^
(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c)
)/(tan(d*x+c)+I))*tan(d*x+c)^3*a+80*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)
^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+60*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2
)*tan(d*x+c)^3*a+30*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a-15*(I*a
)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c))
)^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a+24*I*A*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)-30*ln(1/2*
(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I
*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a+20*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+12*A*(a*tan(d*x+c)*(1+I*tan(d*x+
c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.77383, size = 1598, normalized size = 8.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="fricas")
```

```
[Out] 1/30*(sqrt(2)*((108*I*A + 100*B)*a*e^(6*I*d*x + 6*I*c) + (-12*I*A - 60*B)*a
*e^(4*I*d*x + 4*I*c) + (-60*I*A - 100*B)*a*e^(2*I*d*x + 2*I*c) + (60*I*A +
60*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 15*sqrt((8*I*A^2 + 16*A*B -
8*I*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^
(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) +
(2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*
I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt((8*I*A^2 + 16*A
*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A
+ 2*B)*a)) + 15*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(6*I*d*x +
6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2
)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c) - sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*
x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(6*I*d*x + 6*I*c)
 - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.52655, size = 285, normalized size = 1.57

$$-\frac{-(i-1)\sqrt{-2\left(ia\tan\left(dx+c\right)+a\right)a+2a^{2}}\left(ia\tan\left(dx+c\right)+a\right)^{2}a^{5}+\left(-(2i+2)\left(ia\tan\left(dx+c\right)+a\right)^{2}a^{4}+(2i+2)\left(i\right.\right.}{2\left(\left(ia\tan\left(dx+c\right)+a\right)^{5}a-6\left(ia\tan\left(dx+c\right)+a\right)^{4}a^{2}+14\left(ia\tan\left(dx+c\right)+a\right)^{3}a^{3}-16\left(ia\tan\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="giac")
```

```
[Out] -1/2*(-(I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c)
+ a)^2*a^5 + (-(2*I + 2)*(I*a*tan(d*x + c) + a)^2*a^4 + (2*I + 2)*(I*a*tan(
d*x + c) + a)*a^5)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d
*x + c) + a)*B)/(((I*a*tan(d*x + c) + a)^5*a - 6*(I*a*tan(d*x + c) + a)^4*a
^2 + 14*(I*a*tan(d*x + c) + a)^3*a^3 - 16*(I*a*tan(d*x + c) + a)^2*a^4 + 9*
(I*a*tan(d*x + c) + a)*a^5 - 2*a^6)*d)
```

3.167 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=225

$$\frac{(2-2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{4a(19A-21iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a(7B+8iA)\sqrt{a+ia\tan(c+d}}{35d\tan^{\frac{5}{2}}(c+dx)}$$

```
[Out] ((2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(7*d*Tan
[c + d*x]^(7/2)) - (2*a*((8*I)*A + 7*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d*T
an[c + d*x]^(5/2)) + (4*a*(19*A - (21*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(10
5*d*Tan[c + d*x]^(3/2)) + (4*a*((67*I)*A + 63*B)*Sqrt[a + I*a*Tan[c + d*x]]
)/(105*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.735221, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$\frac{(2-2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{4a(19A-21iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a(7B+8iA)\sqrt{a+ia\tan(c+d}}{35d\tan^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),
x]
```


```
[Out] ((2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(7*d*Tan
[c + d*x]^(7/2)) - (2*a*((8*I)*A + 7*B)*Sqrt[a + I*a*Tan[c + d*x]])/(35*d*T
an[c + d*x]^(5/2)) + (4*a*(19*A - (21*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(10
5*d*Tan[c + d*x]^(3/2)) + (4*a*((67*I)*A + 63*B)*Sqrt[a + I*a*Tan[c + d*x]]
)/(105*d*Sqrt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
```

```
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(8iA+7B\right.}{\tan^{\frac{7}{2}}(c\right.}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2a(8iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{4}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2a(8iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{4a}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2a(8iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{4a}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2a(8iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{4a}{}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2a(8iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{4a}{}$$

$$= -\frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2aA\sqrt{a+ia\tan(}}{7d\tan^{\frac{7}{2}}(c+}$$

Mathematica [A] time = 11.0162, size = 261, normalized size = 1.16

$$\frac{a(B+iA)e^{-3i(c+dx)}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\left(1+e^{2i(c+dx)}\right)^2(\tan(c+dx)-i)\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{-1+e^{2i(c+dx)}}} - \frac{a\csc^3(c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(9/2),x]
```

```
[Out] -(a*Csc[c + d*x]^3*(7*(A + (6*I)*B)*Cos[c + d*x] + (53*A - (42*I)*B)*Cos[3*
(c + d*x)] + 2*((-110*I)*A - 105*B + ((158*I)*A + 147*B)*Cos[2*(c + d*x)])*
Sin[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])/(210*d*Sqrt[Tan[c + d*x]]) + (a*(
I*A + B)*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*
(1 + E^((2*I)*(c + d*x)))^2*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c +
```

```
 d*x))]]*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])/(d*E^((3*I)*(c + d
*x))*Sqrt[-1 + E^((2*I)*(c + d*x))])
```

Maple [B] time = 0.044, size = 796, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] 1/210/d*(a*(1+I*tan(d*x+c)))^(1/2)*a/tan(d*x+c)^(7/2)*(504*B*(I*a)^(1/2)*(-
I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+536*I*A*(I*a)
^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-420*
I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^
(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^4*a+152*A*(I*a)^(1/2)*(-I*a)^
(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+105*I*(I*a)^(1/2)*
2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+
I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+420*A*ln(1/2*(2*I*a*tan(
d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*
(-I*a)^(1/2)*tan(d*x+c)^4*a-168*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-105*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2
)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(t
an(d*x+c)+I))*tan(d*x+c)^4*a-96*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*
tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+210*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d
*x+c)^4*a+210*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^4*a-84*B*(I*a)^(1
/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-60*A*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2))/(I*a)^(1/2)/(-I
*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.84498, size = 1774, normalized size = 7.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="fricas")
```

```
[Out] -1/210*(4*sqrt(2)*((211*A - 189*I*B)*a*e^(8*I*d*x + 8*I*c) - 10*(16*A - 21*
I*B)*a*e^(6*I*d*x + 6*I*c) + 14*(A + 6*I*B)*a*e^(4*I*d*x + 4*I*c) + 70*(4*A
 - 3*I*B)*a*e^(2*I*d*x + 2*I*c) - 105*(A - I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I
*d*x + I*c) - 105*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(8*I*d*x
 + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*
d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*
A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c)
+ I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-8*I*A^2 - 16*A*B
 + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A +
2*B)*a)) + 105*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(8*I*d*x +
8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x
 + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A +
 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((-8*I*A^2 - 16*A*B +
8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B
)*a)))/(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x +
4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.48651, size = 309, normalized size = 1.37

$$\frac{(i-1)\sqrt{-2\,(i\,a\tan\left(dx+c\right)+a)a+2\,a^2}(i\,a\tan\left(dx+c\right)+a)^2a^6+\Big((2i+2)\,\left(i\,a\tan\left(dx+c\right)+a\right)^2a^5-(2i+2)\,\left(i\,a\tan\left(d\right.\right.}{\Big(-2i\,(i\,a\tan\left(dx+c\right)+a)^6a+14i\,(i\,a\tan\left(dx+c\right)+a)^5a^2-40i\,(i\,a\tan\left(dx+c\right)+a)^4a^3+60i\,(i\,a\tan\left(dx+c\right)+a)^3a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="giac")
```

```
[Out] ((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^2
*a^6 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^2*a^5 - (2*I + 2)*(I*a*tan(d*x + c
) + a)*a^6)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c)
 + a)*B)/((-2*I*(I*a*tan(d*x + c) + a)^6*a + 14*I*(I*a*tan(d*x + c) + a)^5*
a^2 - 40*I*(I*a*tan(d*x + c) + a)^4*a^3 + 60*I*(I*a*tan(d*x + c) + a)^3*a^4
 - 50*I*(I*a*tan(d*x + c) + a)^2*a^5 + 22*I*(I*a*tan(d*x + c) + a)*a^6 - 4*
I*a^7)*d)
```

3.168 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx$

Optimal. Leaf size=269

$$\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{4a(57B+61iA)\sqrt{a+ia\tan(c+dx)}}{315d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a(11A-12iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

```
[Out] ((2 + 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(9*d*Tan
[c + d*x]^(9/2)) - (2*a*((10*I)*A + 9*B)*Sqrt[a + I*a*Tan[c + d*x]])/(63*d*
Tan[c + d*x]^(7/2)) + (4*a*(11*A - (12*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(1
05*d*Tan[c + d*x]^(5/2)) + (4*a*((61*I)*A + 57*B)*Sqrt[a + I*a*Tan[c + d*x]
])/(315*d*Tan[c + d*x]^(3/2)) - (4*a*(193*A - (201*I)*B)*Sqrt[a + I*a*Tan[c
 + d*x]])/(315*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.936302, antiderivative size = 269, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$\frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{4a(57B+61iA)\sqrt{a+ia\tan(c+dx)}}{315d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a(11A-12iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(11/2)
,x]
```



```
[Out] ((2 + 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + I*a*Tan[c + d*x]])/(9*d*Tan
[c + d*x]^(9/2)) - (2*a*((10*I)*A + 9*B)*Sqrt[a + I*a*Tan[c + d*x]])/(63*d*
Tan[c + d*x]^(7/2)) + (4*a*(11*A - (12*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(1
05*d*Tan[c + d*x]^(5/2)) + (4*a*((61*I)*A + 57*B)*Sqrt[a + I*a*Tan[c + d*x]
])/(315*d*Tan[c + d*x]^(3/2)) - (4*a*(193*A - (201*I)*B)*Sqrt[a + I*a*Tan[c
 + d*x]])/(315*d*Sqrt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} + \frac{2}{9}\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(10iA+9\right.}{\tan^{\frac{9}{2}}(c}$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2a(10iA+9B)\sqrt{a+ia\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + -$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2a(10iA+9B)\sqrt{a+ia\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + -$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2a(10iA+9B)\sqrt{a+ia\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + -$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2a(10iA+9B)\sqrt{a+ia\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + -$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2a(10iA+9B)\sqrt{a+ia\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + -$$

$$= -\frac{2aA\sqrt{a+ia\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2a(10iA+9B)\sqrt{a+ia\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + -$$

$$= \frac{(2+2i)a^{3/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2aA\sqrt{a+ia\tan(c}}{9d\tan^{\frac{9}{2}}(c+dx}$$

Mathematica [A] time = 14.2096, size = 242, normalized size = 0.9

$$\frac{a\sqrt{a+ia\tan(c+dx)}\left(\frac{2520(A-iB)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} + \csc^4(c+dx)(12(117A-134iB)\cos(2(c+dx))+(-487A+474iB)\cos(4\right.}{1260d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(11/2),x]
```

```
[Out] (a*((2520*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/
Sqrt[-1 + E^((2*I)*(c + d*x))]])/(E^(I*(c + d*x))*Sqrt[((-I)*(-1 + E^((2*I)
*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]) + (Csc[c + d*x]^4*(-1197*A + (113
4*I)*B + 12*(117*A - (134*I)*B)*Cos[2*(c + d*x)] + (-487*A + (474*I)*B)*Cos
[4*(c + d*x)] + (144*I)*A*Sin[2*(c + d*x)] + 138*B*Sin[2*(c + d*x)] - (172*
I)*A*Sin[4*(c + d*x)] - 159*B*Sin[4*(c + d*x)]))/Sqrt[Tan[c + d*x]])*Sqrt[a
 + I*a*Tan[c + d*x]])/(1260*d)
```

Maple [B] time = 0.048, size = 885, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x)
```

```
[Out] 1/630/d*(a*(1+I*tan(d*x+c)))^(1/2)*a/tan(d*x+c)^(9/2)*(-1544*A*(I*a)^(1/2)*
(-I*a)^(1/2)*tan(d*x+c)^4*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+1608*I*B*(I
*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+4
88*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c))
)^(1/2)+456*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)+1260*I*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^5*a+1260*
B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1
/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^5*a-288*I*B*(I*a)^(1/2)*(-I*a)^
(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-315*(I*a)^(1/2)*2^
(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*
a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a+264*A*(I*a)^(1/2)*(-I*a)^(
1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+630*I*ln(1/2*(2*I*a
*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1
/2))*(-I*a)^(1/2)*tan(d*x+c)^5*a-630*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+
c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x
+c)^5*a-315*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*
a-200*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)-180*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)*tan(d*x+c)-140*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a
)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, al
gorithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.89244, size = 1971, normalized size = 7.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, al
gorithm="fricas")
```

```
[Out] 1/630*(sqrt(2)*((-2636*I*A - 2532*B)*a*e^(10*I*d*x + 10*I*c) + (3556*I*A +
4452*B)*a*e^(8*I*d*x + 8*I*c) + (-3384*I*A - 2088*B)*a*e^(6*I*d*x + 6*I*c)
+ (-4536*I*A - 3192*B)*a*e^(4*I*d*x + 4*I*c) + (3780*I*A + 4620*B)*a*e^(2*I
*d*x + 2*I*c) + (-1260*I*A - 1260*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
 + 315*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(10*I*d*x + 10*I*c)
- 5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) - 10*d*e^(4*I*d*x + 4*
I*c) + 5*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*
x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt((8
*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*
I*c)/((2*I*A + 2*B)*a)) - 315*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d
*e^(10*I*d*x + 10*I*c) - 5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c)
 - 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2
*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (2*I*A + 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2
*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^
(I*d*x + I*c) - sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2
*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(10*I*d*x + 10*I*c) -
5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) - 10*d*e^(4*I*d*x + 4*I*
c) + 5*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(11/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.49962, size = 333, normalized size = 1.24

$$-\frac{(i-1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)^2a^7+\Big((2i+2)\,(i\,a\tan(dx+c)+a)^2a^6-(2i+2)}{2\Big((i\,a\tan(dx+c)+a)^7a-8\,(i\,a\tan(dx+c)+a)^6a^2+27\,(i\,a\tan(dx+c)+a)^5a^3-50\,(i\,a\tan(dx+c)+a)^4a^4+55\,(i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, al
gorithm="giac")
```

```
[Out] -1/2*((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)^2*a^7 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^2*a^6 - (2*I + 2)*(I*a*tan(d*
x + c) + a)*a^7)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x
 + c) + a)*B)/((((I*a*tan(d*x + c) + a)^7*a - 8*(I*a*tan(d*x + c) + a)^6*a^2
 + 27*(I*a*tan(d*x + c) + a)^5*a^3 - 50*(I*a*tan(d*x + c) + a)^4*a^4 + 55*(
I*a*tan(d*x + c) + a)^3*a^5 - 36*(I*a*tan(d*x + c) + a)^2*a^6 + 13*(I*a*tan
(d*x + c) + a)*a^7 - 2*a^8)*d)
```

3.169 $\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=298

$$\frac{3(-1)^{3/4}a^{5/2}(121B+120iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{64d}-\frac{a^2(8A-11iB)\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{24d}+\frac{a^2(107B+1$$

```
[Out] (3*(-1)^(3/4)*a^(5/2)*((120*I)*A + 121*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[T
an[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(64*d) + ((4 + 4*I)*a^(5/2)*(I*A
 + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x
]]])/d + (a^2*(152*A - (149*I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d
*x]])/(64*d) + (a^2*((104*I)*A + 107*B)*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan
[c + d*x]])/(96*d) - (a^2*(8*A - (11*I)*B)*Tan[c + d*x]^(5/2)*Sqrt[a + I*a*
Tan[c + d*x]])/(24*d) + ((I/4)*a*B*Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x]
)^(3/2))/d
```

Rubi [A] time = 1.13219, antiderivative size = 298, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {3594, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{3(-1)^{3/4}a^{5/2}(121B+120iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{64d}-\frac{a^2(8A-11iB)\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{24d}+\frac{a^2(107B+1$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (3*(-1)^(3/4)*a^(5/2)*((120*I)*A + 121*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[T
an[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(64*d) + ((4 + 4*I)*a^(5/2)*(I*A
 + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x
]]])/d + (a^2*(152*A - (149*I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d
*x]])/(64*d) + (a^2*((104*I)*A + 107*B)*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan
[c + d*x]])/(96*d) - (a^2*(8*A - (11*I)*B)*Tan[c + d*x]^(5/2)*Sqrt[a + I*a*
Tan[c + d*x]])/(24*d) + ((I/4)*a*B*Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x]
)^(3/2))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
```

```
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}{4d}+\frac{1}{4}\int \tan^{\frac{3}{2}}(c+$$

$$= -\frac{a^2(8A-11iB)\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{24d}+\frac{iaB\,t}{}$$

$$= \frac{a^2(104iA+107B)\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{96d}-\frac{a^2}{}$$

$$= \frac{a^2(152A-149iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{64d}+\frac{a^2}{}$$

$$= \frac{a^2(152A-149iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{64d}+\frac{a^2}{}$$

$$= \frac{a^2(152A-149iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{64d}+\frac{a^2}{}$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(152A}{}$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(152A}{}$$

$$= -\frac{3\sqrt[4]{-1}a^{5/2}(120A-121iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{64d}+$$

Mathematica [A] time = 9.69973, size = 581, normalized size = 1.95

$$\frac{\cos^3(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left((8A-23iB)\left(-\frac{1}{24}\cos(2c)+\frac{1}{24}i\sin(2c)\right)\sec^2(c+dx\right.}{d(c}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c +
d*x)))]*(-2048*(A - I*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x)
)]] + 3*Sqrt[2]*(120*A - (121*I)*B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt
```

```
[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c
 + d*x)) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]]))*(a +
 I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(256*Sqrt[2]*d*E^((2*I)*c)*S
qrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))
)]*Sec[c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin
[c + d*x])) + (Cos[c + d*x]^3*((8*A - (23*I)*B)*Sec[c + d*x]^2*(-Cos[2*c]/2
4 + (I/24)*Sin[2*c]) + (56*A - (65*I)*B)*((13*Cos[2*c])/192 - ((13*I)/192)*
Sin[2*c]) + (104*A - (131*I)*B)*Sec[c + d*x]*(-Cos[3*c + d*x]/96 + (I/96)*S
in[3*c + d*x]) + Sec[c + d*x]^3*((-I/4)*B*Cos[3*c + d*x] - (B*Sin[3*c + d*x
])/4))*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x])
)/(d*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.041, size = 742, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/384/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*a^2*(-96*B*(I*a)^(1/2)*
(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-128*A*(I*a)
^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+272*
I*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(
1/2)+416*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
*tan(d*x+c)+447*I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a-894*I*B*(I*a)^(1/2)*(-
I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+428*B*(I*a)^(1/2)*(-I*a)^(
1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-384*I*(I*a)^(1/2)*2^(
1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a
-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a-456*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(
d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a+9
12*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)-768*I*l
n(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)
+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a+384*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a*(
I*a)^(1/2)-768*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(
1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 2.01838, size = 2928, normalized size = 9.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/384*(2*sqrt(2)*(13*(56*A - 65*I*B)*a^2*e^(6*I*d*x + 6*I*c) + 3*(504*A - 4
25*I*B)*a^2*e^(4*I*d*x + 4*I*c) + (1096*A - 1135*I*B)*a^2*e^(2*I*d*x + 2*I*
c) + 3*(104*A - 107*I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*sqrt(
(-129600*I*A^2 - 261360*A*B + 131769*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c)
 + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((36
0*I*A + 363*B)*a^2*e^(2*I*d*x + 2*I*c) + (360*I*A + 363*B)*a^2)*sqrt(a/(e^(
2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) + 1))*e^(I*d*x + I*c) + 2*I*sqrt((-129600*I*A^2 - 261360*A*B + 131769*I*
B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((360*I*A + 363*B
)*a^2)) - 3*sqrt((-129600*I*A^2 - 261360*A*B + 131769*I*B^2)*a^5/d^2)*(d*e^
(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*
log((sqrt(2)*((360*I*A + 363*B)*a^2*e^(2*I*d*x + 2*I*c) + (360*I*A + 363*B)
*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*I*sqrt((-129600*I*A^2 - 26136
0*A*B + 131769*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/
((360*I*A + 363*B)*a^2)) - 192*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2
)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c
) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*
a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-32*I*A^2 - 64*A*B + 32*
I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*
```

```
a^2)) + 192*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6
*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)
*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
+ 1))*e^(I*d*x + I*c) - I*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e
^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(6*I*d*
x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.59308, size = 416, normalized size = 1.4

$$\frac{\left(-2i\left(i\,a\tan\left(dx+c\right)+a\right)^4+4i\left(i\,a\tan\left(dx+c\right)+a\right)^3a-2i\left(i\,a\tan\left(dx+c\right)+a\right)^2a^2\right)\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^2}\sqrt{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] 1/2*((-2*I*(I*a*tan(d*x + c) + a)^4 + 4*I*(I*a*tan(d*x + c) + a)^3*a - 2*I*
(I*a*tan(d*x + c) + a)^2*a^2)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqr
t(I*a*tan(d*x + c) + a)*B*((-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*
tan(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1) + ((I*a*
tan(d*x + c) + a)^3*a - (I*a*tan(d*x + c) + a)^2*a^2)*sqrt(-2*(I*a*tan(d*x
+ c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*((-I*(I*a*tan(d*x + c) + a)*a +
 I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) + a)*a^3 +
a^4) + 1))/(((I*a*tan(d*x + c) + a)*a^2 - 2*a^3)*d)
```

3.170 $\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=252

$$-\frac{(-1)^{3/4}a^{5/2}(46A-45iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}-\frac{a^2(2A-3iB)\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{a^2(19B+18iA)\sqrt{}}{}$$

```
[Out] -((-1)^(3/4)*a^(5/2)*(46*A - (45*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(8*d) - ((4 + 4*I)*a^(5/2)*(A - I*B
)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])
/d + (a^2*((18*I)*A + 19*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/
(8*d) - (a^2*(2*A - (3*I)*B)*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])
/(4*d) + ((I/3)*a*B*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.922251, antiderivative size = 252, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {3594, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{5/2}(46A-45iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}-\frac{a^2(2A-3iB)\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{a^2(19B+18iA)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((-1)^(3/4)*a^(5/2)*(46*A - (45*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(8*d) - ((4 + 4*I)*a^(5/2)*(A - I*B
)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])
/d + (a^2*((18*I)*A + 19*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/
(8*d) - (a^2*(2*A - (3*I)*B)*Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])
/(4*d) + ((I/3)*a*B*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
```

```
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}{3d}+\frac{1}{3}\int \sqrt{\tan(c-}$$

$$= -\frac{a^2(2A-3iB)\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{iaB\,t}{}$$

$$= \frac{a^2(18iA+19B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a^2(2}{}$$

$$= \frac{a^2(18iA+19B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a^2(2}{}$$

$$= \frac{a^2(18iA+19B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{8d}-\frac{a^2(2}{}$$

$$= -\frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(18}{}$$

$$= -\frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(18}{}$$

$$= -\frac{\sqrt[4]{-1}a^{5/2}(46iA+45B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}-\frac{(4+}{}$$

Mathematica [B] time = 8.98103, size = 537, normalized size = 2.13

$$\frac{\cos^3(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left((6A-13iB)\sec(c+dx)\left(-\frac{1}{12}\sin(3c+dx)-\frac{1}{12}i\cos\right.\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c +
d*x)))]*((-256*I)*(A - I*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d
*x))]] + Sqrt[2]*((46*I)*A + 45*B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[
2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c
+ d*x)) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]))*(a +
I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(32*Sqrt[2]*d*E^((2*I)*c)*Sqr
t[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]
*Sec[c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c
 + d*x])) + (Cos[c + d*x]^3*(((66*I)*A + 91*B)*(Cos[2*c]/24 - (I/24)*Sin[2*
c]) + Sec[c + d*x]^2*(-(B*Cos[2*c])/3 + (I/3)*B*Sin[2*c]) + (6*A - (13*I)*B
)*Sec[c + d*x]*((-I/12)*Cos[3*c + d*x] - Sin[3*c + d*x]/12))*Sqrt[Tan[c + d
*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Si
n[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.042, size = 653, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/48/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*a^2*(16*B*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)^2-52*I*B*(I*a)
^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+54*I*A
*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/
2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a-108*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)+24*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-
I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)-48*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*
```

```
(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan
(d*x+c)+I))*a+57*B*(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a-114*B*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)+96*I*ln(1/2*(2*I*a*tan(d*x+c)
+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)
^(1/2)*a-48*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a*(I*a)^(1/2)-96*ln(1/2*(2*
I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)
^(1/2))*a*(-I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.93646, size = 2603, normalized size = 10.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/48*(2*sqrt(2)*((66*I*A + 91*B)*a^2*e^(4*I*d*x + 4*I*c) + (108*I*A + 98*B)
*a^2*e^(2*I*d*x + 2*I*c) + (42*I*A + 39*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c)
 + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c) + 3*sqrt((2116*I*A^2 + 4140*A*B - 2025*I*B^2)*a^5/d^2)*(d*e^(4*I*d
*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((46*I*A + 45*B)*a^
2*e^(2*I*d*x + 2*I*c) + (46*I*A + 45*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
 I*c) + 2*sqrt((2116*I*A^2 + 4140*A*B - 2025*I*B^2)*a^5/d^2)*d*e^(2*I*d*x +
 2*I*c))*e^(-2*I*d*x - 2*I*c)/((46*I*A + 45*B)*a^2)) - 3*sqrt((2116*I*A^2 +
```

```
 4140*A*B - 2025*I*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x +
2*I*c) + d)*log((sqrt(2)*((46*I*A + 45*B)*a^2*e^(2*I*d*x + 2*I*c) + (46*I*A
 + 45*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*sqrt((2116*I*A^2 + 41
40*A*B - 2025*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(
(46*I*A + 45*B)*a^2)) - 24*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*(d*
e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4
*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c
) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d
*x + I*c) + sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I
*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 24*sqrt((32*I*A^2 + 64*A*B
 - 32*I*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^
5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d
*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.49186, size = 347, normalized size = 1.38

$$-\frac{-i\sqrt{-2\,(i\,a\tan\left(dx+c\right)+a)a+2\,a^2}(i\,a\tan\left(dx+c\right)+a)^3a\left(\frac{-i\,(i\,a\tan(dx+c)+a)a+i\,a^2}{\sqrt{(i\,a\tan(dx+c)+a)^2a^2-2\,(i\,a\tan(dx+c)+a)a^3+a^4}}+1\right)-2\left((i\,a\tan(d\right.}{2\left((i\,a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] -1/2*(-I*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^3
*a*((-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*tan(d*x + c) + a)^2*a^2
 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1) - 2*((I*a*tan(d*x + c) + a)^3 -
 (I*a*tan(d*x + c) + a)^2*a)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt
(I*a*tan(d*x + c) + a)*B*((-I*(I*a*tan(d*x + c) + a)*a + I*a^2)/sqrt((I*a*t
an(d*x + c) + a)^2*a^2 - 2*(I*a*tan(d*x + c) + a)*a^3 + a^4) + 1))/(((I*a*t
an(d*x + c) + a)*a - 2*a^2)*d)
```

3.171 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=206

$$-\frac{(-1)^{3/4}a^{5/2}(23B+20iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{a^2(4A-7iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{(4-4i)a^{5/2}(A$$

```
[Out] -((-1)^(3/4)*a^(5/2)*((20*I)*A + 23*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(4*d) + ((4 - 4*I)*a^(5/2)*(A - I*B
)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])
/d - (a^2*(4*A - (7*I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(4
*d) + ((I/2)*a*B*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.711822, antiderivative size = 206, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3594, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{5/2}(23B+20iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{a^2(4A-7iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d}+\frac{(4-4i)a^{5/2}(A$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
x]
```


```
[Out] -((-1)^(3/4)*a^(5/2)*((20*I)*A + 23*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(4*d) + ((4 - 4*I)*a^(5/2)*(A - I*B
)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])
/d - (a^2*(4*A - (7*I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(4
*d) + ((I/2)*a*B*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2))/d
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
```

```
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{iaB\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}}{2d} + \frac{1}{2}\int \frac{(a+ia\tan(c+dx))^{3}}{}$$

$$= -\frac{a^2(4A-7iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{iaB\sqrt{\tan(c+dx}}{}$$

$$= -\frac{a^2(4A-7iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{iaB\sqrt{\tan(c+dx}}{}$$

$$= -\frac{a^2(4A-7iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{4d} + \frac{iaB\sqrt{\tan(c+dx}}{}$$

$$= -\frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{a^2(4A-7iB)\sqrt{\mathrm{ta}}}{}$$

$$= -\frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{a^2(4A-7iB)\sqrt{\mathrm{ta}}}{}$$

$$= \frac{\sqrt[4]{-1}a^{5/2}(20A-23iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d} - \frac{(4+4i)a^{5/2}(iA+}{}$$

Mathematica [B] time = 9.17287, size = 499, normalized size = 2.42

$$\frac{\cos^3(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left((4A-11iB)\left(-\frac{1}{4}\cos(2c)+\frac{1}{4}i\sin(2c)\right)+\sec(c+d\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c +
d*x]],x]
```

```
[Out] (Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c +
d*x)))]*(128*(A - I*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]
```

```
] - Sqrt[2]*(20*A - (23*I)*B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^
(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x
)) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]))*(a + I*a*T
an[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(16*Sqrt[2]*d*E^((2*I)*c)*Sqrt[-1
+ E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sec[
c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*
x])) + (Cos[c + d*x]^3*((4*A - (11*I)*B)*(-Cos[2*c]/4 + (I/4)*Sin[2*c]) + S
ec[c + d*x]*((-I/2)*B*Cos[3*c + d*x] - (B*Sin[3*c + d*x])/2))*Sqrt[Tan[c +
d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*S
in[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.058, size = 564, normalized size = 2.7

$$\frac{a^2}{8d}\sqrt{a\left(1+i\tan\left(dx+c\right)\right)}\sqrt{\tan\left(dx+c\right)}\left(-9\,iB\ln\left(\frac{1}{2}\left(2\,ia\tan\left(dx+c\right)+2\,\sqrt{a\tan\left(dx+c\right)\left(1+i\tan\left(dx+c\right)\right)}\sqrt{ia}+a\right)\frac{1}{\sqrt{}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 1/8/d*(a*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^(1/2)*a^2*(-9*I*B*ln(1/2*(2*I*a
*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1
/2))*(-I*a)^(1/2)*a+18*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)-4*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*tan(d*x+c)+8*I*(I*a)^(1/2)*2^(1/2)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-I*a+3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+12*A*
ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2
)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a-8*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*
(-I*a)^(1/2)*(I*a)^(1/2)+16*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2)-8*(I*a)^(1/2
)*2^(1/2)*ln((2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-
I*a+3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+16*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(
d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a*(-I*a)^(1/2))/
(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 2.01015, size = 2363, normalized size = 11.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="fricas")
```

```
[Out] -1/8*(2*sqrt(2)*((4*A - 11*I*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*A - 7*I*B)*a^2
)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2
*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt((-400*I*A^2 - 920*A*B + 529*I*
B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((20*I*A + 23*B)*a^2
*e^(2*I*d*x + 2*I*c) + (20*I*A + 23*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1
))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
I*c) + 2*I*sqrt((-400*I*A^2 - 920*A*B + 529*I*B^2)*a^5/d^2)*d*e^(2*I*d*x +
2*I*c))*e^(-2*I*d*x - 2*I*c)/((20*I*A + 23*B)*a^2)) - sqrt((-400*I*A^2 - 92
0*A*B + 529*I*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((20*I
*A + 23*B)*a^2*e^(2*I*d*x + 2*I*c) + (20*I*A + 23*B)*a^2)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c) - 2*I*sqrt((-400*I*A^2 - 920*A*B + 529*I*B^2)*a^5/d^2)*d
*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((20*I*A + 23*B)*a^2)) - 4*sqrt(
(-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((s
qrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(
e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^
2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 4*sqr
t((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log(
(sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a
/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
 2*I*c) + 1))*e^(I*d*x + I*c) - I*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/
d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e
^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.6426, size = 212, normalized size = 1.03

$$\frac{-(i-1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)^3a^2+\left(-(2i+2)(ia\tan(dx+c)+a)^3a+(2i+2)(ia\tan\cdots\right.}{\left(2i(ia\tan(dx+c)+a)^2a-6i(ia\tan(dx+c)+a)a^2+\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, alg
orithm="giac")
```

```
[Out] (-(I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^
3*a^2 + (-(2*I + 2)*(I*a*tan(d*x + c) + a)^3*a + (2*I + 2)*(I*a*tan(d*x + c
) + a)^2*a^2)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x +
c) + a)*B)/((2*I*(I*a*tan(d*x + c) + a)^2*a - 6*I*(I*a*tan(d*x + c) + a)*a^
2 + 4*I*a^3)*d)
```

3.172 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=196

$$\frac{(-1)^{3/4}a^{5/2}(2A-5iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(-B+2iA)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d}+\frac{(4+4i)a^{5/2}(A-iB)}{}$$

```
[Out] ((-1)^(3/4)*a^(5/2)*(2*A - (5*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d + ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTa
nh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d + (a
^2*((2*I)*A - B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d - (2*a*A*
(a + I*a*Tan[c + d*x])^(3/2))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.699569, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {3593, 3594, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(-1)^{3/4}a^{5/2}(2A-5iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(-B+2iA)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d}+\frac{(4+4i)a^{5/2}(A-iB)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
x]
```


```
[Out] ((-1)^(3/4)*a^(5/2)*(2*A - (5*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d + ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTa
nh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d + (a
^2*((2*I)*A - B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d - (2*a*A*
(a + I*a*Tan[c + d*x])^(3/2))/(d*Sqrt[Tan[c + d*x]])
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
```

```
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^{3/2}}{d\sqrt{\tan(c+dx)}} + 2\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{1}{2}a(4iA\right.}{\sqrt{\tan(}}$$

$$= \frac{a^2(2iA-B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2aA(a+ia\tan(c+}{d\sqrt{\tan(c+d}}$$

$$= \frac{a^2(2iA-B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2aA(a+ia\tan(c+}{d\sqrt{\tan(c+d}}$$

$$= \frac{a^2(2iA-B)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2aA(a+ia\tan(c+}{d\sqrt{\tan(c+d}}$$

$$= \frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{a^2(2iA-B)\sqrt{\tan(}}{}$$

$$= \frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{a^2(2iA-B)\sqrt{\tan(}}{}$$

$$= \frac{\sqrt[4]{-1}a^{5/2}(2iA+5B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(4+4i)a^{5/2}(A-iB}{}$$

Mathematica [B] time = 9.36694, size = 493, normalized size = 2.52

$$\frac{\cos^3(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))(\csc(c)(-\cos(2c)+i\sin(2c))(2A\cos(c)+B\sin(c))+}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(3/2),x]
```

```
[Out] (Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c +
d*x)))]*(32*(I*A + B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]]
 - I*Sqrt[2]*(2*A - (5*I)*B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(
I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)
) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]))*(a + I*a*Ta
n[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(4*Sqrt[2]*d*E^((2*I)*c)*Sqrt[-1 +
E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sec[c
+ d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]
)) + (Cos[c + d*x]^3*(Csc[c]*(2*A*Cos[c] + B*Sin[c])*(-Cos[2*c] + I*Sin[2*c
]) + A*Csc[c]*Csc[c + d*x]*(2*Cos[2*c] - (2*I)*Sin[2*c])*Sin[d*x])*Sqrt[Tan
[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x]
+ I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.042, size = 565, normalized size = 2.9

$$\frac{a^2}{2d}\sqrt{a(1+i\tan(dx+c))}\left(6iA\ln\left(\frac{1}{2}\left(2ia\tan(dx+c)+2\sqrt{a\tan(dx+c)(1+i\tan(dx+c))}\sqrt{ia}+a\right)\frac{1}{\sqrt{ia}}\right)\sqrt{-ia}\tan(d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] 1/2/d*(a*(1+I*tan(d*x+c)))^(1/2)*a^2*(6*I*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*
tan(d*x+c)*a-2*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)
*a+3*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*
a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a-2*B*(I*a)^(1/2)*(-I*a)^(
1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+4*I*ln(1/2*(2*I*a*tan
```

```
(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))
*(-I*a)^(1/2)*tan(d*x+c)*a-2*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/
2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I)
)*tan(d*x+c)*a-4*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)
^(1/2)-4*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(
I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a)/tan(d*x+c)^(1/2)/(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(I*a)^(1/2)/(-I*a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.95954, size = 2295, normalized size = 11.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*((-4*I*A - 2*B)*a^2*e^(2*I*d*x + 2*I*c) + (-4*I*A + 2*B)*a^2)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a
^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*
d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sqr
t((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*
x - 2*I*c)/((4*I*A + 4*B)*a^2)) - sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d
^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x
+ 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((3
2*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
```

```
2*I*c)/((4*I*A + 4*B)*a^2)) - sqrt((4*I*A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*(
d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 5*B)*a^2*e^(2*I*d*x + 2*I
*c) + (2*I*A + 5*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 2*sqrt((4*I*
A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*
c)/((2*I*A + 5*B)*a^2)) + sqrt((4*I*A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*(d*e^
(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 5*B)*a^2*e^(2*I*d*x + 2*I*c)
+ (2*I*A + 5*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 2*sqrt((4*I*A^2
+ 20*A*B - 25*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(
(2*I*A + 5*B)*a^2)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.68088, size = 239, normalized size = 1.22

$$-\frac{(i-1)\sqrt{-2\left(ia\tan\left(dx+c\right)+a\right)a+2a^{2}}\left(ia\tan\left(dx+c\right)+a\right)^{3}a^{3}+\left((2i+2)\left(ia\tan\left(dx+c\right)+a\right)^{3}a^{2}-(2i+2)\left(ia\tan\right.\right.}{2\left(\left(ia\tan\left(dx+c\right)+a\right)^{3}a-4\left(ia\tan\left(dx+c\right)+a\right)^{2}a^{2}+5\left(ia\tan\left(d\right.\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, alg
orithm="giac")
```

```
[Out] -1/2*((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)^3*a^3 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^3*a^2 - (2*I + 2)*(I*a*tan(d*
x + c) + a)^2*a^3)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d
*x + c) + a)*B)/(((I*a*tan(d*x + c) + a)^3*a - 4*(I*a*tan(d*x + c) + a)^2*a
^2 + 5*(I*a*tan(d*x + c) + a)*a^3 - 2*a^4)*d)
```

3.173 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=190

$$-\frac{2a^2(B+2iA)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}+\frac{(4+4i)a^{5/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

```
[Out] (2*(-1)^(3/4)*a^(5/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]])/d + ((4 + 4*I)*a^(5/2)*(I*A + B)*ArcTanh[((1 + I)*
Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((2*I)*
A + B)*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a
*Tan[c + d*x])^(3/2))/(3*d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 0.664995, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3593, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{2a^2(B+2iA)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}+\frac{(4+4i)a^{5/2}(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),
x]
```

```
[Out] (2*(-1)^(3/4)*a^(5/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]])/d + ((4 + 4*I)*a^(5/2)*(I*A + B)*ArcTanh[((1 + I)*
Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((2*I)*
A + B)*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a
*Tan[c + d*x])^(3/2))/(3*d*Tan[c + d*x]^(3/2))
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
```

```
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{3}{2}a(2iA\right.}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2a^2(2iA+B)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} +$$

$$= -\frac{2a^2(2iA+B)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} - ($$

$$= -\frac{2a^2(2iA+B)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2a^2(2iA+B)\sqrt{a+}}{d\sqrt{\tan(c}}$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2a^2(2iA+B)\sqrt{a+}}{d\sqrt{\tan(c}}$$

$$= \frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} + \frac{(4+4i)a^{5/2}(iA+B)\tanh}{d}$$

Mathematica [B] time = 9.91254, size = 618, normalized size = 3.25

$$\frac{\cos^3(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\csc(c)\left(\frac{2}{3}\cos(2c)-\frac{2}{3}i\sin(2c)\right)\csc(c+dx)(3B\sin\right.}{d(\cos(dx)+i\sin(d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(5/2),x]
```

```
[Out] (Sqrt[E^(I*d*x)]*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E
^((2*I)*(c + d*x)))]*(Sqrt[2]*B*Log[(2*E^(((7*I)/2)*c)*(Sqrt[2] - I*Sqrt[2]
*E^(I*(c + d*x)) + (2*I)*Sqrt[-1 + E^((2*I)*(c + d*x))]))/(B*(-I + E^(I*(c
+ d*x))))] + 8*(I*A + B)*Log[(E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x
))])/E^(I*c)] - Sqrt[2]*B*Log[((-2*I)*E^(((7*I)/2)*c)*((-I)*Sqrt[2] + Sqrt[
2]*E^(I*(c + d*x)) + 2*Sqrt[-1 + E^((2*I)*(c + d*x))]))/(B*(I + E^(I*(c + d
*x))))])*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(Sqrt[2]*d*E^(I
*(3*c + d*x))*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x
)))]*Sec[c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*S
in[c + d*x])) + (Cos[c + d*x]^3*((-I)*Csc[c]*(7*A*Cos[c] - (3*I)*B*Cos[c] +
 I*A*Sin[c])*((2*Cos[2*c])/3 - ((2*I)/3)*Sin[2*c]) + Csc[c + d*x]^2*((-2*A*
Cos[2*c])/3 + ((2*I)/3)*A*Sin[2*c]) + Csc[c]*Csc[c + d*x]*((2*Cos[2*c])/3 -
 ((2*I)/3)*Sin[2*c])*((7*I)*A*Sin[d*x] + 3*B*Sin[d*x]))*Sqrt[Tan[c + d*x]]*
(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Sin[d*x
])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.044, size = 620, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -1/3/d*(a*(1+I*tan(d*x+c)))^(1/2)*a^2/tan(d*x+c)^(3/2)*(-9*I*B*ln(1/2*(2*I*
a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(
1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a+3*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(
-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(
d*x+c)+I))*tan(d*x+c)^2*a+14*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+12*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+
c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x
+c)^2*a+6*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a-3*(I*a)^(1/2)*2^(
1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a
-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+6*B*(I*a)^(1/2)*(-I*a)^(1/2
)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+6*ln(1/2*(2*I*a*tan(d*x+
c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*
```

```
a)^(1/2)*tan(d*x+c)^2*a+2*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1
/2)*(I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(
1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.93953, size = 2317, normalized size = 12.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/6*(4*sqrt(2)*((8*A - 3*I*B)*a^2*e^(4*I*d*x + 4*I*c) + 2*A*a^2*e^(2*I*d*x
+ 2*I*c) - 3*(2*A - I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 3*sqrt(
(-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*
I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (
4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-32*I*A^2 -
 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((
4*I*A + 4*B)*a^2)) + 3*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(
4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)
*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c) - I*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I
*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 3*sqrt(4*I*B^2*a^5/d^2)*(d
*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*(B*a^2*e^(
2*I*d*x + 2*I*c) + B*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I
```

```
*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt(4*I*
B^2*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(B*a^2)) - 3*sqrt(
4*I*B^2*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log(
(sqrt(2)*(B*a^2*e^(2*I*d*x + 2*I*c) + B*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
 I*c) - I*sqrt(4*I*B^2*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)
/(B*a^2)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.64862, size = 263, normalized size = 1.38

$$\frac{(i-1)\,\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)^3a^4+\left((2i+2)\,(i\,a\tan(dx+c)+a)^3a^3-(2i+2)\,(i\,a\tan(d}{\left(2i\,(i\,a\tan(dx+c)+a)^4a-10i\,(i\,a\tan(dx+c)+a)^3a^2+18i\,(i\,a\tan(dx+c)+a)^2a^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, alg
orithm="giac")
```

```
[Out] ((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^3
*a^4 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^3*a^3 - (2*I + 2)*(I*a*tan(d*x + c
) + a)^2*a^4)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x +
c) + a)*B)/((2*I*(I*a*tan(d*x + c) + a)^4*a - 10*I*(I*a*tan(d*x + c) + a)^3
*a^2 + 18*I*(I*a*tan(d*x + c) + a)^2*a^3 - 14*I*(I*a*tan(d*x + c) + a)*a^4
+ 4*I*a^5)*d)
```

3.174 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=185

$$-\frac{2a^2(5B+8iA)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{2a^2(38A-35iB)\sqrt{a+ia\tan(c+dx)}}{15d\sqrt{\tan(c+dx)}}-\frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(}}{\sqrt{a+ia\tan(c}}\right.}{d}$$

```
[Out] ((-4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((8*I)*A + 5*B)*Sqrt[a + I*a*Tan[c
+ d*x]])/(15*d*Tan[c + d*x]^(3/2)) + (2*a^2*(38*A - (35*I)*B)*Sqrt[a + I*a*
Tan[c + d*x]])/(15*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c + d*x])^(3
/2))/(5*d*Tan[c + d*x]^(5/2))
```

Rubi [A] time = 0.574996, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$-\frac{2a^2(5B+8iA)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)}+\frac{2a^2(38A-35iB)\sqrt{a+ia\tan(c+dx)}}{15d\sqrt{\tan(c+dx)}}-\frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(}}{\sqrt{a+ia\tan(c}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),
x]
```


```
[Out] ((-4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((8*I)*A + 5*B)*Sqrt[a + I*a*Tan[c
+ d*x]])/(15*d*Tan[c + d*x]^(3/2)) + (2*a^2*(38*A - (35*I)*B)*Sqrt[a + I*a*
Tan[c + d*x]])/(15*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c + d*x])^(3
/2))/(5*d*Tan[c + d*x]^(5/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
```

```
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^{3/2}}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{1}{2}a(8iA\right.}{\tan^{\frac{5}{2}}}$$

$$= -\frac{2a^2(8iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{5d\tan^{\frac{5}{2}}(c+dx)} +$$

$$= -\frac{2a^2(8iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a^2(38A-35iB)\sqrt{a+ia\tan}}{15d\sqrt{\tan(c+dx)}}$$

$$= -\frac{2a^2(8iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a^2(38A-35iB)\sqrt{a+ia\tan}}{15d\sqrt{\tan(c+dx)}}$$

$$= -\frac{2a^2(8iA+5B)\sqrt{a+ia\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a^2(38A-35iB)\sqrt{a+ia\tan}}{15d\sqrt{\tan(c+dx)}}$$

$$= -\frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2a^2(8iA+5B)\sqrt{a}}{15d\tan^{\frac{3}{2}}}$$

Mathematica [A] time = 10.7001, size = 323, normalized size = 1.75

$$-\frac{4\sqrt{2}e^{-2ic}\sqrt{e^{idx}}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}(a+ia\tan(c+dx))^{5/2}\left(e^{i(c+dx)}\sqrt{1-e^{2i(c+dx)}}\left(iA\left(-35e^{2i(c+dx)}+26e^{4i(c+dx)}+15\right)+5B\left(-\right.\right.\right.}{15d\left(1-e^{2i(c+dx)}\right)^{7/2}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sec^{\frac{7}{2}}(c+dx)(\cos(dx)+i\sin(d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(7/2),x]
```

```
[Out] (-4*Sqrt[2]*Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^(
(2*I)*(c + d*x)))]*(E^(I*(c + d*x))*Sqrt[1 - E^((2*I)*(c + d*x))]*(5*B*(3 -
 7*E^((2*I)*(c + d*x)) + 4*E^((4*I)*(c + d*x))) + I*A*(15 - 35*E^((2*I)*(c
+ d*x)) + 26*E^((4*I)*(c + d*x)))) + 15*(I*A + B)*(-1 + E^((2*I)*(c + d*x))
)^3*ArcSin[E^(I*(c + d*x))])*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]))/(15*d*E^((2*I)*c)*(1 - E^((2*I)*(c + d*x)))^(7/2)*Sqrt[E^(I*(c + d*x))
/(1 + E^((2*I)*(c + d*x)))]*Sec[c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(5/2
)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.044, size = 709, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -1/15/d*(a*(1+I*tan(d*x+c)))^(1/2)*a^2/tan(d*x+c)^(5/2)*(-76*A*(I*a)^(1/2)*
(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+60*I*A*ln(1
/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)
/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a-15*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*
2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+
c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a+70*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+
c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+60*B*ln(1/2*(2*I*a*tan(d*x+c)+2*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1
/2)*tan(d*x+c)^3*a+30*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a-15*(I
*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a+22*I*A*(I*a)^(
1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-30*ln(1/
2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/
(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a+10*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+6*A*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.76325, size = 1642, normalized size = 8.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="fricas")
```

```
[Out] 1/30*(sqrt(2)*((208*I*A + 160*B)*a^2*e^(6*I*d*x + 6*I*c) + (-72*I*A - 120*B
)*a^2*e^(4*I*d*x + 4*I*c) + (-160*I*A - 160*B)*a^2*e^(2*I*d*x + 2*I*c) + (1
20*I*A + 120*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 15*sqrt((32*I*A^
2 + 64*A*B - 32*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4
*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I
*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((
-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + sq
rt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d
*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 15*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a
^5/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x +
 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A +
 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((32*I*A^2 + 64*A*B -
32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*
B)*a^2)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x
 + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.60115, size = 288, normalized size = 1.56

$$-\frac{-(i-1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)^3a^5+\left(-(2i+2)\,(i\,a\tan(dx+c)+a)^3a^4+(2i+2)\,(i\,a\right.}{2\left((i\,a\tan(dx+c)+a)^5a-6\,(i\,a\tan(dx+c)+a)^4a^2+14\,(i\,a\tan(dx+c)+a)^3a^3-16\,(i\,a\,\mathrm{ta}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, alg
orithm="giac")
```

```
[Out] -1/2*(-(I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c)
+ a)^3*a^5 + (-(2*I + 2)*(I*a*tan(d*x + c) + a)^3*a^4 + (2*I + 2)*(I*a*tan(
d*x + c) + a)^2*a^5)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan
(d*x + c) + a)*B)/(((I*a*tan(d*x + c) + a)^5*a - 6*(I*a*tan(d*x + c) + a)^4
*a^2 + 14*(I*a*tan(d*x + c) + a)^3*a^3 - 16*(I*a*tan(d*x + c) + a)^2*a^4 +
9*(I*a*tan(d*x + c) + a)*a^5 - 2*a^6)*d)
```

3.175 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=231

$$\frac{2a^2(80A-77iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a^2(7B+10iA)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(133B+130iA)\sqrt{a+ia\tan(c+dx)}}{105d\sqrt{\tan(c+dx)}}$$

```
[Out] ((4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((10*I)*A + 7*B)*Sqrt[a + I*a*Tan[c
+ d*x]])/(35*d*Tan[c + d*x]^(5/2)) + (2*a^2*(80*A - (77*I)*B)*Sqrt[a + I*a*
Tan[c + d*x]])/(105*d*Tan[c + d*x]^(3/2)) + (4*a^2*((130*I)*A + 133*B)*Sqrt
[a + I*a*Tan[c + d*x]])/(105*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c
+ d*x])^(3/2))/(7*d*Tan[c + d*x]^(7/2))
```

Rubi [A] time = 0.75676, antiderivative size = 231, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$\frac{2a^2(80A-77iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}-\frac{2a^2(7B+10iA)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)}+\frac{4a^2(133B+130iA)\sqrt{a+ia\tan(c+dx)}}{105d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),
x]
```


```
[Out] ((4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((10*I)*A + 7*B)*Sqrt[a + I*a*Tan[c
+ d*x]])/(35*d*Tan[c + d*x]^(5/2)) + (2*a^2*(80*A - (77*I)*B)*Sqrt[a + I*a*
Tan[c + d*x]])/(105*d*Tan[c + d*x]^(3/2)) + (4*a^2*((130*I)*A + 133*B)*Sqrt
[a + I*a*Tan[c + d*x]])/(105*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*Tan[c
+ d*x])^(3/2))/(7*d*Tan[c + d*x]^(7/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
```

```
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^{3/2}}{7d\tan^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{1}{2}a(10iA\right.}{\tan}$$

$$= -\frac{2a^2(10iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{7d\tan^{\frac{7}{2}}(c+dx)}$$

$$= -\frac{2a^2(10iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2a^2(80A-77iB)\sqrt{a+ia\,\text{ta}}}{105d\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2a^2(10iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2a^2(80A-77iB)\sqrt{a+ia\,\text{ta}}}{105d\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2a^2(10iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2a^2(80A-77iB)\sqrt{a+ia\,\text{ta}}}{105d\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2a^2(10iA+7B)\sqrt{a+ia\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2a^2(80A-77iB)\sqrt{a+ia\,\text{ta}}}{105d\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2a^2(10iA+7B)\sqrt{}}{35d\tan}$$

Mathematica [A] time = 12.9675, size = 363, normalized size = 1.57

$$\frac{4\sqrt{2}e^{-2ic}\sqrt{e^{idx}}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}(a+ia\tan(c+dx))^{5/2}\left(e^{i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\left(7iB\left(50e^{2i(c+dx)}-61e^{4i(c+dx)}+26e^{6i(c+dx)}-\right.\right.\right.}{105d\left(-1+e^{2i(c+dx)}\right)^{9/2}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sec^{\frac{7}{2}}(c+}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(9/2),x]
```

```
[Out] (4*Sqrt[2]*Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((
2*I)*(c + d*x)))]*(E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*((7*I)*B*
(-15 + 50*E^((2*I)*(c + d*x)) - 61*E^((4*I)*(c + d*x)) + 26*E^((6*I)*(c + d
*x))) - 5*A*(-21 + 70*E^((2*I)*(c + d*x)) - 77*E^((4*I)*(c + d*x)) + 40*E^(
(6*I)*(c + d*x)))) + 105*(A - I*B)*(-1 + E^((2*I)*(c + d*x)))^4*Log[E^(I*(c
```

```
 + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]])*(a + I*a*Tan[c + d*x])^(5/2)*(A
 + B*Tan[c + d*x]))/(105*d*E^((2*I)*c)*(-1 + E^((2*I)*(c + d*x)))^(9/2)*Sqr
t[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sec[c + d*x]^(7/2)*(Cos[d*x] +
 I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.044, size = 798, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] 1/105/d*(a*(1+I*tan(d*x+c)))^(1/2)*a^2/tan(d*x+c)^(7/2)*(532*B*(I*a)^(1/2)*
(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-154*I*B*(I*
a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+21
0*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^
(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^4*a+160*A*(I*a)^(1/2)*(-I*a)^
(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+105*I*(I*a)^(1/2)*
2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+
I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+420*A*ln(1/2*(2*I*a*tan(
d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*
(-I*a)^(1/2)*tan(d*x+c)^4*a-90*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-105*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(
-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(
d*x+c)+I))*tan(d*x+c)^4*a-420*I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*
(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)
^4*a+210*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(
I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^4*a+520*I*A*(I*a)^(1/2)*
(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-42*B*(I*a)^
(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-30*A*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2))/(I*a)^(1/2)/(
-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.82178, size = 1813, normalized size = 7.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="fricas")
```

```
[Out] -1/210*(8*sqrt(2)*(2*(100*A - 91*I*B)*a^2*e^(8*I*d*x + 8*I*c) - 5*(37*A - 4
9*I*B)*a^2*e^(6*I*d*x + 6*I*c) - 7*(5*A - 11*I*B)*a^2*e^(4*I*d*x + 4*I*c) +
 245*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - 105*(A - I*B)*a^2)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
 1))*e^(I*d*x + I*c) - 105*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d
*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) -
4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2
*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*
I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt((-3
2*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
2*I*c)/((4*I*A + 4*B)*a^2)) + 105*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/
d^2)*(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*
I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*
d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - I*s
qrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I
*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x
 + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.63827, size = 312, normalized size = 1.35

$$\frac{-(i-1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)^3a^6+\left(-(2i+2)(ia\tan(dx+c)+a)^3a^5+(2i+2)(ia\tan\right.}{\left(2i(ia\tan(dx+c)+a)^6a-14i(ia\tan(dx+c)+a)^5a^2+40i(ia\tan(dx+c)+a)^4a^3-60i(ia\tan(dx+c)+a)^3a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, alg
orithm="giac")
```

```
[Out] (-(I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^
3*a^6 + (-(2*I + 2)*(I*a*tan(d*x + c) + a)^3*a^5 + (2*I + 2)*(I*a*tan(d*x +
 c) + a)^2*a^6)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x
+ c) + a)*B)/((2*I*(I*a*tan(d*x + c) + a)^6*a - 14*I*(I*a*tan(d*x + c) + a)
^5*a^2 + 40*I*(I*a*tan(d*x + c) + a)^4*a^3 - 60*I*(I*a*tan(d*x + c) + a)^3*
a^4 + 50*I*(I*a*tan(d*x + c) + a)^2*a^5 - 22*I*(I*a*tan(d*x + c) + a)*a^6 +
 4*I*a^7)*d)
```

3.176 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx$

Optimal. Leaf size=277

$$\frac{8a^2(60B+59iA)\sqrt{a+ia\tan(c+dx)}}{315d\tan^{\frac{3}{2}}(c+dx)}+\frac{2a^2(46A-45iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{5}{2}}(c+dx)}-\frac{2a^2(3B+4iA)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)}-8$$

```
[Out] ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((4*I)*A + 3*B)*Sqrt[a + I*a*Tan[c +
 d*x]])/(21*d*Tan[c + d*x]^(7/2)) + (2*a^2*(46*A - (45*I)*B)*Sqrt[a + I*a*T
an[c + d*x]])/(105*d*Tan[c + d*x]^(5/2)) + (8*a^2*((59*I)*A + 60*B)*Sqrt[a
+ I*a*Tan[c + d*x]])/(315*d*Tan[c + d*x]^(3/2)) - (8*a^2*(197*A - (195*I)*B
)*Sqrt[a + I*a*Tan[c + d*x]])/(315*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*
Tan[c + d*x])^(3/2))/(9*d*Tan[c + d*x]^(9/2))
```

Rubi [A] time = 0.950501, antiderivative size = 277, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$\frac{8a^2(60B+59iA)\sqrt{a+ia\tan(c+dx)}}{315d\tan^{\frac{3}{2}}(c+dx)}+\frac{2a^2(46A-45iB)\sqrt{a+ia\tan(c+dx)}}{105d\tan^{\frac{5}{2}}(c+dx)}-\frac{2a^2(3B+4iA)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)}-8$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(11/2)
,x]
```



```
[Out] ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((4*I)*A + 3*B)*Sqrt[a + I*a*Tan[c +
 d*x]])/(21*d*Tan[c + d*x]^(7/2)) + (2*a^2*(46*A - (45*I)*B)*Sqrt[a + I*a*T
an[c + d*x]])/(105*d*Tan[c + d*x]^(5/2)) + (8*a^2*((59*I)*A + 60*B)*Sqrt[a
+ I*a*Tan[c + d*x]])/(315*d*Tan[c + d*x]^(3/2)) - (8*a^2*(197*A - (195*I)*B
)*Sqrt[a + I*a*Tan[c + d*x]])/(315*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + I*a*
Tan[c + d*x])^(3/2))/(9*d*Tan[c + d*x]^(9/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^{3/2}}{9d\tan^{\frac{9}{2}}(c+dx)} + \frac{2}{9}\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{3}{2}a(4iA\right.}{\tan^{\frac{9}{2}}}$$

$$= -\frac{2a^2(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{9d\tan^{\frac{9}{2}}(c+dx)} +$$

$$= -\frac{2a^2(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2a^2(46A-45iB)\sqrt{a+ia\tan}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2a^2(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2a^2(46A-45iB)\sqrt{a+ia\tan}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2a^2(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2a^2(46A-45iB)\sqrt{a+ia\tan}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2a^2(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2a^2(46A-45iB)\sqrt{a+ia\tan}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2a^2(4iA+3B)\sqrt{a+ia\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2a^2(46A-45iB)\sqrt{a+ia\tan}}{105d\tan^{\frac{5}{2}}(c+dx)}$$

$$= \frac{(4+4i)a^{5/2}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2a^2(4iA+3B)\sqrt{a}}{21d\tan^{\frac{7}{2}}(}$$

Mathematica [A] time = 14.9964, size = 246, normalized size = 0.89

$$\frac{a^2\sqrt{a+ia\tan(c+dx)}\left(\frac{1260(A-iB)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} + \csc^2(2(c+dx))(12(251A-260iB)\cos(2(c+dx))+(-961A+915iB)\,c\right.}{315d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(11/2),x]
```

```
[Out] (a^2*((1260*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x)
)/Sqrt[-1 + E^((2*I)*(c + d*x))]])/(E^(I*(c + d*x))*Sqrt[((-I)*(-1 + E^((2*
I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]) + (Csc[2*(c + d*x)]^2*(-2331*A
+ (2205*I)*B + 12*(251*A - (260*I)*B)*Cos[2*(c + d*x)] + (-961*A + (915*I)*
B)*Cos[4*(c + d*x)] + (282*I)*A*Sin[2*(c + d*x)] + 390*B*Sin[2*(c + d*x)] -
 (331*I)*A*Sin[4*(c + d*x)] - 285*B*Sin[4*(c + d*x)]))/Tan[c + d*x]^(5/2))*
Sqrt[a + I*a*Tan[c + d*x]])/(315*d)
```

Maple [B] time = 0.048, size = 887, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x)
```

```
[Out] 1/315/d*(a*(1+I*tan(d*x+c)))^(1/2)*a^2/tan(d*x+c)^(9/2)*(-1576*A*(I*a)^(1/2
)*(-I*a)^(1/2)*tan(d*x+c)^4*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+1560*I*B*
(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
-270*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)+480*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*ta
n(d*x+c)))^(1/2)-190*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)*
(1+I*tan(d*x+c)))^(1/2)+1260*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^5*
a+1260*I*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^5*a-315*(I*a)^(1/2)*2^
(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*
a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a+276*A*(I*a)^(1/2)*(-I*a)^(
1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-315*I*(I*a)^(1/2)*2
^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I
*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a-630*ln(1/2*(2*I*a*tan(d*x
+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I
*a)^(1/2)*tan(d*x+c)^5*a+630*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^5*
a+472*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+
c)))^(1/2)-90*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)*tan(d*x+c)-70*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a
)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, al
gorithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.87754, size = 2014, normalized size = 7.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, al
gorithm="fricas")
```

```
[Out] 1/630*(sqrt(2)*((-5168*I*A - 4800*B)*a^2*e^(10*I*d*x + 10*I*c) + (8008*I*A
+ 9240*B)*a^2*e^(8*I*d*x + 8*I*c) + (-5472*I*A - 3600*B)*a^2*e^(6*I*d*x + 6
*I*c) + (-7728*I*A - 6720*B)*a^2*e^(4*I*d*x + 4*I*c) + (8400*I*A + 8400*B)*
a^2*e^(2*I*d*x + 2*I*c) + (-2520*I*A - 2520*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*
I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(
I*d*x + I*c) + 315*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*(d*e^(10*I*
d*x + 10*I*c) - 5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x + 6*I*c) - 10*d*e
^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*
B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c)
 + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c) + sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*
c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) - 315*sqrt((32*I*A^2 + 64*A*B
 - 32*I*B^2)*a^5/d^2)*(d*e^(10*I*d*x + 10*I*c) - 5*d*e^(8*I*d*x + 8*I*c) +
10*d*e^(6*I*d*x + 6*I*c) - 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*d*x + 2*I*
c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)
*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - sqrt((32*I*A^2 + 64*A*B - 32*I*
B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^
2)))/(d*e^(10*I*d*x + 10*I*c) - 5*d*e^(8*I*d*x + 8*I*c) + 10*d*e^(6*I*d*x +
 6*I*c) - 10*d*e^(4*I*d*x + 4*I*c) + 5*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(11/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.71951, size = 336, normalized size = 1.21

$$-\frac{(i-1)\sqrt{-2\,(i\,a\tan\left(dx+c\right)+a)a+2\,a^2}(i\,a\tan\left(dx+c\right)+a)^3a^7+\left((2i+2)\,\left(i\,a\tan\left(dx+c\right)+a\right)^3a^6-(2i+2)\right.}{2\left((i\,a\tan\left(dx+c\right)+a)^7a-8\,(i\,a\tan\left(dx+c\right)+a)^6a^2+27\,(i\,a\tan\left(dx+c\right)+a)^5a^3-50\,(i\,a\tan\left(dx+c\right)+a)^4a^4+55\,(i\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, al
gorithm="giac")
```

```
[Out] -1/2*((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)^3*a^7 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^3*a^6 - (2*I + 2)*(I*a*tan(d*
x + c) + a)^2*a^7)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d
*x + c) + a)*B)/((((I*a*tan(d*x + c) + a)^7*a - 8*(I*a*tan(d*x + c) + a)^6*a
^2 + 27*(I*a*tan(d*x + c) + a)^5*a^3 - 50*(I*a*tan(d*x + c) + a)^4*a^4 + 55
*(I*a*tan(d*x + c) + a)^3*a^5 - 36*(I*a*tan(d*x + c) + a)^2*a^6 + 13*(I*a*t
an(d*x + c) + a)*a^7 - 2*a^8)*d)
```

3.177 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{13}{2}}(c+dx)}\,dx$

Optimal. Leaf size=323

$$-\frac{8a^2(655A-649iB)\sqrt{a+ia\tan(c+dx)}}{3465d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a^2(253B+250iA)\sqrt{a+ia\tan(c+dx)}}{1155d\tan^{\frac{5}{2}}(c+dx)}+\frac{2a^2(212A-209iB)\sqrt{a+ia\tan(c}{693d\tan^{\frac{7}{2}}(c+dx)}$$

```
[Out] ((4 + 4*I)*a^(5/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((14*I)*A + 11*B)*Sqrt[a + I*a*Tan[c
 + d*x]])/(99*d*Tan[c + d*x]^(9/2)) + (2*a^2*(212*A - (209*I)*B)*Sqrt[a + I
*a*Tan[c + d*x]])/(693*d*Tan[c + d*x]^(7/2)) + (4*a^2*((250*I)*A + 253*B)*S
qrt[a + I*a*Tan[c + d*x]])/(1155*d*Tan[c + d*x]^(5/2)) - (8*a^2*(655*A - (6
49*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3465*d*Tan[c + d*x]^(3/2)) - (8*a^2*(
(2155*I)*A + 2167*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3465*d*Sqrt[Tan[c + d*x]]
) - (2*a*A*(a + I*a*Tan[c + d*x])^(3/2))/(11*d*Tan[c + d*x]^(11/2))
```

Rubi [A] time = 1.16084, antiderivative size = 323, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3593, 3598, 12, 3544, 205}

$$-\frac{8a^2(655A-649iB)\sqrt{a+ia\tan(c+dx)}}{3465d\tan^{\frac{3}{2}}(c+dx)}+\frac{4a^2(253B+250iA)\sqrt{a+ia\tan(c+dx)}}{1155d\tan^{\frac{5}{2}}(c+dx)}+\frac{2a^2(212A-209iB)\sqrt{a+ia\tan(c}{693d\tan^{\frac{7}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(13/2)
,x]
```


```
[Out] ((4 + 4*I)*a^(5/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]])/d - (2*a^2*((14*I)*A + 11*B)*Sqrt[a + I*a*Tan[c
 + d*x]])/(99*d*Tan[c + d*x]^(9/2)) + (2*a^2*(212*A - (209*I)*B)*Sqrt[a + I
*a*Tan[c + d*x]])/(693*d*Tan[c + d*x]^(7/2)) + (4*a^2*((250*I)*A + 253*B)*S
qrt[a + I*a*Tan[c + d*x]])/(1155*d*Tan[c + d*x]^(5/2)) - (8*a^2*(655*A - (6
49*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3465*d*Tan[c + d*x]^(3/2)) - (8*a^2*(
(2155*I)*A + 2167*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3465*d*Sqrt[Tan[c + d*x]]
) - (2*a*A*(a + I*a*Tan[c + d*x])^(3/2))/(11*d*Tan[c + d*x]^(11/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{13}{2}}(c+dx)}\,dx = -\frac{2aA(a+ia\tan(c+dx))^{3/2}}{11d\tan^{\frac{11}{2}}(c+dx)} + \frac{2}{11}\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{1}{2}a(14i\right.}{\tan}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} - \frac{2aA(a+ia\tan(c+dx))^{3/2}}{11d\tan^{\frac{11}{2}}(c+dx)}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2a^2(212A-209iB)\sqrt{a+ia}}{693d\tan^{\frac{7}{2}}(c+d}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2a^2(212A-209iB)\sqrt{a+ia}}{693d\tan^{\frac{7}{2}}(c+d}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2a^2(212A-209iB)\sqrt{a+ia}}{693d\tan^{\frac{7}{2}}(c+d}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2a^2(212A-209iB)\sqrt{a+ia}}{693d\tan^{\frac{7}{2}}(c+d}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2a^2(212A-209iB)\sqrt{a+ia}}{693d\tan^{\frac{7}{2}}(c+d}$$

$$= -\frac{2a^2(14iA+11B)\sqrt{a+ia\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2a^2(212A-209iB)\sqrt{a+ia}}{693d\tan^{\frac{7}{2}}(c+d}$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d} - \frac{2a^2(14iA+11B)\sqrt{}}{99d\tan^{\frac{9}{2}}}$$

Mathematica [A] time = 19.3325, size = 328, normalized size = 1.02

$$\frac{4\sqrt{2}a^2(B+iA)e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{d\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} - \frac{a^2\csc^3(c+dx)\sec^2(c+dx)\sqrt{a+ia\tan(c+d}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^
(13/2),x]
```

```
[Out] (4*Sqrt[2]*a^2*(I*A + B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[(a*E^((2*I)*(c
 + d*x)))/(1 + E^((2*I)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((
2*I)*(c + d*x))]])/(d*E^(I*(c + d*x))*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x)))
)/(1 + E^((2*I)*(c + d*x)))]) - (a^2*Csc[c + d*x]^3*Sec[c + d*x]^2*(66*(95*
A - (47*I)*B)*Cos[c + d*x] + (-5225*A + (6743*I)*B)*Cos[3*(c + d*x)] + 3995
*A*Cos[5*(c + d*x)] - (3641*I)*B*Cos[5*(c + d*x)] + (84810*I)*A*Sin[c + d*x
] + 84414*B*Sin[c + d*x] - (42185*I)*A*Sin[3*(c + d*x)] - 43703*B*Sin[3*(c
+ d*x)] + (10925*I)*A*Sin[5*(c + d*x)] + 10571*B*Sin[5*(c + d*x)])*Sqrt[a +
 I*a*Tan[c + d*x]])/(27720*d*Tan[c + d*x]^(5/2))
```

Maple [B] time = 0.046, size = 976, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x)
```

```
[Out] -1/3465/d*(a*(1+I*tan(d*x+c)))^(1/2)*a^2/tan(d*x+c)^(11/2)*(17336*B*(I*a)^(
1/2)*(-I*a)^(1/2)*tan(d*x+c)^5*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-5192*I
*B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)-13860*I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^6*a+5240*A*(I*a)^(1
/2)*(-I*a)^(1/2)*tan(d*x+c)^4*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+2090*I*
B*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)+13860*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^6*a-3000*I*A*(I*a)^(1/
2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-3465*(I*
a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^6*a-3036*B*(I*a)^(1
/2)*(-I*a)^(1/2)*tan(d*x+c)^3*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+17240*I
*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^5*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)+6930*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(
I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^6*a-2120*A*(I*a)^(1/2)*(
-I*a)^(1/2)*tan(d*x+c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+1610*I*A*(I*
a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+3465
*I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^6*a+6930*I*ln
(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+
```

```
a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^6*a+770*B*(I*a)^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+630*A*(a*tan(d*x+c)*(1+I*t
an(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2))/(I*a)^(1/2)/(-I*a)^(1/2)/(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x, al
gorithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.88638, size = 2203, normalized size = 6.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x, al
gorithm="fricas")
```

```
[Out] 1/6930*(8*sqrt(2)*(2*(3730*A - 3553*I*B)*a^2*e^(12*I*d*x + 12*I*c) - 9*(180
5*A - 2013*I*B)*a^2*e^(10*I*d*x + 10*I*c) + 55*(397*A - 337*I*B)*a^2*e^(8*I
*d*x + 8*I*c) + 66*(95*A - 47*I*B)*a^2*e^(6*I*d*x + 6*I*c) - 1386*(15*A - 1
6*I*B)*a^2*e^(4*I*d*x + 4*I*c) + 15015*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) -
3465*(A - I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - 3465*sqrt((-32*I*
A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(12*I*d*x + 12*I*c) - 6*d*e^(10*I*d*
x + 10*I*c) + 15*d*e^(8*I*d*x + 8*I*c) - 20*d*e^(6*I*d*x + 6*I*c) + 15*d*e^
(4*I*d*x + 4*I*c) - 6*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B
)*a^2*e^(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
 + I*c) + I*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*
I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 3465*sqrt((-32*I*A^2 - 64
*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(12*I*d*x + 12*I*c) - 6*d*e^(10*I*d*x + 10*I
*c) + 15*d*e^(8*I*d*x + 8*I*c) - 20*d*e^(6*I*d*x + 6*I*c) + 15*d*e^(4*I*d*x
```

```
 + 4*I*c) - 6*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^
(2*I*d*x + 2*I*c) + (4*I*A + 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sq
rt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
- I*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^
(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(12*I*d*x + 12*I*c) - 6*d*e^(
10*I*d*x + 10*I*c) + 15*d*e^(8*I*d*x + 8*I*c) - 20*d*e^(6*I*d*x + 6*I*c) +
15*d*e^(4*I*d*x + 4*I*c) - 6*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(13/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.71255, size = 360, normalized size = 1.11

$$\frac{(i-1)\sqrt{-2\,(i\,a\tan\left(dx+c\right)+a)a+2\,a^2}(i\,a\tan\left(dx+c\right)+a)^3a^8+\left((2i+2)\,\left(i\,a\tan\left(dx+c\right)\right.\right.}{\left(2i\,(i\,a\tan\left(dx+c\right)+a)^8a-18i\,(i\,a\tan\left(dx+c\right)+a)^7a^2+70i\,(i\,a\tan\left(dx+c\right)+a)^6a^3-154i\,(i\,a\tan\left(dx+c\right)+a)^5a^4+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x, al
gorithm="giac")
```

```
[Out] ((I - 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)^3
*a^8 + ((2*I + 2)*(I*a*tan(d*x + c) + a)^3*a^7 - (2*I + 2)*(I*a*tan(d*x + c
) + a)^2*a^8)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x +
c) + a)*B)/((2*I*(I*a*tan(d*x + c) + a)^8*a - 18*I*(I*a*tan(d*x + c) + a)^7
*a^2 + 70*I*(I*a*tan(d*x + c) + a)^6*a^3 - 154*I*(I*a*tan(d*x + c) + a)^5*a
^4 + 210*I*(I*a*tan(d*x + c) + a)^4*a^5 - 182*I*(I*a*tan(d*x + c) + a)^3*a^
6 + 98*I*(I*a*tan(d*x + c) + a)^2*a^7 - 30*I*(I*a*tan(d*x + c) + a)*a^8 + 4
*I*a^9)*d)
```

3.178 $\int \frac{(a+ia\tan(c+dx))^{5/2}\left(\frac{3bB}{2a}+B\tan(c+dx)\right)}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=190

$$\frac{(2+2i)a^{3/2}B(2a+3ib)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{bB(a+ia\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] (2*(-1)^(3/4)*a^(5/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]])/d + ((2 + 2*I)*a^(3/2)*(2*a + (3*I)*b)*B*ArcTanh[(
(1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a*(
a + (3*I)*b)*B*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]]) - (b*B*(a
 + I*a*Tan[c + d*x])^(3/2))/(d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 0.72894, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {3593, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(2+2i)a^{3/2}B(2a+3ib)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{bB(a+ia\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*((3*b*B)/(2*a) + B*Tan[c + d*x]))/Tan[c +
 d*x]^(5/2),x]
```


```
[Out] (2*(-1)^(3/4)*a^(5/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]])/d + ((2 + 2*I)*a^(3/2)*(2*a + (3*I)*b)*B*ArcTanh[(
(1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/d - (2*a*(
a + (3*I)*b)*B*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]]) - (b*B*(a
 + I*a*Tan[c + d*x])^(3/2))/(d*Tan[c + d*x]^(3/2))
```


Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
```

```
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}\left(\frac{3bB}{2a}+B\tan(c+dx)\right)}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{bB(a+ia\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+\frac{2}{3}\int \frac{(a+ia\tan(c+dx))^{3/2}\left(\frac{3}{2}(a+3\right.}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2a(a+3ib)B\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+ia\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= -\frac{2a(a+3ib)B\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+ia\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}-$$

$$= -\frac{2a(a+3ib)B\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+ia\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}-$$

$$= \frac{(2+2i)a^{3/2}(2a+3ib)B\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(a+3ib)B}{d\sqrt{t}}$$

$$= \frac{(2+2i)a^{3/2}(2a+3ib)B\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(a+3ib)B}{d\sqrt{t}}$$

$$= \frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{(2+2i)a^{3/2}(2a+3ib)B}{}$$

Mathematica [B] time = 10.2212, size = 485, normalized size = 2.55

$$\frac{\cos^3(c+dx)\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}\left(\frac{3bB}{2a}+B\tan(c+dx)\right)\left(\csc(c)(2\cos(2c)-2i\sin(2c))\csc(c+dx)(2a\sin\right.}{d(\cos(dx)+i\sin(dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*((3*b*B)/(2*a) + B*Tan[c + d*x]))/T
an[c + d*x]^(5/2),x]
```

```
[Out] (-2*Sqrt[2]*Sqrt[E^(I*d*x)]*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^(
(2*I)*(c + d*x)))]*(((-4*I)*a + 6*b)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((
2*I)*(c + d*x))]] + I*Sqrt[2]*a*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[-1 +
 E^((2*I)*(c + d*x))]])*(a + I*a*Tan[c + d*x])^(5/2)*((3*b*B)/(2*a) + B*Tan
[c + d*x]))/(d*E^((2*I)*c)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*
x))/(1 + E^((2*I)*(c + d*x)))]*Sec[c + d*x]^(7/2)*(Cos[d*x] + I*Sin[d*x])^(
5/2)*(3*b*Cos[c + d*x] + 2*a*Sin[c + d*x])) + (Cos[c + d*x]^3*((-I)*Csc[c]*
((-2*I)*a*Cos[c] + 7*b*Cos[c] + I*b*Sin[c])*(2*Cos[2*c] - (2*I)*Sin[2*c]) +
 Csc[c + d*x]^2*(-2*b*Cos[2*c] + (2*I)*b*Sin[2*c]) + Csc[c]*Csc[c + d*x]*(2
*Cos[2*c] - (2*I)*Sin[2*c])*(2*a*Sin[d*x] + (7*I)*b*Sin[d*x]))*Sqrt[Tan[c +
 d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*((3*b*B)/(2*a) + B*Tan[c + d*x]))/(d*(C
os[d*x] + I*Sin[d*x])^2*(3*b*Cos[c + d*x] + 2*a*Sin[c + d*x]))
```

Maple [B] time = 0.076, size = 551, normalized size = 2.9

$$\frac{aB}{2d}\left(-i\sqrt{ia}\sqrt{2}\ln\left(-\frac{1}{\tan(dx+c)+i}\left(-2\sqrt{2}\sqrt{-ia}\sqrt{a\tan(dx+c)(1+i\tan(dx+c))}+ia-3a\tan(dx+c)\right)\right)(\tan(dx+c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] 1/2/d*B*a*(-I*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*
a-2*I*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a
)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a^2+2*I*ln(1/2*(2*I*a*tan
(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))
*(-I*a)^(1/2)*tan(d*x+c)^2*a-14*I*tan(d*x+c)*(a*tan(d*x+c)*(1+I*tan(d*x+c))
)^(1/2)*(I*a)^(1/2)*(-I*a)^(1/2)*b+(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*
a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x
+c)+I))*tan(d*x+c)^2*a-2*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a-4*(I
*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)*a-2
*b*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)*(-I*a)^(1/2))*(a*(1+I*
tan(d*x+c)))^(1/2)/tan(d*x+c)^(3/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(
I*a)^(1/2)/(-I*a)^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2
),x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.96486, size = 2410, normalized size = 12.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(4*B*a*b*e^(2*I*d*x + 2*I*c) + 4*I*B*a^2 - 12*B*a*b + (-4*I*B*
a^2 + 16*B*a*b)*e^(4*I*d*x + 4*I*c))*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt
((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) -
(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((32*I*B^2*a^5 -
96*B^2*a^4*b - 72*I*B^2*a^3*b^2)/d^2)*log((sqrt(2)*(-4*I*B*a^2 + 6*B*a*b +
(-4*I*B*a^2 + 6*B*a*b)*e^(2*I*d*x + 2*I*c))*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1
))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
I*c) + d*sqrt((32*I*B^2*a^5 - 96*B^2*a^4*b - 72*I*B^2*a^3*b^2)/d^2)*e^(2*I*
d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(-4*I*B*a^2 + 6*B*a*b)) + (d*e^(4*I*d*x
+ 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((32*I*B^2*a^5 - 96*B^2*a^4*b -
 72*I*B^2*a^3*b^2)/d^2)*log((sqrt(2)*(-4*I*B*a^2 + 6*B*a*b + (-4*I*B*a^2 +
6*B*a*b)*e^(2*I*d*x + 2*I*c))*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - d*sqrt(
(32*I*B^2*a^5 - 96*B^2*a^4*b - 72*I*B^2*a^3*b^2)/d^2)*e^(2*I*d*x + 2*I*c))*
e^(-2*I*d*x - 2*I*c)/(-4*I*B*a^2 + 6*B*a*b)) + sqrt(4*I*B^2*a^5/d^2)*(d*e^(
4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*(B*a^2*e^(2*I*
d*x + 2*I*c) + B*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + I*sqrt(4*I*B^2*
a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(B*a^2)) - sqrt(4*I*B^
2*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(
2)*(B*a^2*e^(2*I*d*x + 2*I*c) + B*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sq
rt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
```

```
- I*sqrt(4*I*B^2*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(B*a^
2)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)**(5
/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.63756, size = 258, normalized size = 1.36

$$-\frac{-3i\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^2}\left(i\,a\tan\left(dx+c\right)+a\right)^3a^2b-2\left(\left(i\,a\tan\left(dx+c\right)+a\right)^3a^2-\left(i\,a\tan\left(dx+c\right)+a\right)^2a^3\right)}{2\left(\left(i+1\right)\,\left(i\,a\tan\left(dx+c\right)+a\right)^4-\left(5i+5\right)\,\left(i\,a\tan\left(dx+c\right)+a\right)^3a+\left(9i+9\right)\,\left(i\,a\tan\left(dx+c\right)+a\right)^2a^2-\left(7i+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2
),x, algorithm="giac")
```

```
[Out] -1/2*(-3*I*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)
^3*a^2*b - 2*((I*a*tan(d*x + c) + a)^3*a^2 - (I*a*tan(d*x + c) + a)^2*a^3)*
sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a))/(((I + 1)
*(I*a*tan(d*x + c) + a)^4 - (5*I + 5)*(I*a*tan(d*x + c) + a)^3*a + (9*I + 9
)*(I*a*tan(d*x + c) + a)^2*a^2 - (7*I + 7)*(I*a*tan(d*x + c) + a)*a^3 + (2*
I + 2)*a^4)*d)
```

3.179 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=205

$$\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(-1)^{3/4}(-B+2iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}-\frac{(A+2iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad}-$$

```
[Out] ((-1)^(3/4)*((2*I)*A - B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sq
rt[a + I*a*Tan[c + d*x]]])/(Sqrt[a]*d) - ((1/2 - I/2)*(A - I*B)*ArcTanh[((1
 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(Sqrt[a]*d)
+ ((I*A - B)*Tan[c + d*x]^(3/2))/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((A + (2*
I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(a*d)
```

Rubi [A] time = 0.690517, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {3595, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(-1)^{3/4}(-B+2iA)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}-\frac{(A+2iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad}-$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] ((-1)^(3/4)*((2*I)*A - B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sq
rt[a + I*a*Tan[c + d*x]]])/(Sqrt[a]*d) - ((1/2 - I/2)*(A - I*B)*ArcTanh[((1
 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(Sqrt[a]*d)
+ ((I*A - B)*Tan[c + d*x]^(3/2))/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((A + (2*
I)*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(a*d)
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{\int \sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(\frac{3}{2}a(iA-B)+a\right.}{a^2}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(A+2iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{\int \frac{\sqrt{a}}{}}{}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(A+2iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{(A-}{}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(A+2iB)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad} + \frac{(2A}{}$$

$$= \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(A+}{}$$

$$= \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(A+}{}$$

$$= -\frac{\sqrt[4]{-1}(2A+iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{}}{\sqrt{a+i}}\right.}{\sqrt{a}d}$$

Mathematica [A] time = 4.77915, size = 277, normalized size = 1.35

$$\frac{(A+B\tan(c+dx))\left(\frac{\sqrt{2}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\left((B+iA)\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)+\sqrt{2}(B-2iA)\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\sqrt{\sec(c+dx)}}-2\sqrt{\tan(c+dx)}(-B\,\mathrm{si}\ldots}{2d\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*
x]],x]
```

```
[Out] (((Sqrt[2]*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I
)*(c + d*x)))]*((I*A + B)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d
*x))]] + Sqrt[2]*((-2*I)*A + B)*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[-1 +
 E^((2*I)*(c + d*x))]]))/(Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2
*I)*(c + d*x)))]*Sqrt[Sec[c + d*x]]) - 2*((A + (2*I)*B)*Cos[c + d*x] - B*Si
n[c + d*x])*Sqrt[Tan[c + d*x]])*(A + B*Tan[c + d*x]))/(2*d*(A*Cos[c + d*x]
+ B*Sin[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.101, size = 1141, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/4/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*(8*I*B*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)*(I*a)^(1/2)*(-I*a)^(1/2)-4*I*B*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2-2*I*B*ln(1/2*(2*I*a*tan
(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))
*(-I*a)^(1/2)*a+I*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x
+c)^2*a+B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-I*
A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+2*I*B*ln(1/2*(2*I*a*tan
(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))
*(-I*a)^(1/2)*tan(d*x+c)^2*a-8*I*A*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c
```

```
)*a+2*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+4*A*ln
(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+
a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a+4*I*A*(a*tan(d*x+c)*(1+I*tan(d*
x+c)))^(1/2)*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+c)-2*I*B*(I*a)^(1/2)*2^(1/2)*
ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*
tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1
/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/
(tan(d*x+c)+I))*a+4*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a-12*B*(I*a
)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-4*A*l
n(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)
+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a+4*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(
-I*a)^(1/2)*(I*a)^(1/2))/a/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+
c)+I)^2/(I*a)^(1/2)/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 3.03536, size = 2268, normalized size = 11.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] -1/4*(a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*lo
g((I*a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + s
qrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c
) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d
```

```
*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((-2*I*A^2 - 4*A*B + 2
*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((-I*a*d*sqrt((-2*I*A^2 - 4*A*B + 2
*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*
c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A
+ 4*B)) + a*d*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*
log((sqrt(2)*((-416*I*A + 208*B)*e^(2*I*d*x + 2*I*c) - 416*I*A + 208*B)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) + 1))*e^(I*d*x + I*c) + (312*I*a*d*e^(2*I*d*x + 2*I*c) - 104*I*a
*d)*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a*d^2)))/((-1210*I*A + 605*B)*e^(2*I*d
*x + 2*I*c) - 1210*I*A + 605*B)) - a*d*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a*d
^2))*e^(2*I*d*x + 2*I*c)*log((sqrt(2)*((-416*I*A + 208*B)*e^(2*I*d*x + 2*I*
c) - 416*I*A + 208*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (-312*I*a*d*e^(
2*I*d*x + 2*I*c) + 104*I*a*d)*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a*d^2)))/((-
1210*I*A + 605*B)*e^(2*I*d*x + 2*I*c) - 1210*I*A + 605*B)) + 2*sqrt(2)*((A
+ 3*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
)*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.180 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=156

$$\frac{(-B+iA)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}-\frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

```
[Out] (-2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*
a*Tan[c + d*x]]])/(Sqrt[a]*d) - ((1/2 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqr
t[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + ((I*A -
 B)*Sqrt[Tan[c + d*x]])/(d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.480029, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3595, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(-B+iA)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}-\frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```


```
[Out] (-2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*
a*Tan[c + d*x]]])/(Sqrt[a]*d) - ((1/2 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqr
t[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + ((I*A -
 B)*Sqrt[Tan[c + d*x]])/(d*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

<u>Rule 3544</u>

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

<u>Rule 205</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

<u>Rule 3599</u>

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

<u>Rule 63</u>

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

<u>Rule 217</u>

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

<u>Rule 203</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
```

```
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{(iA-B)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} - \frac{\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(iA-B)+iaB\tan(c+dx)\right)}{\sqrt{\tan(c+dx)}}\,dx}{a^2}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} + \frac{B\int \frac{(a-ia\tan(c+dx))\sqrt{a+ia\tan(c+dx)}}{\sqrt{\tan(c+dx)}}\,dx}{a^2} - \frac{(iA+B)\int \frac{\sqrt{a+}}{\sqrt{}}}{2a}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(a(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{-ia-2a^2x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

$$= -\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(2B}{}$$

$$= -\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(2B}{}$$

$$= -\frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} - \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c}}{\sqrt{a+ia\tan(c+}}\right.}{\sqrt{a}d}$$

Mathematica [A] time = 3.56046, size = 183, normalized size = 1.17

$$\frac{\sqrt{\tan(c+dx)}\left(i(A+iB)\sqrt{-1+e^{2i(c+dx)}} - i(A-iB)e^{i(c+dx)}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right) + 2\sqrt{2}Be^{i(c+dx)}\tanh^{-1}\left(\frac{\sqrt{2}e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\right)}{d\sqrt{-1+e^{2i(c+dx)}}\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*
x]],x]
```

```
[Out] ((I*(A + I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))] - I*(A - I*B)*E^(I*(c + d*x))*
ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]] + 2*Sqrt[2]*B*E^(I*
(c + d*x))*ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[-1 + E^((2*I)*(c + d*x))]
])*Sqrt[Tan[c + d*x]])/(d*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[a + I*a*Tan[c
 + d*x]])
```

Maple [B] time = 0.09, size = 900, normalized size = 5.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/4/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)/a*(I*B*(I*a)^(1/2)*2^(1/2
)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*
a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+2*I*A*(I*a)^(1/2)*2^(1/2)*ln(-
(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(
d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*
(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan
(d*x+c)+I))*tan(d*x+c)^2*a-I*B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(
1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+
I))*a-8*I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)*a+4*I*B*(I*a)^(1/2)*(
-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+2*B*2^(1/2)*(I
*a)^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+4*B*ln(1/2*(2*I*a*tan(d*
x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-
I*a)^(1/2)*tan(d*x+c)^2*a-4*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)
^(1/2)*(-I*a)^(1/2)+A*2^(1/2)*(I*a)^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+4*A
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)-
4*B*(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a+4*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)*(-I*a)^(1/2)*(I*a)^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d
*x+c)+I)^2/(I*a)^(1/2)/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.80482, size = 1989, normalized size = 12.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] -1/4*(a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log
((a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(
2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x +
 I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^
2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(-(a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/
(a*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A
 + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B))
- a*d*sqrt(-4*I*B^2/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(52/605*(4*sqrt(2)*(B*e
^(2*I*d*x + 2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d
*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (3*a*d*e^(2*I
*d*x + 2*I*c) - a*d)*sqrt(-4*I*B^2/(a*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B)) +
 a*d*sqrt(-4*I*B^2/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(52/605*(4*sqrt(2)*(B*e^
(2*I*d*x + 2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - (3*a*d*e^(2*I*
d*x + 2*I*c) - a*d)*sqrt(-4*I*B^2/(a*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B)) -
sqrt(2)*((2*I*A - 2*B)*e^(2*I*d*x + 2*I*c) + 2*I*A - 2*B)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\sqrt{\tan{(c + dx)}}}{\sqrt{a\,(i\tan{(c + dx)} + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/sqrt(a*(I*tan(c + d*x) + 1
)), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.181 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=99

$$\frac{(A+iB)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

```
[Out] ((1/2 - I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(d*Sqrt[
a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.193384, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3596, 12, 3544, 205}

$$\frac{(A+iB)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]]),x]
```

```
[Out] ((1/2 - I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(d*Sqrt[
a + I*a*Tan[c + d*x]])
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx &= \frac{(A+iB)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}+\frac{\int \frac{a(A-iB)\sqrt{a+ia\tan(c+dx)}}{2\sqrt{\tan(c+dx)}}\,dx}{a^2}\\
&= \frac{(A+iB)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(A-iB)\int \frac{\sqrt{a+ia\tan(c+dx)}}{\sqrt{\tan(c+dx)}}\,dx}{2a}\\
&= \frac{(A+iB)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(a(iA+B))\,\mathrm{Subst}\left(\int \frac{1}{-ia-2a^2x^2}\,dx,x,\frac{\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}\\
&= -\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}+\frac{(A+iB)\sqrt{\tan(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}
\end{aligned}$$

Mathematica [A] time = 3.06364, size = 123, normalized size = 1.24

$$\frac{\sqrt{\tan(c+dx)}\left((A+iB)\sqrt{-1+e^{2i(c+dx)}}+(A-iB)e^{i(c+dx)}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\right)}{d\sqrt{-1+e^{2i(c+dx)}}\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x
]]),x]
```

```
[Out] (((A + I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))] + (A - I*B)*E^(I*(c + d*x))*ArcT
anh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[Tan[c + d*x]])/(d
*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.094, size = 639, normalized size = 6.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] -1/4/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*(I*A*2^(1/2)*ln(-(-2*2^(
1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))
/(tan(d*x+c)+I))*tan(d*x+c)^2*a-2*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*t
an(d*x+c)*a+B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-I*A*2^(1/2
)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*
a*tan(d*x+c))/(tan(d*x+c)+I))*a+4*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
*(-I*a)^(1/2)*tan(d*x+c)+2*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)
*a+4*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)-B*2^(1/2)*ln(-(
-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d
*x+c))/(tan(d*x+c)+I))*a-4*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(
1/2)*tan(d*x+c)+4*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2))/a/(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)^2/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.04757, size = 1183, normalized size = 11.95

$$\left(ad\sqrt{\frac{-2i\,A^2-4\,AB+2i\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}\log\left(\frac{\left(i\,ad\sqrt{\frac{-2i\,A^2-4\,AB+2i\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}+i\,A+B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,d}}{4i\,A+4\,B}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/4*(a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log
((I*a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sq
rt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c)
 + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((-2*I*A^2 - 4*A*B + 2*
I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((-I*a*d*sqrt((-2*I*A^2 - 4*A*B + 2*
I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c
) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A +
 4*B)) + 2*sqrt(2)*((A + I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
+ 1))*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A+B\tan{(c+dx)}}{\sqrt{a\,(i\tan{(c+dx)}+1)}\sqrt{\tan{(c+dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(sqrt(a*(I*tan(c + d*x) + 1))*sqrt(tan(c + d*
x))), x)
```

Giac [B] time = 1.35289, size = 207, normalized size = 2.09

$$\frac{-(i+1)\sqrt{-2\left(i\,a\tan\left(dx+c\right)+a\right)a+2\,a^2}\left(i\,a\tan\left(dx+c\right)+a\right)a^2+\left((2i-2)\,\left(i\,a\tan\left(dx+c\right)+a\right)a-(2i-2)\,a^2\right)\sqrt{-2\,(}}{2\left(\left(i\,a\tan\left(dx+c\right)+a\right)^3a-3\left(i\,a\tan\left(dx+c\right)+a\right)^2a^2+2\left(i\,a\tan\left(dx+c\right)+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] 1/2*(-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)*a^2 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a - (2*I - 2)*a^2)*sqrt(-2*(I*a
*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*x
+ c) + a)^3*a - 3*(I*a*tan(d*x + c) + a)^2*a^2 + 2*(I*a*tan(d*x + c) + a)*a
^3)*d)
```

3.182 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=143

$$\frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}-\frac{(3A+iB)\sqrt{a+ia\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

```
[Out] ((1/2 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + (A + I*B)/(d*Sqrt[Tan[c + d*x]]*Sqrt[a
+ I*a*Tan[c + d*x]]) - ((3*A + I*B)*Sqrt[a + I*a*Tan[c + d*x]])/(a*d*Sqrt[T
an[c + d*x]])
```

Rubi [A] time = 0.365383, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$\frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}-\frac{(3A+iB)\sqrt{a+ia\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]]),x]
```

```
[Out] ((1/2 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + (A + I*B)/(d*Sqrt[Tan[c + d*x]]*Sqrt[a
+ I*a*Tan[c + d*x]]) - ((3*A + I*B)*Sqrt[a + I*a*Tan[c + d*x]])/(a*d*Sqrt[T
an[c + d*x]])
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}} + \frac{\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(3A+iB)-a(iA-B)\tan(c+dx)\right.}{\tan^{\frac{3}{2}}(c+dx)}}{a^2}$$

$$= \frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+iB)\sqrt{a+ia\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} + \frac{2\int \frac{a^2(i\ldots}{\ldots}}{\ldots}$$

$$= \frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+iB)\sqrt{a+ia\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} + \frac{(iA+B\ldots}{\ldots}$$

$$= \frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+iB)\sqrt{a+ia\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} + \frac{(a(A-\ldots}{\ldots}$$

$$= \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{A+iB}{d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+\ldots}}$$

Mathematica [A] time = 3.19658, size = 181, normalized size = 1.27

$$\frac{(A+B\tan(c+dx))\left(\frac{(A-iB)\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} + \frac{-4A\cos(c+dx)+2(B-3iA)\sin(c+dx)}{\sqrt{\tan(c+dx)}}\right)}{2d\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x
]]),x]
```

```
[Out] ((((A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1
 + E^((2*I)*(c + d*x))]])/Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2
*I)*(c + d*x)))] + (-4*A*Cos[c + d*x] + 2*((-3*I)*A + B)*Sin[c + d*x])/Sqrt
[Tan[c + d*x]])*(A + B*Tan[c + d*x]))/(2*d*(A*Cos[c + d*x] + B*Sin[c + d*x]
)*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.1, size = 701, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x)
```

```
[Out] -1/4/d*(a*(1+I*tan(d*x+c)))^(1/2)*(I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*
tan(d*x+c)^3*a+2*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-A*2
^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I
*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-I*B*2^(1/2)*ln(-(-2*2^(1/
2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(
tan(d*x+c)+I))*tan(d*x+c)*a+4*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I
*a)^(1/2)*tan(d*x+c)^2+2*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+
c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2
*a-20*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)+A*2
^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I
*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+12*A*(a*tan(d*x+c)*(1+I*tan
(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+4*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)-8*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*
(-I*a)^(1/2))/a/tan(d*x+c)^(1/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-ta
n(d*x+c)+I)^2/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.06693, size = 1330, normalized size = 9.3

$$\frac{\sqrt{2}\left((-10i\,A+2\,B)e^{(4i\,dx+4i\,c)}-8i\,Ae^{(2i\,dx+2i\,c)}+2i\,A-2\,B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}+\left(ade^{(4i\,dx+4i\,c)}-ade^{(2i\,dx}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/4*(sqrt(2)*((-10*I*A + 2*B)*e^(4*I*d*x + 4*I*c) - 8*I*A*e^(2*I*d*x + 2*I*
c) + 2*I*A - 2*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (a*d*e^(4*I*d*x + 4
*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*
log((a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sq
rt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c)
 + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - (a*d*e^(4*I*d*x + 4*I*c) - a*d*
e^(2*I*d*x + 2*I*c))*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*log(-(a*d*sq
rt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A
 + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt
((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e
^(-I*d*x - I*c)/(4*I*A + 4*B)))/(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x +
 2*I*c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan{(c + dx)}}{\sqrt{a\,(i\tan{(c + dx)} + 1)}\tan^{\frac{3}{2}}{(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2)/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(sqrt(a*(I*tan(c + d*x) + 1))*tan(c + d*x)**(
3/2)), x)
```

Giac [A] time = 1.45652, size = 234, normalized size = 1.64

$$\frac{-(i+1)\sqrt{-2\,(i\,a\tan{(dx+c)}+a)a+2\,a^2}(i\,a\tan{(dx+c)}+a)a^3+\left((2i-2)\,(i\,a\tan{(dx+c)}+a)a^2-(2i-2)\,a^3\right)\sqrt{-2\,(i}}{\left(-2i\,(i\,a\tan{(dx+c)}+a)^4a+8i\,(i\,a\tan{(dx+c)}+a)^3a^2-10i\,(i\,a\tan{(dx+c)}+a)^2a^3+4i\,(i\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x, alg
orithm="giac")
```

```
[Out] (-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*
a^3 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a^2 - (2*I - 2)*a^3)*sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/((-2*I*(I*a*tan(d
*x + c) + a)^4*a + 8*I*(I*a*tan(d*x + c) + a)^3*a^2 - 10*I*(I*a*tan(d*x + c
) + a)^2*a^3 + 4*I*(I*a*tan(d*x + c) + a)*a^4)*d)
```

3.183 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=191

$$-\frac{(5A+3iB)\sqrt{a+ia\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)}+\frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}+\frac{(-9B+7iA)\sqrt{a+ia\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(B$$

```
[Out] ((1/2 + I/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + (A + I*B)/(d*Tan[c + d*x]^(3/2)*Sqrt[a
+ I*a*Tan[c + d*x]]) - ((5*A + (3*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d*
Tan[c + d*x]^(3/2)) + (((7*I)*A - 9*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d*S
qrt[Tan[c + d*x]])
```

Rubi [A] time = 0.545859, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$-\frac{(5A+3iB)\sqrt{a+ia\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)}+\frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}+\frac{(-9B+7iA)\sqrt{a+ia\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(B$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]]),x]
```


```
[Out] ((1/2 + I/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + (A + I*B)/(d*Tan[c + d*x]^(3/2)*Sqrt[a
+ I*a*Tan[c + d*x]]) - ((5*A + (3*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d*
Tan[c + d*x]^(3/2)) + (((7*I)*A - 9*B)*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d*S
qrt[Tan[c + d*x]])
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
```

```
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} + \frac{\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(5A+3iB)-2a(iA-B)\tan(c+d\ldots\right.}{\tan^{\frac{5}{2}}(c+dx)}}{a^2}$$

$$= \frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+3iB)\sqrt{a+ia\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2\int \ldots}{\ldots}$$

$$= \frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+3iB)\sqrt{a+ia\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{(7iA-\ldots}{\ldots}$$

$$= \frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+3iB)\sqrt{a+ia\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{(7iA-\ldots}{\ldots}$$

$$= \frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+3iB)\sqrt{a+ia\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{(7iA-\ldots}{\ldots}$$

$$= \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{A+iB}{d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+\ldots}}$$

Mathematica [A] time = 3.80479, size = 221, normalized size = 1.16

$$\frac{e^{-i(c+dx)}(A+B\tan(c+dx))\left(3(B+iA)e^{i(c+dx)}\left(-1+e^{2i(c+dx)}\right)^{3/2}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)+iA\left(-18e^{2i(c+dx)}+7e^{4i(c+dx)}+3\right)-\ldots}{6d\left(-1+e^{2i(c+dx)}\right)\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x
]]),x]
```

```
[Out] ((-3*B*(1 - 6*E^((2*I)*(c + d*x)) + 5*E^((4*I)*(c + d*x))) + I*A*(3 - 18*E^
((2*I)*(c + d*x)) + 7*E^((4*I)*(c + d*x))) + 3*(I*A + B)*E^(I*(c + d*x))*(-
1 + E^((2*I)*(c + d*x)))^(3/2)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(
c + d*x))]])*(A + B*Tan[c + d*x]))/(6*d*E^(I*(c + d*x))*(-1 + E^((2*I)*(c +
 d*x)))*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[Tan[c + d*x]]*Sqrt[a + I*a*T
an[c + d*x]])
```

Maple [B] time = 0.103, size = 746, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x)
```

```
[Out] 1/12/d*(a*(1+I*tan(d*x+c)))^(1/2)/a/tan(d*x+c)^(3/2)*(-3*I*A*2^(1/2)*ln(-(-
2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*
x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-36*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(
1/2)*(-I*a)^(1/2)*tan(d*x+c)^3-6*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*ta
n(d*x+c)^3*a+3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*ta
n(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+36*A*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+28*I*A*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3+3*I*A*2^(1/2)*ln(
-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan
(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+6*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^
(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)
+I))*tan(d*x+c)^3*a+60*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/
2)*tan(d*x+c)^2-3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+24*B
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)+8*A*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)/(-tan(d*x+c)+I)^2/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.08726, size = 1523, normalized size = 7.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(2*sqrt(2)*((7*A + 15*I*B)*e^(6*I*d*x + 6*I*c) - (11*A + 3*I*B)*e^(4*
I*d*x + 4*I*c) - 15*(A + I*B)*e^(2*I*d*x + 2*I*c) + 3*A + 3*I*B)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c) + 3*(a*d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x +
 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2
))*log((I*a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c
) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x +
2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e
^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*(a*d*e^(6*I*d*x + 6*I*c
) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-2*I*A^2 - 4
*A*B + 2*I*B^2)/(a*d^2))*log((-I*a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d
^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B
)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2
*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)))/(a*
d*e^(6*I*d*x + 6*I*c) - 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c)
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2)/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.4823, size = 258, normalized size = 1.35

$$\frac{(i+1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)a^4+\left(-(2i-2)\,(i\,a\tan(dx+c)+a)a^3+(2i-2)\,a^4\right)\sqrt{-2\,(i}}{2\left((i\,a\tan(dx+c)+a)^5a-5\,(i\,a\tan(dx+c)+a)^4a^2+9\,(i\,a\tan(dx+c)+a)^3a^3-7\,(i\,a\tan(dx+c)+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x, alg
orithm="giac")
```

```
[Out] 1/2*((I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
a)*a^4 + (-(2*I - 2)*(I*a*tan(d*x + c) + a)*a^3 + (2*I - 2)*a^4)*sqrt(-2*(I
*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*
x + c) + a)^5*a - 5*(I*a*tan(d*x + c) + a)^4*a^2 + 9*(I*a*tan(d*x + c) + a)
^3*a^3 - 7*(I*a*tan(d*x + c) + a)^2*a^4 + 2*(I*a*tan(d*x + c) + a)*a^5)*d)
```

3.184 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=237

$$\frac{(-25B+23iA)\sqrt{a+ia\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)}-\frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)}+\frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}+\frac{(61A+35}{15a}$$

```
[Out] ((-1/2 - I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + (A + I*B)/(d*Tan[c + d*x]^(5/2)*Sqrt[a
 + I*a*Tan[c + d*x]]) - ((7*A + (5*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(5*a*d
*Tan[c + d*x]^(5/2)) + (((23*I)*A - 25*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*a
*d*Tan[c + d*x]^(3/2)) + ((61*A + (35*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15
*a*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.739402, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$\frac{(-25B+23iA)\sqrt{a+ia\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)}-\frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)}+\frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}+\frac{(61A+35}{15a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(7/2)*Sqrt[a + I*a*Tan[c + d*x]]),x]
```



```
[Out] ((-1/2 - I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(Sqrt[a]*d) + (A + I*B)/(d*Tan[c + d*x]^(5/2)*Sqrt[a
 + I*a*Tan[c + d*x]]) - ((7*A + (5*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(5*a*d
*Tan[c + d*x]^(5/2)) + (((23*I)*A - 25*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15*a
*d*Tan[c + d*x]^(3/2)) + ((61*A + (35*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(15
*a*d*Sqrt[Tan[c + d*x]])
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
```

```
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} + \frac{\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(7A+5iB)-3a(iA-B)\tan(c+a\right.}{\tan^{\frac{7}{2}}(c+dx)}}{a^2}$$

$$= \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2\int \frac{\sqrt{a}}{}}{}$$

$$= \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{(23iA}{}$$

$$= \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{(23iA}{}$$

$$= \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{(23iA}{}$$

$$= \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}} - \frac{(7A+5iB)\sqrt{a+ia\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{(23iA}{}$$

$$= -\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d} + \frac{A+iB}{d\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+}}$$

Mathematica [A] time = 5.09103, size = 241, normalized size = 1.02

$$\frac{(A+B\tan(c+dx))\left(-\frac{(A-iB)\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}} - \frac{\csc^2(c+dx)(-5(2A+iB)\cos(c+dx)+(22A+5iB)\cos(3(c+dx))+\sin(c+dx)((-25B+5}{15\sqrt{\tan(c+dx)}}\right.}{2d\sqrt{a+ia\tan(c+dx)}(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(7/2)*Sqrt[a + I*a*Tan[c + d*x
]]),x]
```

```
[Out] ((-(((A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[
-1 + E^((2*I)*(c + d*x))]])/Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^(
```

```
(2*I)*(c + d*x)))]) - (Csc[c + d*x]^2*(-5*(2*A + I*B)*Cos[c + d*x] + (22*A
+ (5*I)*B)*Cos[3*(c + d*x)] + (9*((-7*I)*A + 5*B) + ((59*I)*A - 25*B)*Cos[2
*(c + d*x)])*Sin[c + d*x]))/(15*Sqrt[Tan[c + d*x]]))*(A + B*Tan[c + d*x]))/
(2*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.098, size = 821, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x)
```

```
[Out] 1/60/d*(a*(1+I*tan(d*x+c)))^(1/2)*(15*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I
))*tan(d*x+c)^5*a+30*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a
-15*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a-15*I*B*2^(1/2)*ln(
-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan
(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a+140*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+
c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4+30*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I
))*tan(d*x+c)^4*a-396*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2
)*tan(d*x+c)^3+15*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a+244*
A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4+180*B*(a*
tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3+16*I*A*tan(d*x
+c)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)-144*A*(a*tan(d*x+c)*
(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+40*B*(a*tan(d*x+c)*(1+I*t
an(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)+24*A*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)*(-I*a)^(1/2))/a/tan(d*x+c)^(5/2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)/(-tan(d*x+c)+I)^2/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.15469, size = 1694, normalized size = 7.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x, alg
orithm="fricas")
```

```
[Out] 1/60*(sqrt(2)*((206*I*A - 70*B)*e^(8*I*d*x + 8*I*c) + (-204*I*A + 180*B)*e^
(6*I*d*x + 6*I*c) + (-80*I*A + 40*B)*e^(4*I*d*x + 4*I*c) + (300*I*A - 180*B
)*e^(2*I*d*x + 2*I*c) - 30*I*A + 30*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sq
rt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
- 15*(a*d*e^(8*I*d*x + 8*I*c) - 3*a*d*e^(6*I*d*x + 6*I*c) + 3*a*d*e^(4*I*d*
x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d
^2))*log((a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)
 + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2
*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^
(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) + 15*(a*d*e^(8*I*d*x + 8*I*c
) - 3*a*d*e^(6*I*d*x + 6*I*c) + 3*a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x
+ 2*I*c))*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*log(-(a*d*sqrt((2*I*A^2
 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*
I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I
*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x -
I*c)/(4*I*A + 4*B)))/(a*d*e^(8*I*d*x + 8*I*c) - 3*a*d*e^(6*I*d*x + 6*I*c) +
 3*a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2)/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.45037, size = 282, normalized size = 1.19

$$\frac{(i+1)\,\sqrt{-2\,(i\,a\tan\left(dx+c\right)+a)a+2\,a^{2}}(i\,a\tan\left(dx+c\right)+a)a^{5}+\left(-\left(2i-2\right)\,\left(i\,a\tan\left(dx+c\right)+a\right)a^{4}+\left(2i-2\right)\,a^{5}\right)\sqrt{}}{\left(-2i\,(i\,a\tan\left(dx+c\right)+a)^{6}a+12i\,(i\,a\tan\left(dx+c\right)+a)^{5}a^{2}-28i\,(i\,a\tan\left(dx+c\right)+a)^{4}a^{3}+32i\,(i\,a\tan\left(dx+c\right)+a)^{3}a^{4}-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x, alg
orithm="giac")
```

```
[Out] ((I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*a
^5 + (-(2*I - 2)*(I*a*tan(d*x + c) + a)*a^4 + (2*I - 2)*a^5)*sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/((-2*I*(I*a*tan(d
*x + c) + a)^6*a + 12*I*(I*a*tan(d*x + c) + a)^5*a^2 - 28*I*(I*a*tan(d*x +
c) + a)^4*a^3 + 32*I*(I*a*tan(d*x + c) + a)^3*a^4 - 18*I*(I*a*tan(d*x + c)
+ a)^2*a^5 + 4*I*(I*a*tan(d*x + c) + a)*a^6)*d)
```

3.185 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=203

$$-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{2(-1)^{3/4}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(A+3}{2ad\sqrt{a}}$$

```
[Out] (2*(-1)^(3/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]])/(a^(3/2)*d) - ((1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt
[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(a^(3/2)*d) + ((I*A -
B)*Tan[c + d*x]^(3/2))/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((A + (3*I)*B)*
Sqrt[Tan[c + d*x]])/(2*a*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.668543, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3595, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{2(-1)^{3/4}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(A+3}{2ad\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),
x]
```


```
[Out] (2*(-1)^(3/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]])/(a^(3/2)*d) - ((1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt
[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(a^(3/2)*d) + ((I*A -
B)*Tan[c + d*x]^(3/2))/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((A + (3*I)*B)*
Sqrt[Tan[c + d*x]])/(2*a*d*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} - \frac{\int \frac{\sqrt{\tan(c+dx)}\left(\frac{3}{2}a(iA-B)+3iaB\tan(c+dx)\right)}{\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A+3iB)\sqrt{\tan(c+dx)}}{2ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \frac{\sqrt{a+ia\tan(c+dx)}\left(-\frac{3}{4}a^2(A+\right.}{\sqrt{\tan(c+}}}{3a^4}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A+3iB)\sqrt{\tan(c+dx)}}{2ad\sqrt{a+ia\tan(c+dx)}} - \frac{(A-iB)\int \frac{\sqrt{a+ia\tan(c+dx}}{\sqrt{\tan(c+dx)}}}{4a^2}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A+3iB)\sqrt{\tan(c+dx)}}{2ad\sqrt{a+ia\tan(c+dx)}} - \frac{(iB)\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+iax}}\right.}{ad}$$

$$= \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A}{2ad}$$

$$= \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A}{2ad}$$

$$= \frac{2(-1)^{3/4}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+}}{\sqrt{a+ia\tan(c+d}}\right.}{a^{3/2}d}$$

Mathematica [A] time = 6.14975, size = 285, normalized size = 1.4

$$\frac{e^{-i(c+dx)}\sqrt{\tan(c+dx)}\sec^{\frac{3}{2}}(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(-4iAe^{2i(c+dx)}+iA+10Be^{2i(c+dx)}-B\right)+3(B+iA)e^{3i(c+dx)}\tanh^{-1}\left(\right.\right.}{6\sqrt{2}ad\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(3/2),x]
```

```
[Out] ((Sqrt[-1 + E^((2*I)*(c + d*x))]*(I*A - B - (4*I)*A*E^((2*I)*(c + d*x)) + 1
0*B*E^((2*I)*(c + d*x))) + 3*(I*A + B)*E^((3*I)*(c + d*x))*ArcTanh[E^(I*(c
+ d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]] - 12*Sqrt[2]*B*E^((3*I)*(c + d*x))*
ArcTanh[(Sqrt[2]*E^(I*(c + d*x)))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sec[c +
d*x]^(3/2)*Sqrt[Tan[c + d*x]])/(6*Sqrt[2]*a*d*E^(I*(c + d*x))*Sqrt[-1 + E^(
(2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*(-I + Tan
[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.068, size = 1223, normalized size = 6.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/24*I/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)/a^2*(-72*I*B*ln(1/2*(2
*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a
)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a+20*A*(I*a)^(1/2)*(-I*a)^(1/2)*tan(d*x+
c)^2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+9*I*A*(I*a)^(1/2)*2^(1/2)*ln(-(-
2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*
x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-3*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2
)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(t
an(d*x+c)+I))*tan(d*x+c)^3*a-36*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*
(1+I*tan(d*x+c)))^(1/2)+3*I*B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I
))*tan(d*x+c)^3*a+44*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*
x+c)))^(1/2)*tan(d*x+c)^2+9*B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I
))*tan(d*x+c)^2*a+24*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*
x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^3*a+24*I*B
*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/
2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*a-3*I*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)
*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(ta
n(d*x+c)+I))*a+9*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(
d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+
c)*a-32*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*
tan(d*x+c)-9*I*B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)
*a-3*B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*
tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a-72*B*ln(1/2*(2*I*a
*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1
```

```
/2))*(-I*a)^(1/2)*tan(d*x+c)*a+80*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*
(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-12*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)*(-I*a)^(1/2)*(I*a)^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*
x+c)+I)^3/(I*a)^(1/2)/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.86375, size = 2169, normalized size = 10.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*
x + 4*I*c)*log((2*I*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2)
)*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqr
t(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*l
og((-2*I*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(2*I*d*
x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*a^2*d*sqrt(4*I
*B^2/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(1/605*(208*sqrt(2)*(B*e^(2*I*d*x +
2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c)
+ I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (156*I*a^2*d*e^(2*I*d*x +
 2*I*c) - 52*I*a^2*d)*sqrt(4*I*B^2/(a^3*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B))
 + 3*a^2*d*sqrt(4*I*B^2/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(1/605*(208*sqrt(
```

```
2)*(B*e^(2*I*d*x + 2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (-156*
I*a^2*d*e^(2*I*d*x + 2*I*c) + 52*I*a^2*d)*sqrt(4*I*B^2/(a^3*d^2)))/(B*e^(2*
I*d*x + 2*I*c) + B)) - sqrt(2)*(2*(2*A + 5*I*B)*e^(4*I*d*x + 4*I*c) + 3*(A
+ 3*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)
)*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.186 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=150

$$-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{(-B+iA)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(5B+iA)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}}$$

```
[Out] ((-1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(a^(3/2)*d) + ((I*A - B)*Sqrt[Tan[c + d*x]])/(3*d*(a
 + I*a*Tan[c + d*x])^(3/2)) + ((I*A + 5*B)*Sqrt[Tan[c + d*x]])/(6*a*d*Sqrt[
a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.3793, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3595, 3596, 12, 3544, 205}

$$-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{(-B+iA)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(5B+iA)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),
x]
```

```
[Out] ((-1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(a^(3/2)*d) + ((I*A - B)*Sqrt[Tan[c + d*x]])/(3*d*(a
 + I*a*Tan[c + d*x])^(3/2)) + ((I*A + 5*B)*Sqrt[Tan[c + d*x]])/(6*a*d*Sqrt[
a + I*a*Tan[c + d*x]])
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(iA-B)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} - \frac{\int \frac{\frac{1}{2}a(iA-B)-a(A-2iB)\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(iA+5B)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{\int \frac{3a^2(iA+B)\sqrt{a+ia\tan(c+dx}}{4\sqrt{\tan(c+dx)}}}{3a^4}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(iA+5B)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(iA+B)\int \frac{\sqrt{a+ia\tan(c+d}}{\sqrt{\tan(c+dx)}}}{4a^2}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(iA+5B)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{-ia-}\right.}{}$$

$$= -\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(i}{6a}$$

Mathematica [A] time = 4.66369, size = 228, normalized size = 1.52

$$\frac{e^{-i(c+dx)}\sqrt{\tan(c+dx)}\sec^{\frac{3}{2}}(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(2Ae^{2i(c+dx)}+A-iB\left(-1+4e^{2i(c+dx)}\right)\right)-3(A-iB)e^{3i(c+dx)}\tanh^{-1}\left(\frac{}{\sqrt{}}\right.\right.}{6\sqrt{2}ad\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(3/2),x]
```

```
[Out] ((Sqrt[-1 + E^((2*I)*(c + d*x))]*(A + 2*A*E^((2*I)*(c + d*x)) - I*B*(-1 + 4
*E^((2*I)*(c + d*x)))) - 3*(A - I*B)*E^((3*I)*(c + d*x))*ArcTanh[E^(I*(c +
d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sec[c + d*x]^(3/2)*Sqrt[Tan[c + d*x]
])/(6*Sqrt[2]*a*d*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*
(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[
c + d*x]])
```

Maple [B] time = 0.049, size = 868, normalized size = 5.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] -1/24/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)/a^2*(-20*I*B*(-I*a)^(1/
2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^2+4*A*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2-3*I*A*2^(1/2)*ln(-(-2*2^(1/2
)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(t
an(d*x+c)+I))*a-3*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-9*I*
B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+12*I*B*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+9*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*t
an(d*x+c)^2*a+3*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a+9*I*
A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+9*A*2^(1/2)*ln(-(-2*2^
(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c)
)/(tan(d*x+c)+I))*tan(d*x+c)*a-16*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)*tan(d*x+c)-3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a-32*B*(a*
tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)-12*A*(a*tan(d*x+
c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)/(-tan(d*x+c)+I)^3/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.03743, size = 1293, normalized size = 8.62

$$-\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{iA^2+2AB-iB^2}{a^3d^2}}e^{(4idx+4ic)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{iA^2+2AB-iB^2}{a^3d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}e^{(i\cdots}}{4iA+4B}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(4*I*d*x
 + 4*I*c)*log((2*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^
(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(
a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1/
2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(-(
2*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*
c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x +
 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*
e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((2*I*A + 4*B)*e
^(4*I*d*x + 4*I*c) + (3*I*A + 3*B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) + 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{\tan(c + dx)}}{(a(i\tan(c + dx) + 1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/(a*(I*tan(c + d*x) + 1))**
(3/2), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.187 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(7A+iB)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}}$$

```
[Out] ((1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(3/2)*d) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(3*d*(a
+ I*a*Tan[c + d*x])^(3/2)) + ((7*A + I*B)*Sqrt[Tan[c + d*x]])/(6*a*d*Sqrt[a
 + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.379965, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3596, 12, 3544, 205}

$$\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}}+\frac{(7A+iB)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)),
x]
```

```
[Out] ((1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(3/2)*d) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(3*d*(a
+ I*a*Tan[c + d*x])^(3/2)) + ((7*A + I*B)*Sqrt[Tan[c + d*x]])/(6*a*d*Sqrt[a
 + I*a*Tan[c + d*x]])
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\frac{1}{2}a(5A-iB)-a(iA-B)\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(7A+iB)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \frac{3a^2(A-iB)\sqrt{a+ia\tan(}}{4\sqrt{\tan(c+dx)}}}{3a^4}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(7A+iB)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{(A-iB)\int \frac{\sqrt{a+ia\tan}}{\sqrt{\tan(c}}}{4a^2}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(7A+iB)\sqrt{\tan(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(iA+B)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{(A+iB)\sqrt{\tan(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}}$$

Mathematica [A] time = 5.03915, size = 230, normalized size = 1.55

$$\frac{e^{-i(c+dx)}\sqrt{\tan(c+dx)}\sec^{\frac{3}{2}}(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(-iA\left(1+8e^{2i(c+dx)}\right)+2Be^{2i(c+dx)}+B\right)-3i(A-iB)e^{3i(c+dx)}\tanh^{-1}\left(\right.\right.}{6\sqrt{2}ad\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(
3/2)),x]
```

```
[Out] ((Sqrt[-1 + E^((2*I)*(c + d*x))]*(B + 2*B*E^((2*I)*(c + d*x)) - I*A*(1 + 8*
E^((2*I)*(c + d*x)))) - (3*I)*(A - I*B)*E^((3*I)*(c + d*x))*ArcTanh[E^(I*(c
 + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sec[c + d*x]^(3/2)*Sqrt[Tan[c + d
*x]])/(6*Sqrt[2]*a*d*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^
(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*(-I + Tan[c + d*x])*Sqrt[a + I*a*T
an[c + d*x]])
```

Maple [B] time = 0.079, size = 868, normalized size = 5.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/24/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*(3*I*A*2^(1/2)*ln(-(-2*2
^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c
))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-9*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2
)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))
*tan(d*x+c)^2*a+3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-9*I*
A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+28*I*A*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+9*A*2^(1/2)*ln(-(-2*2^(1/2)*
(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan
(d*x+c)+I))*tan(d*x+c)^2*a+3*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+16*I
*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)-9*B*2^(1/2
)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*
a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-4*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(
1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^2-36*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)*(-I*a)^(1/2)-3*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(
1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+64*A*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+12*B*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2))/a^2/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)/(-tan(d*x+c)+I)^3/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.09351, size = 1303, normalized size = 8.8

$$\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{-iA^2-2AB+iB^2}{a^3d^2}}e^{(4idx+4ic)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{-iA^2-2AB+iB^2}{a^3d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}e^{(}\right.}{4iA+4B}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/12*(3*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*x
 + 4*I*c)*log((2*I*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))
*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt
(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*lo
g((-2*I*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(2*I*d*x
 + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*
I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
 + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) + sqrt(2)*(2*(4*A +
 I*B)*e^(4*I*d*x + 4*I*c) + 3*(3*A + I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.41423, size = 209, normalized size = 1.41

$$\frac{-(i+1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)a^2+\left((2i-2)(ia\tan(dx+c)+a)a-(2i-2)a^2\right)\sqrt{-2(ia}{2\left((ia\tan(dx+c)+a)^4a-3(ia\tan(dx+c)+a)^3a^2+2(ia\tan(dx+c)+a)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] 1/2*(-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)*a^2 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a - (2*I - 2)*a^2)*sqrt(-2*(I*a
*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*x
+ c) + a)^4*a - 3*(I*a*tan(d*x + c) + a)^3*a^2 + 2*(I*a*tan(d*x + c) + a)^2
*a^3)*d)
```

3.188 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=194

$$-\frac{(25A+7iB)\sqrt{a+ia\tan(c+dx)}}{6a^2d\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}$$

```
[Out] ((1/4 + I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(3/2)*d) + (A + I*B)/(3*d*Sqrt[Tan[c + d*x]]*(a +
I*a*Tan[c + d*x])^(3/2)) + (11*A + (5*I)*B)/(6*a*d*Sqrt[Tan[c + d*x]]*Sqrt[
a + I*a*Tan[c + d*x]]) - ((25*A + (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(6*a
^2*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.577233, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$-\frac{(25A+7iB)\sqrt{a+ia\tan(c+dx)}}{6a^2d\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)),
x]
```

```
[Out] ((1/4 + I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(3/2)*d) + (A + I*B)/(3*d*Sqrt[Tan[c + d*x]]*(a +
I*a*Tan[c + d*x])^(3/2)) + (11*A + (5*I)*B)/(6*a*d*Sqrt[Tan[c + d*x]]*Sqrt[
a + I*a*Tan[c + d*x]]) - ((25*A + (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(6*a
^2*d*Sqrt[Tan[c + d*x]])
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
```

```
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\frac{1}{2}a(7A+iB)-2a(iA-B)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{11A+5iB}{6ad\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+}$$

$$= \frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{11A+5iB}{6ad\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+}$$

$$= \frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{11A+5iB}{6ad\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+}$$

$$= \frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{11A+5iB}{6ad\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+}$$

$$= \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{A+iB}{3d\sqrt{\tan(c+dx)}(a+ia\tan(c}$$

Mathematica [A] time = 4.80223, size = 237, normalized size = 1.22

$$\frac{ie^{-2i(c+dx)}\sqrt{\tan(c+dx)}\csc(c+dx)\sec(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(A\left(-13e^{2i(c+dx)}+38e^{4i(c+dx)}-1\right)+iB\left(-7e^{2i(c+dx)}+8e^{4i}\right.\right.\right.}{12ad\sqrt{-1+e^{2i(c+dx)}}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(
3/2)),x]
```

```
[Out] ((I/12)*(Sqrt[-1 + E^((2*I)*(c + d*x))]*(I*B*(-1 - 7*E^((2*I)*(c + d*x)) +
8*E^((4*I)*(c + d*x))) + A*(-1 - 13*E^((2*I)*(c + d*x)) + 38*E^((4*I)*(c +
d*x)))) - 3*(A - I*B)*E^((3*I)*(c + d*x))*(-1 + E^((2*I)*(c + d*x)))*ArcTan
h[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Csc[c + d*x]*Sec[c + d*x
]*Sqrt[Tan[c + d*x]])/(a*d*E^((2*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x)
)]*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.069, size = 931, normalized size = 4.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/24/d*(a*(1+I*tan(d*x+c)))^(1/2)*(3*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/
2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I)
)*tan(d*x+c)^4*a+9*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(
1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-3
*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a-9*I*B*2^(1/2)*ln(-(-2
*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x
+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+28*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3+9*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan
(d*x+c)^3*a-3*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*t
an(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-256*I*A*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+9*A*2^(1/2)
*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a
*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+100*A*(-I*a)^(1/2)*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^3-36*I*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*ta
n(d*x+c)*a+64*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+
c)^2+48*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)-204*A*(-I*a)
^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c))/a^2/tan(d*x+c)^(1/
2)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)^3/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.05854, size = 1462, normalized size = 7.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/12*(sqrt(2)*((-38*I*A + 8*B)*e^(6*I*d*x + 6*I*c) + (-25*I*A + B)*e^(4*I*d
*x + 4*I*c) + (14*I*A - 8*B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) +
 1))*e^(I*d*x + I*c) + 3*sqrt(1/2)*(a^2*d*e^(6*I*d*x + 6*I*c) - a^2*d*e^(4*
I*d*x + 4*I*c))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*log((2*sqrt(1/2)*a^
2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*(
(I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c
))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1/2)*(a^2*d*e^(6*I*d*x + 6*I*c)
 - a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*log(-
(2*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I
*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x
+ 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))
*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)))/(a^2*d*e^(6*I*d*x + 6*I*
c) - a^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.46314, size = 236, normalized size = 1.22

$$\frac{-(i+1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)a^3+\left((2i-2)\,(i\,a\tan(dx+c)+a)a^2-(2i-2)\,a^3\right)\sqrt{-2}}{\left(-2i\,(i\,a\tan(dx+c)+a)^5a+8i\,(i\,a\tan(dx+c)+a)^4a^2-10i\,(i\,a\tan(dx+c)+a)^3a^3+4i\,(i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] (-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*
a^3 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a^2 - (2*I - 2)*a^3)*sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/((-2*I*(I*a*tan(d
*x + c) + a)^5*a + 8*I*(I*a*tan(d*x + c) + a)^4*a^2 - 10*I*(I*a*tan(d*x + c
) + a)^3*a^3 + 4*I*(I*a*tan(d*x + c) + a)^2*a^4)*d)
```

3.189 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=240

$$-\frac{(21A+11iB)\sqrt{a+ia\tan(c+dx)}}{6a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{(-25B+39iA)\sqrt{a+ia\tan(c+dx)}}{6a^2d\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}$$

```
[Out] ((1/4 + I/4)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(3/2)*d) + (A + I*B)/(3*d*Tan[c + d*x]^(3/2)*(a +
I*a*Tan[c + d*x])^(3/2)) + (5*A + (3*I)*B)/(2*a*d*Tan[c + d*x]^(3/2)*Sqrt[a
 + I*a*Tan[c + d*x]]) - ((21*A + (11*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(6*a
^2*d*Tan[c + d*x]^(3/2)) + (((39*I)*A - 25*B)*Sqrt[a + I*a*Tan[c + d*x]])/(
6*a^2*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.769485, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$-\frac{(21A+11iB)\sqrt{a+ia\tan(c+dx)}}{6a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{(-25B+39iA)\sqrt{a+ia\tan(c+dx)}}{6a^2d\sqrt{\tan(c+dx)}}+\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(B+iA)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(3/2)),
x]
```


```
[Out] ((1/4 + I/4)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(3/2)*d) + (A + I*B)/(3*d*Tan[c + d*x]^(3/2)*(a +
I*a*Tan[c + d*x])^(3/2)) + (5*A + (3*I)*B)/(2*a*d*Tan[c + d*x]^(3/2)*Sqrt[a
 + I*a*Tan[c + d*x]]) - ((21*A + (11*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(6*a
^2*d*Tan[c + d*x]^(3/2)) + (((39*I)*A - 25*B)*Sqrt[a + I*a*Tan[c + d*x]])/(
6*a^2*d*Sqrt[Tan[c + d*x]])
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
```

```
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\frac{3}{2}a(3A+iB)-3a(iA-B)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx}{3a^2}$$

$$= \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{5A+3iB}{2ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+}}$$

$$= \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{5A+3iB}{2ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+}}$$

$$= \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{5A+3iB}{2ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+}}$$

$$= \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{5A+3iB}{2ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+}}$$

$$= \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{5A+3iB}{2ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+}}$$

$$= \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d} + \frac{A+iB}{3d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(}$$

Mathematica [A] time = 6.64076, size = 244, normalized size = 1.02

$$\frac{ie^{-2i(c+dx)}\sec^2(c+dx)\left(-3i(A-iB)e^{3i(c+dx)}\left(-1+e^{2i(c+dx)}\right)^{3/2}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)-iA\left(18e^{2i(c+dx)}-87e^{4i(c+dx)}+52e^{6i(}\right.\right.}{12ad\left(-1+e^{2i(c+dx)}\right)\sqrt{\tan(c+dx)}(\tan(c+dx)-i)\sqrt{a+ia\tan(c+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(
3/2)),x]
```

```
[Out] ((I/12)*(B*(1 + 12*E^((2*I)*(c + d*x)) - 51*E^((4*I)*(c + d*x)) + 38*E^((6*
I)*(c + d*x))) - I*A*(1 + 18*E^((2*I)*(c + d*x)) - 87*E^((4*I)*(c + d*x)) +
 52*E^((6*I)*(c + d*x))) - (3*I)*(A - I*B)*E^((3*I)*(c + d*x))*(-1 + E^((2*
I)*(c + d*x)))^(3/2)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]
```

```
])*Sec[c + d*x]^2)/(a*d*E^((2*I)*(c + d*x))*(-1 + E^((2*I)*(c + d*x)))*Sqrt
[Tan[c + d*x]]*(-I + Tan[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.08, size = 1012, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] -1/24/d*(a*(1+I*tan(d*x+c)))^(1/2)/a^2/tan(d*x+c)^(3/2)*(-48*I*B*tan(d*x+c)
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)-100*B*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^4-9*I*A*2^(1/2)*ln(-(-2*2^(1/2
)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(t
an(d*x+c)+I))*tan(d*x+c)^3*a+3*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*
x+c)^5*a+384*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c
)^3+156*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4
+3*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+9*A*2^(1/2)*ln(-(
-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d
*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+204*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)*tan(d*x+c)^2-9*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*
tan(d*x+c)^4*a-276*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*t
an(d*x+c)^2-9*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan
(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-32*A*(-I
*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+256*I*B*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3-3*A*2^(1/2)*ln(-(-2
*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x
+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-16*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)*(-I*a)^(1/2)+3*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a
)/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)^3/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.22245, size = 1656, normalized size = 6.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(sqrt(2)*(2*(26*A + 19*I*B)*e^(8*I*d*x + 8*I*c) - (35*A + 13*I*B)*e^(
6*I*d*x + 6*I*c) - 3*(23*A + 13*I*B)*e^(4*I*d*x + 4*I*c) + (19*A + 13*I*B)*
e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 3*sqrt
(1/2)*(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4
*I*d*x + 4*I*c))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*log((2*I*sqrt(1/2
)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*c) + sqrt
(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1/2)*(a^2*d*e^(8*I*d*x + 8
*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((-I*A
^2 - 2*A*B + I*B^2)/(a^3*d^2))*log((-2*I*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A
*B + I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x
+ 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(
4*I*A + 4*B)))/(a^2*d*e^(8*I*d*x + 8*I*c) - 2*a^2*d*e^(6*I*d*x + 6*I*c) + a
^2*d*e^(4*I*d*x + 4*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.47054, size = 261, normalized size = 1.09

$$\frac{(i+1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)a^4+\left(-(2i-2)(ia\tan(dx+c)+a)a^3+(2i-2)a^4\right)\sqrt{-2(i}{2\left((ia\tan(dx+c)+a)^6a-5(ia\tan(dx+c)+a)^5a^2+9(ia\tan(dx+c)+a)^4a^3-7(ia\tan(dx+c)+a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] 1/2*((I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
a)*a^4 + (-(2*I - 2)*(I*a*tan(d*x + c) + a)*a^3 + (2*I - 2)*a^4)*sqrt(-2*(I
*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*
x + c) + a)^6*a - 5*(I*a*tan(d*x + c) + a)^5*a^2 + 9*(I*a*tan(d*x + c) + a)
^4*a^3 - 7*(I*a*tan(d*x + c) + a)^3*a^4 + 2*(I*a*tan(d*x + c) + a)^2*a^5)*d
)
```

3.190 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=249

$$-\frac{(-7B+iA)\sqrt{\tan(c+dx)}}{4a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(-B+}{5d(a+}$$

```
[Out] (2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]])/(a^(5/2)*d) + ((1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt
[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((I*A -
B)*Tan[c + d*x]^(5/2))/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + ((A + (3*I)*B)*
Tan[c + d*x]^(3/2))/(6*a*d*(a + I*a*Tan[c + d*x])^(3/2)) - ((I*A - 7*B)*Sqr
t[Tan[c + d*x]])/(4*a^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.855009, antiderivative size = 249, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {3595, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-7B+iA)\sqrt{\tan(c+dx)}}{4a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(-B+}{5d(a+}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```

```
[Out] (2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]])/(a^(5/2)*d) + ((1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt
[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((I*A -
B)*Tan[c + d*x]^(5/2))/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + ((A + (3*I)*B)*
Tan[c + d*x]^(3/2))/(6*a*d*(a + I*a*Tan[c + d*x])^(3/2)) - ((I*A - 7*B)*Sqr
t[Tan[c + d*x]])/(4*a^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
```

```
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{\int \frac{\tan^{\frac{3}{2}}(c+dx)\left(\frac{5}{2}a(iA-B)+5iaB\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+3iB)\tan^{\frac{3}{2}}(c+dx)}{6ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\sqrt{\tan(c+dx)}\left(-\frac{15}{4}a^2(A\cdots\right.}{\sqrt{a+ia\tan\cdots}}}{1\cdots}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+3iB)\tan^{\frac{3}{2}}(c+dx)}{6ad(a+ia\tan(c+dx))^{3/2}} - \frac{(iA-7B)\sqrt{\tan(c+\cdots}}{4a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+3iB)\tan^{\frac{3}{2}}(c+dx)}{6ad(a+ia\tan(c+dx))^{3/2}} - \frac{(iA-7B)\sqrt{\tan(c+\cdots}}{4a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+3iB)\tan^{\frac{3}{2}}(c+dx)}{6ad(a+ia\tan(c+dx))^{3/2}} - \frac{(iA-7B)\sqrt{\tan(c+\cdots}}{4a^2d\sqrt{a+ia\tan(c\cdots}}$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(\cdots}{6a\cdots}$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{(iA-B)\tan^{\frac{5}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(\cdots}{6a\cdots}$$

$$= \frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+\cdots}}{\sqrt{a+ia\tan(c+dx\cdots}}\right.}{a^{5/2}d}$$

Mathematica [A] time = 7.55064, size = 275, normalized size = 1.1

$$\frac{e^{-2i(c+dx)}\sqrt{\tan(c+dx)}\sec^2(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(iA\left(-11e^{2i(c+dx)}+23e^{4i(c+dx)}+3\right)-3B\left(-7e^{2i(c+dx)}+41e^{4i(c+dx)}+1\cdots\right.\right.\right.}{60a^2d\sqrt{-1+e^{2i(c+dx)}}(\tan(c+dx)-i)^2\sqrt{a+i\cdots}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(5/2),x]
```

```
[Out] ((Sqrt[-1 + E^((2*I)*(c + d*x))]*(I*A*(3 - 11*E^((2*I)*(c + d*x)) + 23*E^((
4*I)*(c + d*x))) - 3*B*(1 - 7*E^((2*I)*(c + d*x)) + 41*E^((4*I)*(c + d*x)))
) - (15*I)*(A - I*B)*E^((5*I)*(c + d*x))*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 +
E^((2*I)*(c + d*x))]] + 120*Sqrt[2]*B*E^((5*I)*(c + d*x))*ArcTanh[(Sqrt[2]*
E^(I*(c + d*x)))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sec[c + d*x]^2*Sqrt[Tan[c
 + d*x]])/(60*a^2*d*E^((2*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*(-I
+ Tan[c + d*x])^2*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.073, size = 1542, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] -1/240/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)/a^3*(148*A*(I*a)^(1/2)
*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^3-220*A*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)-15*A*
(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+1548*B*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*(I*a)^(1/2)*tan(d*x+c)^2+240*
B*(-I*a)^(1/2)*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(
1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*a-420*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1
/2)*(-I*a)^(1/2)*(I*a)^(1/2)+240*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c
)^4*a-1440*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/
2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/2)*tan(d*x+c)^2*a-15*A*2^(1/2)*(I*
a)^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+960*I*B*ln(1/2*(2*I*a*tan(d*x+c)+2*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a)^(1/
2)*tan(d*x+c)*a+60*B*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*
x+c)^3*a+90*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c
)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*
a-60*B*2^(1/2)*(I*a)^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*
tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+60*I*A*
```

```
(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-90*I*B*(I*a)
^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+15*I*B*(I*a)^(1/2
)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a+588*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^3+15*I*B*(I*a)^(1/2)*2^(1/2)
*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a
*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a-960*I*B*ln(1/2*(2*I*a*tan(d*x+c
)+2*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(I*a)^(1/2)+a)/(I*a)^(1/2))*(-I*a
)^(1/2)*tan(d*x+c)^3*a-60*I*A*(I*a)^(1/2)*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1
/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I
))*tan(d*x+c)*a-308*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)*tan(d*x+c)^2+60*I*A*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I
*tan(d*x+c)))^(1/2)-1380*I*B*(I*a)^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*ta
n(d*x+c)))^(1/2)*tan(d*x+c))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*
x+c)+I)^4/(I*a)^(1/2)/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.9785, size = 2205, normalized size = 8.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*
x + 6*I*c)*log((2*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e
```

```
^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqrt(
1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(
-(2*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(2*I*d*x + 2*
I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1)
)*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 30*a^3*d*sqrt(-4*I*B^2
/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(52/605*(4*sqrt(2)*(B*e^(2*I*d*x + 2*I*c
) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/
(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + (3*a^3*d*e^(2*I*d*x + 2*I*c) -
 a^3*d)*sqrt(-4*I*B^2/(a^5*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B)) + 30*a^3*d*s
qrt(-4*I*B^2/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(52/605*(4*sqrt(2)*(B*e^(2*I
*d*x + 2*I*c) + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) - (3*a^3*d*e^(2*I*d*
x + 2*I*c) - a^3*d)*sqrt(-4*I*B^2/(a^5*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B))
+ sqrt(2)*((-23*I*A + 123*B)*e^(6*I*d*x + 6*I*c) + (-12*I*A + 102*B)*e^(4*I
*d*x + 4*I*c) + (8*I*A - 18*B)*e^(2*I*d*x + 2*I*c) - 3*I*A + 3*B)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) + 1))*e^(I*d*x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)

[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.191 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{(13A-37iB)\sqrt{\tan(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{(A+11iB)\sqrt{\tan}}{30ad(a+ia\tan(}$$

```
[Out] ((-1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^(3/2))/(5*d*(a
 + I*a*Tan[c + d*x])^(5/2)) + ((A + (11*I)*B)*Sqrt[Tan[c + d*x]])/(30*a*d*(
a + I*a*Tan[c + d*x])^(3/2)) + ((13*A - (37*I)*B)*Sqrt[Tan[c + d*x]])/(60*a
^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.599792, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3595, 3596, 12, 3544, 205}

$$\frac{(13A-37iB)\sqrt{\tan(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(-B+iA)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{(A+11iB)\sqrt{\tan}}{30ad(a+ia\tan(}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```

```
[Out] ((-1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((I*A - B)*Tan[c + d*x]^(3/2))/(5*d*(a
 + I*a*Tan[c + d*x])^(5/2)) + ((A + (11*I)*B)*Sqrt[Tan[c + d*x]])/(30*a*d*(
a + I*a*Tan[c + d*x])^(3/2)) + ((13*A - (37*I)*B)*Sqrt[Tan[c + d*x]])/(60*a
^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{\int \frac{\sqrt{\tan(c+dx)}\left(\frac{3}{2}a(iA-B)-a(A-4iB)\tan(c+dx)\right)}{(a+ia\tan(c+dx))^{3/2}}dx}{5a^2}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+11iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{-\frac{1}{4}a^2(A+11iB)-\frac{1}{2}a^2(7i}{\sqrt{\tan(c+dx)}\sqrt{a+}}}{15a}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+11iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(13A-37iB)\sqrt{\tan(}}{60a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+11iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(13A-37iB)\sqrt{\tan(}}{60a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A+11iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(13A-37iB)\sqrt{\tan(}}{60a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{(iA-B)\tan^{\frac{3}{2}}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(A}{30a}$$

Mathematica [A] time = 6.97963, size = 214, normalized size = 1.1

$$\frac{e^{-3i(c+dx)}\sec^3(c+dx)\left(\left(-1+e^{2i(c+dx)}\right)\left(iA\left(e^{2i(c+dx)}+17e^{4i(c+dx)}-3\right)+B\left(-11e^{2i(c+dx)}+23e^{4i(c+dx)}+3\right)\right)-15i(A-iB)e^{5i(}}{120a^2d\sqrt{\tan(c+dx)}(\tan(c+dx)-i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(5/2),x]
```

```
[Out] (((-1 + E^((2*I)*(c + d*x)))*(I*A*(-3 + E^((2*I)*(c + d*x)) + 17*E^((4*I)*(
c + d*x))) + B*(3 - 11*E^((2*I)*(c + d*x)) + 23*E^((4*I)*(c + d*x)))) - (15
*I)*(A - I*B)*E^((5*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^
(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sec[c + d*x]^3)/(120*a^2*d*E
^((3*I)*(c + d*x))*Sqrt[Tan[c + d*x]]*(-I + Tan[c + d*x])^2*Sqrt[a + I*a*Ta
n[c + d*x]])
```

Maple [B] time = 0.062, size = 1096, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 1/240/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)/a^3*(308*I*B*(-I*a)^(1/
2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^2-148*B*(a*tan(d*x+c)*(
1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3+15*I*A*2^(1/2)*ln(-(-2*2^(
1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))
/(tan(d*x+c)+I))*tan(d*x+c)^4*a+15*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(
a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*ta
n(d*x+c)^4*a-212*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d
*x+c)^2+60*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a+220*I*A*(-I
*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)+60*A*2^(1/2)*ln(
-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan
(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-90*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*
a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x
+c)+I))*tan(d*x+c)^2*a+15*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d
*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a-90*B*2^
(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*
a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-52*I*A*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^3-60*I*B*2^(1/2)*ln(-(-2*2^(1/2)
*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(ta
n(d*x+c)+I))*tan(d*x+c)^3*a-60*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*
x+c)*a-60*I*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+15*B*2^(1/
2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3
*a*tan(d*x+c))/(tan(d*x+c)+I))*a+220*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2
)*(-I*a)^(1/2)*tan(d*x+c)+60*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)
^(1/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)^4/(-I*a)^(1/2
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.13225, size = 1368, normalized size = 7.05

$$-\frac{\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{-iA^2-2AB+iB^2}{a^5d^2}}e^{(6idx+6ic)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{-iA^2-2AB+iB^2}{a^5d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}\cdots\right.}{4iA+4B}\right.\right.\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] -1/120*(15*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*
d*x + 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^
2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*
sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c
)*log((-2*I*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(2*I
*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((17*
A - 23*I*B)*e^(6*I*d*x + 6*I*c) + 6*(3*A - 2*I*B)*e^(4*I*d*x + 4*I*c) - 2*(
A - 4*I*B)*e^(2*I*d*x + 2*I*c) - 3*A - 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x
+ I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.192 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=196

$$-\frac{(-13B+3iA)\sqrt{\tan(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(7B+3iA)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}}+\frac{(-B+iA)\sqrt{}}{5d(a+ia\tan}$$

```
[Out] ((-1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((I*A - B)*Sqrt[Tan[c + d*x]])/(5*d*(a
 + I*a*Tan[c + d*x])^(5/2)) + (((3*I)*A + 7*B)*Sqrt[Tan[c + d*x]])/(30*a*d*
(a + I*a*Tan[c + d*x])^(3/2)) - (((3*I)*A - 13*B)*Sqrt[Tan[c + d*x]])/(60*a
^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.592109, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3595, 3596, 12, 3544, 205}

$$-\frac{(-13B+3iA)\sqrt{\tan(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(7B+3iA)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}}+\frac{(-B+iA)\sqrt{}}{5d(a+ia\tan}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```


```
[Out] ((-1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((I*A - B)*Sqrt[Tan[c + d*x]])/(5*d*(a
 + I*a*Tan[c + d*x])^(5/2)) + (((3*I)*A + 7*B)*Sqrt[Tan[c + d*x]])/(30*a*d*
(a + I*a*Tan[c + d*x])^(3/2)) - (((3*I)*A - 13*B)*Sqrt[Tan[c + d*x]])/(60*a
^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(iA-B)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} - \frac{\int \frac{\frac{1}{2}a(iA-B)-a(2A-3iB)\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(3iA+7B)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{\int \frac{\frac{1}{4}a^2(9iA+B)-\frac{1}{2}a^2(3A-}{\sqrt{\tan(c+dx)}\sqrt{a+ia}}}{15a^4}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(3iA+7B)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(3iA-13B)\sqrt{\tan(c}}{60a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(3iA+7B)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(3iA-13B)\sqrt{\tan(c}}{60a^2d\sqrt{a+ia\tan(c}}$$

$$= \frac{(iA-B)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(3iA+7B)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} - \frac{(3iA-13B)\sqrt{\tan(c}}{60a^2d\sqrt{a+ia\tan(c}}$$

$$= -\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{(iA-B)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(}{30}$$

Mathematica [A] time = 5.70813, size = 215, normalized size = 1.1

$$\frac{e^{-2i(c+dx)}\sqrt{\tan(c+dx)}\sec^2(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(-3iA\left(3e^{2i(c+dx)}+e^{4i(c+dx)}+1\right)-B\left(e^{2i(c+dx)}+17e^{4i(c+dx)}-3\right)\right)+15(}{60a^2d\sqrt{-1+e^{2i(c+dx)}}(\tan(c+dx)-i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(5/2),x]
```

```
[Out] ((Sqrt[-1 + E^((2*I)*(c + d*x))]*((-3*I)*A*(1 + 3*E^((2*I)*(c + d*x)) + E^(
(4*I)*(c + d*x))) - B*(-3 + E^((2*I)*(c + d*x)) + 17*E^((4*I)*(c + d*x))))
+ 15*(I*A + B)*E^((5*I)*(c + d*x))*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*
I)*(c + d*x))]])*Sec[c + d*x]^2*Sqrt[Tan[c + d*x]])/(60*a^2*d*E^((2*I)*(c +
 d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*(-I + Tan[c + d*x])^2*Sqrt[a + I*a*Ta
n[c + d*x]])
```

Maple [B] time = 0.052, size = 1096, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 1/240/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)/a^3*(220*I*B*(-I*a)^(1/
2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)-12*A*(-I*a)^(1/2)*(a*ta
n(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^3-60*I*A*2^(1/2)*ln(-(-2*2^(1/2
)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(t
an(d*x+c)+I))*tan(d*x+c)*a-15*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x
+c)^4*a-212*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)
^2+60*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-90*I*B*2^(1/2)
*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a
*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+60*B*2^(1/2)*ln(-(-2*2^(1/2)*(-
I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d
*x+c)+I))*tan(d*x+c)^3*a+15*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan
(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x
+c)^4*a+12*I*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c
)^2+90*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-52*I*B*(-I*a)^(
1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^3+60*I*A*(-I*a)^(1/2)
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)-60*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^
(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)
+I))*tan(d*x+c)*a+15*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a-15*A*2^(1/2)
*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a
*tan(d*x+c))/(tan(d*x+c)+I))*a-60*A*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x
+c)))^(1/2)*tan(d*x+c)+60*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1
/2))/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)^4/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.10997, size = 1357, normalized size = 6.92

$$-\frac{\left(15\sqrt{\frac{1}{2}}a^{3}d\sqrt{\frac{iA^{2}+2AB-iB^{2}}{a^{5}d^{2}}}e^{(6idx+6ic)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^{3}d\sqrt{\frac{iA^{2}+2AB-iB^{2}}{a^{5}d^{2}}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}e^{(id\cdots}}{4iA+4B}\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] -1/120*(15*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d
*x + 6*I*c)*log((2*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*
e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqrt
(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log
(-(2*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(2*I*d*x + 2
*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1
))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((3*I*A + 17*
B)*e^(6*I*d*x + 6*I*c) + (12*I*A + 18*B)*e^(4*I*d*x + 4*I*c) + (12*I*A - 2*
B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqr
t((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*
e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

<u>**Giac**</u> **[F(-2)]** time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.193 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=194

$$\frac{(67A-3iB)\sqrt{\tan(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{(13A+3iB)\sqrt{\tan}}{30ad(a+ia\tan(c}$$

```
[Out] ((1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(5*d*(a
+ I*a*Tan[c + d*x])^(5/2)) + ((13*A + (3*I)*B)*Sqrt[Tan[c + d*x]])/(30*a*d*
(a + I*a*Tan[c + d*x])^(3/2)) + ((67*A - (3*I)*B)*Sqrt[Tan[c + d*x]])/(60*a
^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.596692, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3596, 12, 3544, 205}

$$\frac{(67A-3iB)\sqrt{\tan(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}}+\frac{(13A+3iB)\sqrt{\tan}}{30ad(a+ia\tan(c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)),
x]
```

```
[Out] ((1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(5/2)*d) + ((A + I*B)*Sqrt[Tan[c + d*x]])/(5*d*(a
+ I*a*Tan[c + d*x])^(5/2)) + ((13*A + (3*I)*B)*Sqrt[Tan[c + d*x]])/(30*a*d*
(a + I*a*Tan[c + d*x])^(3/2)) + ((67*A - (3*I)*B)*Sqrt[Tan[c + d*x]])/(60*a
^2*d*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\frac{1}{2}a(9A-iB)-2a(iA-B)\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(13A+3iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\frac{1}{4}a^2(41A-9iB)-\frac{1}{2}}{\sqrt{\tan(c+dx}}}{}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(13A+3iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(67A-3iB)\sqrt{\mathrm{ta}}}{60a^2d\sqrt{a+ia\,\mathrm{ta}}}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(13A+3iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(67A-3iB)\sqrt{\mathrm{ta}}}{60a^2d\sqrt{a+ia\,\mathrm{ta}}}$$

$$= \frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(13A+3iB)\sqrt{\tan(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(67A-3iB)\sqrt{\mathrm{ta}}}{60a^2d\sqrt{a+ia\,\mathrm{ta}}}$$

$$= -\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{(A+iB)\sqrt{\tan(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}}$$

Mathematica [A] time = 6.1377, size = 216, normalized size = 1.11

$$-\frac{e^{-2i(c+dx)}\sqrt{\tan(c+dx)}\sec^2(c+dx)\left(\sqrt{-1+e^{2i(c+dx)}}\left(A\left(19e^{2i(c+dx)}+83e^{4i(c+dx)}+3\right)+3iB\left(3e^{2i(c+dx)}+e^{4i(c+dx)}+1\right)\right)+\right.}{60a^2d\sqrt{-1+e^{2i(c+dx)}}(\tan(c+dx)-i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^(
5/2)),x]
```

```
[Out] -((Sqrt[-1 + E^((2*I)*(c + d*x))]*((3*I)*B*(1 + 3*E^((2*I)*(c + d*x)) + E^(
(4*I)*(c + d*x))) + A*(3 + 19*E^((2*I)*(c + d*x)) + 83*E^((4*I)*(c + d*x)))
) + 15*(A - I*B)*E^((5*I)*(c + d*x))*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((
2*I)*(c + d*x))]])*Sec[c + d*x]^2*Sqrt[Tan[c + d*x]])/(60*a^2*d*E^((2*I)*(c
 + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*(-I + Tan[c + d*x])^2*Sqrt[a + I*a*
Tan[c + d*x]])
```

Maple [B] time = 0.076, size = 1096, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] -1/240/d*tan(d*x+c)^(1/2)*(a*(1+I*tan(d*x+c)))^(1/2)*(-12*I*B*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*tan(d*x+c)^2+15*I*A*2^(1/2)*ln(-(-2*2
^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c
))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+15*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)
*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*
tan(d*x+c)^4*a+60*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-1060
*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)+60*A*2^(
1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a
-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-90*I*A*2^(1/2)*ln(-(-2*2^(1
/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/
(tan(d*x+c)+I))*tan(d*x+c)^2*a+15*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*a
-90*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^
(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a+12*B*(a*tan(d*x+c)
*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3+268*I*A*(a*tan(d*x+c)*(1
```

```
+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3-60*I*B*2^(1/2)*ln(-(-2*2^(1
/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/
(tan(d*x+c)+I))*tan(d*x+c)^3*a-60*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a
*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan
(d*x+c)*a+908*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+
c)^2-60*I*B*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+15*B*2^(1/2)
*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a
*tan(d*x+c))/(tan(d*x+c)+I))*a+60*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(
-I*a)^(1/2)*tan(d*x+c)-420*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(
1/2))/a^3/(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)/(-tan(d*x+c)+I)^4/(-I*a)^(1
/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.13174, size = 1370, normalized size = 7.06

$$\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{-iA^2-2AB+iB^2}{a^5d^2}}e^{(6idx+6ic)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{-iA^2-2AB+iB^2}{a^5d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}+iA+B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}\right.}{4iA+4B}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*d
*x + 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2
))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
```

```
*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*s
qrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)
*log((-2*I*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(2*I*
d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) + sqrt(2)*((83*A
 + 3*I*B)*e^(6*I*d*x + 6*I*c) + 6*(17*A + 2*I*B)*e^(4*I*d*x + 4*I*c) + 2*(1
1*A + 6*I*B)*e^(2*I*d*x + 2*I*c) + 3*A + 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c)
 + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*
x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.45931, size = 209, normalized size = 1.08

$$\frac{-(i+1)\sqrt{-2\,(i\,a\tan(dx+c)+a)a+2\,a^2}(i\,a\tan(dx+c)+a)a^2+\left((2i-2)\,(i\,a\tan(dx+c)+a)a-(2i-2)\,a^2\right)\sqrt{-2\,(i\,a}}{2\left((i\,a\tan(dx+c)+a)^5a-3\,(i\,a\tan(dx+c)+a)^4a^2+2\,(i\,a\tan(dx+c)+a)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] 1/2*(-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
 a)*a^2 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a - (2*I - 2)*a^2)*sqrt(-2*(I*a
*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*x
+ c) + a)^5*a - 3*(I*a*tan(d*x + c) + a)^4*a^2 + 2*(I*a*tan(d*x + c) + a)^3
*a^3)*d)
```

3.194 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=240

$$-\frac{(317A+67iB)\sqrt{a+ia\tan(c+dx)}}{60a^3d\sqrt{\tan(c+dx)}}+\frac{151A+41iB}{60a^2d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(}}{\sqrt{a+ia\tan(c}}\right.}{a^{5/2}d}$$

```
[Out] ((1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(5/2)*d) + (A + I*B)/(5*d*Sqrt[Tan[c + d*x]]*(a +
I*a*Tan[c + d*x])^(5/2)) + (17*A + (7*I)*B)/(30*a*d*Sqrt[Tan[c + d*x]]*(a +
 I*a*Tan[c + d*x])^(3/2)) + (151*A + (41*I)*B)/(60*a^2*d*Sqrt[Tan[c + d*x]]
*Sqrt[a + I*a*Tan[c + d*x]]) - ((317*A + (67*I)*B)*Sqrt[a + I*a*Tan[c + d*x
]])/(60*a^3*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.802976, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$-\frac{(317A+67iB)\sqrt{a+ia\tan(c+dx)}}{60a^3d\sqrt{\tan(c+dx)}}+\frac{151A+41iB}{60a^2d\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(}}{\sqrt{a+ia\tan(c}}\right.}{a^{5/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)),
x]
```



```
[Out] ((1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(5/2)*d) + (A + I*B)/(5*d*Sqrt[Tan[c + d*x]]*(a +
I*a*Tan[c + d*x])^(5/2)) + (17*A + (7*I)*B)/(30*a*d*Sqrt[Tan[c + d*x]]*(a +
 I*a*Tan[c + d*x])^(3/2)) + (151*A + (41*I)*B)/(60*a^2*d*Sqrt[Tan[c + d*x]]
*Sqrt[a + I*a*Tan[c + d*x]]) - ((317*A + (67*I)*B)*Sqrt[a + I*a*Tan[c + d*x
]])/(60*a^3*d*Sqrt[Tan[c + d*x]])
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
```

```
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\frac{1}{2}a(11A+iB)-3a(iA-B)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}dx}{5a^2}$$

$$= \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{17A+7iB}{30ad\sqrt{\tan(c+dx)}(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{17A+7iB}{30ad\sqrt{\tan(c+dx)}(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{17A+7iB}{30ad\sqrt{\tan(c+dx)}(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{17A+7iB}{30ad\sqrt{\tan(c+dx)}(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{17A+7iB}{30ad\sqrt{\tan(c+dx)}(a+ia\tan(c+$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{A+iB}{5d\sqrt{\tan(c+dx)}(a+ia\tan($$

Mathematica [A] time = 9.88676, size = 288, normalized size = 1.2

$$\frac{\sec^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))\left(\frac{\sqrt{2}(B+iA)e^{3i(c+dx)}\sqrt{-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}} + \frac{2((19B-149iA)\tan(c+dx)+\cos(2(c+dx))((86B-}{15\sqrt{\tan(c+dx}}\right.}{8d(a+ia\tan(c+dx))^{5/2}(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(
5/2)),x]
```

```
[Out] (Sec[c + d*x]^(3/2)*(A + B*Tan[c + d*x])*((Sqrt[2]*(I*A + B)*E^((3*I)*(c +
d*x))*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x)))]*Arc
Tanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/(Sqrt[-1 + E^((2*I)*(
c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]) + (2*(340*A + (
```

```
80*I)*B + ((-149*I)*A + 19*B)*Tan[c + d*x] + Cos[2*(c + d*x)]*(-20*(23*A +
(4*I)*B) + ((-466*I)*A + 86*B)*Tan[c + d*x]))))/(15*Sqrt[Sec[c + d*x]]*Sqrt[
Tan[c + d*x]]))))/(8*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*
x])^(5/2))
```

Maple [B] time = 0.059, size = 1158, normalized size = 4.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] -1/240/d*(a*(1+I*tan(d*x+c)))^(1/2)/a^3*(-1060*I*B*(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+1268*A*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4+268*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^4-15*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*t
an(d*x+c)^5*a+908*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(
d*x+c)^3+60*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan
(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+15*I*B*2
^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I
*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a+60*B*2^(1/2)*ln(-(-2*2^(1
/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/
(tan(d*x+c)+I))*tan(d*x+c)^4*a-5660*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)
*(-I*a)^(1/2)*tan(d*x+c)^2+15*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*t
an(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d
*x+c)*a+2940*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x
+c)+90*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-60*I*A*2^(1/2)*
ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*
tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-4468*I*A*(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3-60*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a
)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+
c)+I))*tan(d*x+c)^2*a-90*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*
x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)
^3*a-15*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c
)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)*a-420*B*(a*tan(d*x
+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)+480*A*(a*tan(d*x+c)*(1+
I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2))/tan(d*x+c)^(1/2)/(a*tan(d*x+c)*(1+I*tan(
d*x+c)))^(1/2)/(-tan(d*x+c)+I)^4/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.189, size = 1534, normalized size = 6.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/120*(sqrt(2)*((-463*I*A + 83*B)*e^(8*I*d*x + 8*I*c) + (-269*I*A + 19*B)*e
^(6*I*d*x + 6*I*c) + (220*I*A - 80*B)*e^(4*I*d*x + 4*I*c) + (29*I*A - 19*B)
*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(
(-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 1
5*sqrt(1/2)*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((I
*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*log((2*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B
 - I*B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x +
2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*
I*A + 4*B)) - 15*sqrt(1/2)*(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x +
6*I*c))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*log(-(2*sqrt(1/2)*a^3*d*sqr
t((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A +
B)*e^(2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-
I*d*x - I*c)/(4*I*A + 4*B)))/(a^3*d*e^(8*I*d*x + 8*I*c) - a^3*d*e^(6*I*d*x
+ 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.52889, size = 236, normalized size = 0.98

$$\frac{-(i+1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)a^3+\left((2i-2)(ia\tan(dx+c)+a)a^2-(2i-2)a^3\right)\sqrt{-2(i}}{\left(-2i(ia\tan(dx+c)+a)^6a+8i(ia\tan(dx+c)+a)^5a^2-10i(ia\tan(dx+c)+a)^4a^3+4i(ia\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] (-(I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) + a)*
a^3 + ((2*I - 2)*(I*a*tan(d*x + c) + a)*a^2 - (2*I - 2)*a^3)*sqrt(-2*(I*a*t
an(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/((-2*I*(I*a*tan(d
*x + c) + a)^6*a + 8*I*(I*a*tan(d*x + c) + a)^5*a^2 - 10*I*(I*a*tan(d*x + c
) + a)^4*a^3 + 4*I*(I*a*tan(d*x + c) + a)^3*a^4)*d)
```

3.195 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=286

$$-\frac{(361A+151iB)\sqrt{a+ia\tan(c+dx)}}{60a^3d\tan^{\frac{3}{2}}(c+dx)}+\frac{89A+39iB}{20a^2d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}+\frac{(-317B+707iA)\sqrt{a+ia\tan(c+dx)}}{60a^3d\sqrt{\tan(c+dx)}}$$

```
[Out] ((1/8 + I/8)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(5/2)*d) + (A + I*B)/(5*d*Tan[c + d*x]^(3/2)*(a +
I*a*Tan[c + d*x])^(5/2)) + (21*A + (11*I)*B)/(30*a*d*Tan[c + d*x]^(3/2)*(a
+ I*a*Tan[c + d*x])^(3/2)) + (89*A + (39*I)*B)/(20*a^2*d*Tan[c + d*x]^(3/2)
*Sqrt[a + I*a*Tan[c + d*x]]) - ((361*A + (151*I)*B)*Sqrt[a + I*a*Tan[c + d*
x]])/(60*a^3*d*Tan[c + d*x]^(3/2)) + (((707*I)*A - 317*B)*Sqrt[a + I*a*Tan[
c + d*x]])/(60*a^3*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 1.00663, antiderivative size = 286, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {3596, 3598, 12, 3544, 205}

$$-\frac{(361A+151iB)\sqrt{a+ia\tan(c+dx)}}{60a^3d\tan^{\frac{3}{2}}(c+dx)}+\frac{89A+39iB}{20a^2d\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}+\frac{(-317B+707iA)\sqrt{a+ia\tan(c+dx)}}{60a^3d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(5/2)),
x]
```



```
[Out] ((1/8 + I/8)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]])/(a^(5/2)*d) + (A + I*B)/(5*d*Tan[c + d*x]^(3/2)*(a +
I*a*Tan[c + d*x])^(5/2)) + (21*A + (11*I)*B)/(30*a*d*Tan[c + d*x]^(3/2)*(a
+ I*a*Tan[c + d*x])^(3/2)) + (89*A + (39*I)*B)/(20*a^2*d*Tan[c + d*x]^(3/2)
*Sqrt[a + I*a*Tan[c + d*x]]) - ((361*A + (151*I)*B)*Sqrt[a + I*a*Tan[c + d*
x]])/(60*a^3*d*Tan[c + d*x]^(3/2)) + (((707*I)*A - 317*B)*Sqrt[a + I*a*Tan[
c + d*x]])/(60*a^3*d*Sqrt[Tan[c + d*x]])
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\frac{1}{2}a(13A+3iB)-4a(iA-B)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx}{5a^2}$$

$$= \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{21A+11iB}{30ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{21A+11iB}{30ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{21A+11iB}{30ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{21A+11iB}{30ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{21A+11iB}{30ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+$$

$$= \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{21A+11iB}{30ad\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d} + \frac{A+iB}{5d\tan^{\frac{3}{2}}(c+dx)(a+ia\tan($$

Mathematica [B] time = 9.45376, size = 701, normalized size = 2.45

$$\frac{\sqrt{\tan(c+dx)}\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left((21A+16iB)\left(-\frac{\cos(c)}{60}+\frac{1}{60}i\sin(c)\right)\cos(4dx)+(11$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(
5/2)),x]
```

```
[Out] ((I*A + B)*Sqrt[E^(I*d*x)]*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*
x))/(1 + E^((2*I)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(
c + d*x))]]*Sec[c + d*x]^(3/2)*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A + B*Tan[c +
 d*x]))/(4*Sqrt[2]*d*E^(I*(-2*c + d*x))*Sqrt[((-I)*(-1 + E^((2*I)*(c + d*x)
)))/(1 + E^((2*I)*(c + d*x)))]*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*T
an[c + d*x])^(5/2)) + (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((21*A + (1
6*I)*B)*Cos[4*d*x]*(-Cos[c]/60 + (I/60)*Sin[c]) + (11*A + (6*I)*B)*Cos[2*d*
x]*((-7*Cos[c])/20 - ((7*I)/20)*Sin[c]) + I*Csc[c]*(640*A*Cos[c] + (240*I)*
B*Cos[c] + (343*I)*A*Sin[c] - 223*B*Sin[c])*(Cos[3*c]/120 + (I/120)*Sin[3*c
]) + (A + I*B)*Cos[6*d*x]*(-Cos[3*c]/40 + (I/40)*Sin[3*c]) + Csc[c + d*x]^2
*((-2*A*Cos[3*c])/3 - ((2*I)/3)*A*Sin[3*c]) + (11*A + (6*I)*B)*(((7*I)/20)*
Cos[c] - (7*Sin[c])/20)*Sin[2*d*x] + (21*A + (16*I)*B)*((I/60)*Cos[c] + Sin
[c]/60)*Sin[4*d*x] + (A + I*B)*((I/40)*Cos[3*c] + Sin[3*c]/40)*Sin[6*d*x] +
 (2*Csc[c]*Csc[c + d*x]*(4*A*Cos[3*c - d*x] + ((3*I)/2)*B*Cos[3*c - d*x] -
4*A*Cos[3*c + d*x] - ((3*I)/2)*B*Cos[3*c + d*x] + (4*I)*A*Sin[3*c - d*x] -
(3*B*Sin[3*c - d*x])/2 - (4*I)*A*Sin[3*c + d*x] + (3*B*Sin[3*c + d*x])/2))/
3)*Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(d*(A*Cos[c + d*x] + B*Sin[c +
d*x])*(a + I*a*Tan[c + d*x])^(5/2))
```

Maple [B] time = 0.058, size = 1239, normalized size = 4.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] 1/240/d*(a*(1+I*tan(d*x+c)))^(1/2)*(-2940*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)
))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2+2828*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^5+15*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*
(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*t
an(d*x+c)^6*a+4468*I*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*t
an(d*x+c)^4-90*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*
tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a+60*A*
2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+
I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^5*a-60*I*B*2^(1/2)*ln(-(-2*2
^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c
))/(tan(d*x+c)+I))*tan(d*x+c)^5*a+15*I*A*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/
2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I)
)*tan(d*x+c)^6*a-90*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1
+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^4*a-12
68*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^5+640*I*
```

```
A*tan(d*x+c)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)+15*I*A*2^(1
/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-
3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^2*a-60*A*2^(1/2)*ln(-(-2*2^(1/2)
*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(ta
n(d*x+c)+I))*tan(d*x+c)^3*a+9868*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-
I*a)^(1/2)*tan(d*x+c)^4-12260*I*A*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I
*a)^(1/2)*tan(d*x+c)^3+15*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x
+c)*(1+I*tan(d*x+c)))^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^
2*a+5660*B*(a*tan(d*x+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^3+
60*I*B*2^(1/2)*ln(-(-2*2^(1/2)*(-I*a)^(1/2)*(a*tan(d*x+c)*(1+I*tan(d*x+c)))
^(1/2)+I*a-3*a*tan(d*x+c))/(tan(d*x+c)+I))*tan(d*x+c)^3*a-6020*A*(a*tan(d*x
+c)*(1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)^2-480*B*(a*tan(d*x+c)*(
1+I*tan(d*x+c)))^(1/2)*(-I*a)^(1/2)*tan(d*x+c)-160*A*(a*tan(d*x+c)*(1+I*tan
(d*x+c)))^(1/2)*(-I*a)^(1/2))/a^3/tan(d*x+c)^(3/2)/(a*tan(d*x+c)*(1+I*tan(d
*x+c)))^(1/2)/(-tan(d*x+c)+I)^4/(-I*a)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.4034, size = 1740, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] -1/120*(sqrt(2)*((983*A + 463*I*B)*e^(10*I*d*x + 10*I*c) - 2*(272*A + 97*I*
B)*e^(8*I*d*x + 8*I*c) - 3*(393*A + 163*I*B)*e^(6*I*d*x + 6*I*c) + (381*A +
 191*I*B)*e^(4*I*d*x + 4*I*c) + 2*(18*A + 13*I*B)*e^(2*I*d*x + 2*I*c) + 3*A
 + 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) +
```

```
I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c) + 15*sqrt(1/2)*(a^3*d*e^(10*I
*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*s
qrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*log((2*I*sqrt(1/2)*a^3*d*sqrt((-I*A
^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(
2*I*d*x + 2*I*c) + I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2
*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x
- I*c)/(4*I*A + 4*B)) - 15*sqrt(1/2)*(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d
*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((-I*A^2 - 2*A*B + I*
B^2)/(a^5*d^2))*log((-2*I*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^
5*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A
+ B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e
^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)))/
(a^3*d*e^(10*I*d*x + 10*I*c) - 2*a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d
*x + 6*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.56839, size = 261, normalized size = 0.91

$$\frac{(i+1)\sqrt{-2(ia\tan(dx+c)+a)a+2a^2}(ia\tan(dx+c)+a)a^4+\left(-(2i-2)(ia\tan(dx+c)+a)a^3+(2i-2)a^4\right)\sqrt{-2(i\cdots}}{2\left((ia\tan(dx+c)+a)^7a-5(ia\tan(dx+c)+a)^6a^2+9(ia\tan(dx+c)+a)^5a^3-7(ia\tan(dx+c)+a\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] 1/2*((I + 1)*sqrt(-2*(I*a*tan(d*x + c) + a)*a + 2*a^2)*(I*a*tan(d*x + c) +
a)*a^4 + (-(2*I - 2)*(I*a*tan(d*x + c) + a)*a^3 + (2*I - 2)*a^4)*sqrt(-2*(I
*a*tan(d*x + c) + a)*a + 2*a^2)*sqrt(I*a*tan(d*x + c) + a)*B)/(((I*a*tan(d*
x + c) + a)^7*a - 5*(I*a*tan(d*x + c) + a)^6*a^2 + 9*(I*a*tan(d*x + c) + a)
```

```
^5*a^3 - 7*(I*a*tan(d*x + c) + a)^4*a^4 + 2*(I*a*tan(d*x + c) + a)^3*a^5)*d
)
```

3.196 $\int \sqrt[3]{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=201

$$-\frac{\sqrt{3}\sqrt[3]{a}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{2^{2/3}d}+\frac{3\sqrt[3]{a}(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\,2^{2/3}d}+\frac{\sqrt[3]{a}(B+iA)\log(\cos(}{2\,2^{2/3}d}$$

```
[Out] -(a^(1/3)*(A - I*B)*x)/(2*2^(2/3)) - (Sqrt[3]*a^(1/3)*(I*A + B)*ArcTan[(a^(
1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(2/3)*d
) + (a^(1/3)*(I*A + B)*Log[Cos[c + d*x]])/(2*2^(2/3)*d) + (3*a^(1/3)*(I*A +
 B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(2/3)*d) + (3
*B*(a + I*a*Tan[c + d*x])^(1/3))/d
```

Rubi [A] time = 0.165943, antiderivative size = 201, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3527, 3481, 57, 617, 204, 31}

$$-\frac{\sqrt{3}\sqrt[3]{a}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{2^{2/3}d}+\frac{3\sqrt[3]{a}(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\,2^{2/3}d}+\frac{\sqrt[3]{a}(B+iA)\log(\cos(}{2\,2^{2/3}d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^(1/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(a^(1/3)*(A - I*B)*x)/(2*2^(2/3)) - (Sqrt[3]*a^(1/3)*(I*A + B)*ArcTan[(a^(
1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(2/3)*d
) + (a^(1/3)*(I*A + B)*Log[Cos[c + d*x]])/(2*2^(2/3)*d) + (3*a^(1/3)*(I*A +
 B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(2/3)*d) + (3
*B*(a + I*a*Tan[c + d*x])^(1/3))/d
```


Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
```

```
c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 57

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(2/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q^2),
 x] + (-Dist[3/(2*b*q), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/
3)], x] - Dist[3/(2*b*q^2), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x
])] /; FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \sqrt[3]{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{3B\sqrt[3]{a+ia\tan(c+dx)}}{d} - (-A+iB)\int \sqrt[3]{a+ia\tan(c+dx)}\,dx$$

$$= \frac{3B\sqrt[3]{a+ia\tan(c+dx)}}{d} - \frac{(a(iA+B))\,\mathrm{Subst}\left(\int \frac{1}{(a-x)(a+x)^{2/3}}\,dx, x, ia\tan(\right.}{d}$$

$$= -\frac{\sqrt[3]{a}(A-iB)x}{2\,2^{2/3}} + \frac{\sqrt[3]{a}(iA+B)\log(\cos(c+dx))}{2\,2^{2/3}d} + \frac{3B\sqrt[3]{a+ia\tan(c+dx}}{d}$$

$$= -\frac{\sqrt[3]{a}(A-iB)x}{2\,2^{2/3}} + \frac{\sqrt[3]{a}(iA+B)\log(\cos(c+dx))}{2\,2^{2/3}d} + \frac{3\sqrt[3]{a}(iA+B)\log\left(\sqrt[3]{2}\right.}{2}$$

$$= -\frac{\sqrt[3]{a}(A-iB)x}{2\,2^{2/3}} - \frac{\sqrt{3}\sqrt[3]{a}(iA+B)\tan^{-1}\left(\frac{1+\frac{2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2^{2/3}d} + \sqrt[3]{a}(iA+B$$

Mathematica [F] time = 180.004, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^(1/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.019, size = 297, normalized size = 1.5

$$3\,\frac{B\sqrt[3]{a+ia\tan(dx+c)}}{d} + \frac{\sqrt[3]{2}B}{2d}\sqrt[3]{a}\ln\left(\sqrt[3]{a+ia\tan(dx+c)} - \sqrt[3]{2}\sqrt[3]{a}\right) + \frac{\frac{i}{2}\sqrt[3]{2}A}{d}\sqrt[3]{a}\ln\left(\sqrt[3]{a+ia\tan(dx+c)} - \sqrt[3]{2}\sqrt[3]{a}\right) - $$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] 3*B*(a+I*a*tan(d*x+c))^(1/3)/d+1/2/d*a^(1/3)*2^(1/3)*ln((a+I*a*tan(d*x+c))^
(1/3)-2^(1/3)*a^(1/3))*B+1/2*I/d*a^(1/3)*2^(1/3)*ln((a+I*a*tan(d*x+c))^(1/3
)-2^(1/3)*a^(1/3))*A-1/4/d*a^(1/3)*2^(1/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1
```

```
/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2^(2/3)*a^(2/3))*B-1/4*I/d*a^(1/3)*2^(
1/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2
^(2/3)*a^(2/3))*A-1/2/d*a^(1/3)*2^(1/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2^(2/3)
/a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+1))*B-1/2*I/d*a^(1/3)*2^(1/3)*3^(1/2)*arc
tan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+1))*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.76749, size = 1131, normalized size = 5.63

$$6\cdot 2^{\frac{1}{3}} B \left(\frac{a}{e^{(2i\,dx+2i\,c)}+1}\right)^{\frac{1}{3}} e^{\left(\frac{2}{3}i\,dx+\frac{2}{3}i\,c\right)} + \left(\frac{1}{4}\right)^{\frac{1}{3}} \left(-i\sqrt{3}d-d\right) \left(\frac{\left(-i\,A^3-3\,A^2B+3i\,AB^2+B^3\right)a}{d^3}\right)^{\frac{1}{3}} \log\left(\frac{2^{\frac{1}{3}}(i\,A+B)\left(\frac{a}{e^{(2i\,dx+2i\,c)}+1}\right)^{\frac{1}{3}} e^{\left(\frac{2}{3}i\,dx+\frac{2}{3}i\,c\right)}+\left(\frac{1}{4}\right)}{i\,A+B}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(6*2^(1/3)*B*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c
) + (1/4)^(1/3)*(-I*sqrt(3)*d - d)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)*a/
d^3)^(1/3)*log((2^(1/3)*(I*A + B)*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/
3*I*d*x + 2/3*I*c) + (1/4)^(1/3)*(I*sqrt(3)*d + d)*((-I*A^3 - 3*A^2*B + 3*I
*A*B^2 + B^3)*a/d^3)^(1/3))/(I*A + B)) + (1/4)^(1/3)*(I*sqrt(3)*d - d)*((-I
*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)*a/d^3)^(1/3)*log((2^(1/3)*(I*A + B)*(a/(e
^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) + (1/4)^(1/3)*(-I*sq
rt(3)*d + d)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)*a/d^3)^(1/3))/(I*A + B))
 + 2*(1/4)^(1/3)*d*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)*a/d^3)^(1/3)*log((
2^(1/3)*(I*A + B)*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*
c) - 2*(1/4)^(1/3)*d*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)*a/d^3)^(1/3))/(I
```

```
*A + B)))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt[3]{a\,(i\tan{(c+dx)}+1)}\,(A+B\tan{(c+dx)})\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**(1/3)*(A + B*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan{(dx+c)}+A)(i\,a\tan{(dx+c)}+a)^{\frac{1}{3}}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(1/3), x)
```

3.197 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=270

$$-\frac{\sqrt{3}a^{2/3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}-\frac{3a^{2/3}(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}-\frac{a^{2/3}(B+iA)\log(c}{2\sqrt[3]{2}d}$$

```
[Out] (a^(2/3)*(A - I*B)*x)/(2*2^(1/3)) - (Sqrt[3]*a^(2/3)*(I*A + B)*ArcTan[(a^(1
/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d)
 - (a^(2/3)*(I*A + B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) - (3*a^(2/3)*(I*A +
B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d) - (9*
B*(a + I*a*Tan[c + d*x])^(2/3))/(8*d) + (3*B*Tan[c + d*x]^2*(a + I*a*Tan[c
+ d*x])^(2/3))/(8*d) - (3*((4*I)*A + B)*(a + I*a*Tan[c + d*x])^(5/3))/(20*a
*d)
```

Rubi [A] time = 0.444395, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3597, 3592, 3527, 3481, 55, 617, 204, 31}

$$-\frac{\sqrt{3}a^{2/3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}-\frac{3a^{2/3}(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}-\frac{a^{2/3}(B+iA)\log(c}{2\sqrt[3]{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^(2/3)*(A - I*B)*x)/(2*2^(1/3)) - (Sqrt[3]*a^(2/3)*(I*A + B)*ArcTan[(a^(1
/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d)
 - (a^(2/3)*(I*A + B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) - (3*a^(2/3)*(I*A +
B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d) - (9*
B*(a + I*a*Tan[c + d*x])^(2/3))/(8*d) + (3*B*Tan[c + d*x]^2*(a + I*a*Tan[c
+ d*x])^(2/3))/(8*d) - (3*((4*I)*A + B)*(a + I*a*Tan[c + d*x])^(5/3))/(20*a
*d)
```


Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx = \frac{3B\tan^2(c+dx)(a+ia\tan(c+dx))^{2/3}}{8d} + \frac{3\int \tan(c+dx)}{}$$

$$= \frac{3B\tan^2(c+dx)(a+ia\tan(c+dx))^{2/3}}{8d} - \frac{3(4iA+B)(a}{}$$

$$= -\frac{9B(a+ia\tan(c+dx))^{2/3}}{8d} + \frac{3B\tan^2(c+dx)(a+ia\tan}{8d}$$

$$= -\frac{9B(a+ia\tan(c+dx))^{2/3}}{8d} + \frac{3B\tan^2(c+dx)(a+ia\tan}{8d}$$

$$= \frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}} - \frac{a^{2/3}(iA+B)\log(\cos(c+dx))}{2\sqrt[3]{2}d} - \frac{9B(a+}{}$$

$$= \frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}} - \frac{a^{2/3}(iA+B)\log(\cos(c+dx))}{2\sqrt[3]{2}d} - \frac{3a^{2/3}(i}{}$$

$$= \frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}} - \frac{\sqrt{3}a^{2/3}(iA+B)\tan^{-1}\left(\frac{1+\frac{2^{2/3}\sqrt[3]{a+ia\tan(c+dx}}{\sqrt[3]{a}}}{\sqrt{3}}\right.}{\sqrt[3]{2}d}$$

Mathematica [C] time = 2.64225, size = 104, normalized size = 0.39

$$\frac{3(a+ia\tan(c+dx))^{2/3}\left(10(B+iA)\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)+(8A-2iB)\tan(c+dx)-8iA+5B\sec^2\right.}{40d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),
```

```
x]
```

```
[Out] (3*(a + I*a*Tan[c + d*x])^(2/3)*((-8*I)*A - 22*B + 10*(I*A + B)*Hypergeomet
ric2F1[2/3, 1, 5/3, E^((2*I)*(c + d*x))/(1 + E^((2*I)*(c + d*x)))] + 5*B*Se
c[c + d*x]^2 + (8*A - (2*I)*B)*Tan[c + d*x]))/(40*d)
```

Maple [A] time = 0.027, size = 367, normalized size = 1.4

$$-\frac{3B}{8a^2d}(a+ia\tan(dx+c))^{\frac{8}{3}}+\frac{3B}{5ad}(a+ia\tan(dx+c))^{\frac{5}{3}}-\frac{\frac{3i}{5}A}{ad}(a+ia\tan(dx+c))^{\frac{5}{3}}-\frac{3B}{2d}(a+ia\tan(dx+c))^{\frac{2}{3}}-\frac{2^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] -3/8/d/a^2*B*(a+I*a*tan(d*x+c))^(8/3)+3/5/d/a*B*(a+I*a*tan(d*x+c))^(5/3)-3/
5*I/d/a*A*(a+I*a*tan(d*x+c))^(5/3)-3/2*B*(a+I*a*tan(d*x+c))^(2/3)/d-1/2/d*a
^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*B-1/2*I/d*a^(2/
3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*A+1/4/d*a^(2/3)*2^(
2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2
^(2/3)*a^(2/3))*B+1/4*I/d*a^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/
3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2^(2/3)*a^(2/3))*A-1/2/d*a^(2/3)*3^(1/2
)*2^(2/3)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+1))*
B-1/2*I/d*a^(2/3)*3^(1/2)*2^(2/3)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*
a*tan(d*x+c))^(1/3)+1))*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.82168, size = 1762, normalized size = 6.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/10*(2^(2/3)*((-12*I*A - 18*B)*e^(4*I*d*x + 4*I*c) + (-12*I*A - 18*B)*e^(2
*I*d*x + 2*I*c) - 15*B)*(a/(e^(2*I*d*x + 2*I*c) + 1))^(2/3)*e^(4/3*I*d*x +
4/3*I*c) + 10*(1/2)^(1/3)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c)
+ d)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2
- 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I
*c) + 2*(1/2)^(2/3)*d^2*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(2/3)
)/((A^2 - 2*I*A*B - B^2)*a)) - 5*(1/2)^(1/3)*((-I*sqrt(3)*d + d)*e^(4*I*d*x
 + 4*I*c) + 2*(-I*sqrt(3)*d + d)*e^(2*I*d*x + 2*I*c) - I*sqrt(3)*d + d)*((I
*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2 - 2*I*A*
B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (1
/2)^(2/3)*(I*sqrt(3)*d^2 + d^2)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^
3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)) - (1/2)^(1/3)*(5*(I*sqrt(3)*d + d)*e^(
4*I*d*x + 4*I*c) + 10*(I*sqrt(3)*d + d)*e^(2*I*d*x + 2*I*c) + 5*I*sqrt(3)*d
 + 5*d)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A
^2 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/
3*I*c) - (1/2)^(2/3)*(-I*sqrt(3)*d^2 + d^2)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 -
 B^3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)))/(d*e^(4*I*d*x + 4*I*c) +
2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a(i\tan(c+dx)+1))^{\frac{2}{3}}(A+B\tan(c+dx))\tan^2(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**(2/3)*(A + B*tan(c + d*x))*tan(c + d*x)*
*2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{2}{3}}\tan(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(2/3)*tan(d*x + c)^2,
 x)
```

3.198 $\int \tan(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=232

$$\frac{\sqrt{3}a^{2/3}(A-iB)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}+\frac{3a^{2/3}(A-iB)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}+\frac{a^{2/3}(A-iB)\log(\cos}{2\sqrt[3]{2}d}$$

```
[Out] (a^(2/3)*(I*A + B)*x)/(2*2^(1/3)) + (Sqrt[3]*a^(2/3)*(A - I*B)*ArcTan[(a^(1
/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d)
 + (a^(2/3)*(A - I*B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) + (3*a^(2/3)*(A - I*
B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d) + (3*
A*(a + I*a*Tan[c + d*x])^(2/3))/(2*d) - (((3*I)/5)*B*(a + I*a*Tan[c + d*x])
^(5/3))/(a*d)
```

Rubi [A] time = 0.221381, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3592, 3527, 3481, 55, 617, 204, 31}

$$\frac{\sqrt{3}a^{2/3}(A-iB)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}+\frac{3a^{2/3}(A-iB)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}+\frac{a^{2/3}(A-iB)\log(\cos}{2\sqrt[3]{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^(2/3)*(I*A + B)*x)/(2*2^(1/3)) + (Sqrt[3]*a^(2/3)*(A - I*B)*ArcTan[(a^(1
/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d)
 + (a^(2/3)*(A - I*B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) + (3*a^(2/3)*(A - I*
B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d) + (3*
A*(a + I*a*Tan[c + d*x])^(2/3))/(2*d) - (((3*I)/5)*B*(a + I*a*Tan[c + d*x])
^(5/3))/(a*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
```

```
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx = -\frac{3iB(a+ia\tan(c+dx))^{5/3}}{5ad} + \int (a+ia\tan(c+dx))^{2/3}(-$$

$$= \frac{3A(a+ia\tan(c+dx))^{2/3}}{2d} - \frac{3iB(a+ia\tan(c+dx))^{5/3}}{5ad} -$$

$$= \frac{3A(a+ia\tan(c+dx))^{2/3}}{2d} - \frac{3iB(a+ia\tan(c+dx))^{5/3}}{5ad} -$$

$$= \frac{a^{2/3}(iA+B)x}{2\sqrt[3]{2}} + \frac{a^{2/3}(A-iB)\log(\cos(c+dx))}{2\sqrt[3]{2}d} + \frac{3A(a+$$

$$= \frac{a^{2/3}(iA+B)x}{2\sqrt[3]{2}} + \frac{a^{2/3}(A-iB)\log(\cos(c+dx))}{2\sqrt[3]{2}d} + \frac{3a^{2/3}(A$$

$$= \frac{a^{2/3}(iA+B)x}{2\sqrt[3]{2}} + \frac{\sqrt{3}a^{2/3}(A-iB)\tan^{-1}\left(\frac{1+\frac{2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right.}{\sqrt[3]{2}d}$$

Mathematica [C] time = 1.47345, size = 115, normalized size = 0.5

$$\frac{3\left(e^{idx}\right)^{2/3}(a+ia\tan(c+dx))^{2/3}\left(-5(A-iB)\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)+10A+4B\tan(c+dx)-4iB\right)}{20d(\cos(dx)+i\sin(dx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*(E^(I*d*x))^(2/3)*(a + I*a*Tan[c + d*x])^(2/3)*(10*A - (4*I)*B - 5*(A -
I*B)*Hypergeometric2F1[2/3, 1, 5/3, E^((2*I)*(c + d*x))/(1 + E^((2*I)*(c +
d*x)))] + 4*B*Tan[c + d*x]))/(20*d*(Cos[d*x] + I*Sin[d*x])^(2/3))
```

Maple [A] time = 0.018, size = 321, normalized size = 1.4

$$\frac{-\frac{3i}{5}B}{ad}(a+ia\tan(dx+c))^{\frac{5}{3}} + \frac{3A}{2d}(a+ia\tan(dx+c))^{\frac{2}{3}} - \frac{\frac{i}{2}2^{\frac{2}{3}}B}{d}a^{\frac{2}{3}}\ln\left(\sqrt[3]{a+ia\tan(dx+c)}-\sqrt[3]{2}\sqrt[3]{a}\right) + \frac{2^{\frac{2}{3}}A}{2d}a^{\frac{2}{3}}\ln\left(\sqrt[3]{a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] -3/5*I*B*(a+I*a*tan(d*x+c))^(5/3)/a/d+3/2*A*(a+I*a*tan(d*x+c))^(2/3)/d-1/2*
I/d*a^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*B+1/2/d*a^
(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*A+1/4*I/d*a^(2/3
)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1
/3)+2^(2/3)*a^(2/3))*B-1/4/d*a^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^
(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2^(2/3)*a^(2/3))*A-1/2*I/d*a^(2/3)*3
^(1/2)*2^(2/3)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)
+1))*B+1/2/d*a^(2/3)*3^(1/2)*2^(2/3)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a
+I*a*tan(d*x+c))^(1/3)+1))*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.77218, size = 1520, normalized size = 6.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/10*(3*2^(2/3)*((5*A - 4*I*B)*e^(2*I*d*x + 2*I*c) + 5*A)*(a/(e^(2*I*d*x +
2*I*c) + 1))^(2/3)*e^(4/3*I*d*x + 4/3*I*c) + 10*(1/2)^(1/3)*(d*e^(2*I*d*x +
 2*I*c) + d)*((A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(1/3)*log((2^(1/
3)*(A^2 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x
 + 2/3*I*c) - 2*(1/2)^(2/3)*d^2*((A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^
3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)) - (1/2)^(1/3)*(5*(I*sqrt(3)*d + d)*e^(
2*I*d*x + 2*I*c) + 5*I*sqrt(3)*d + 5*d)*((A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3
```

```
)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*
c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (1/2)^(2/3)*(I*sqrt(3)*d^2 - d^2)*
((A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)
*a)) - 5*(1/2)^(1/3)*((-I*sqrt(3)*d + d)*e^(2*I*d*x + 2*I*c) - I*sqrt(3)*d
+ d)*((A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2
- 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I
*c) - (1/2)^(2/3)*(-I*sqrt(3)*d^2 - d^2)*((A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^
3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a (i \tan (c + dx) + 1))^{\frac{2}{3}} (A + B \tan (c + dx)) \tan (c + dx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**(2/3)*(A + B*tan(c + d*x))*tan(c + d*x),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(i a \tan (dx + c) + a)^{\frac{2}{3}} \tan (dx + c) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(2/3)*tan(d*x + c), x
)
```

3.199 $\int (a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=202

$$\frac{\sqrt{3}a^{2/3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}+\frac{3a^{2/3}(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}+\frac{a^{2/3}(B+iA)\log(\cos(}{2\sqrt[3]{2}d}$$

```
[Out] -(a^(2/3)*(A - I*B)*x)/(2*2^(1/3)) + (Sqrt[3]*a^(2/3)*(I*A + B)*ArcTan[(a^(
1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d
) + (a^(2/3)*(I*A + B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) + (3*a^(2/3)*(I*A +
 B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d) + (3
*B*(a + I*a*Tan[c + d*x])^(2/3))/(2*d)
```

Rubi [A] time = 0.149228, antiderivative size = 202, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3527, 3481, 55, 617, 204, 31}

$$\frac{\sqrt{3}a^{2/3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}+\frac{3a^{2/3}(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}+\frac{a^{2/3}(B+iA)\log(\cos(}{2\sqrt[3]{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a^(2/3)*(A - I*B)*x)/(2*2^(1/3)) + (Sqrt[3]*a^(2/3)*(I*A + B)*ArcTan[(a^(
1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d
) + (a^(2/3)*(I*A + B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) + (3*a^(2/3)*(I*A +
 B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d) + (3
*B*(a + I*a*Tan[c + d*x])^(2/3))/(2*d)
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
```

```
c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int (a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx = \frac{3B(a+ia\tan(c+dx))^{2/3}}{2d} - (-A+iB)\int (a+ia\tan(c+dx))^{2/3}\,dx$$

$$= \frac{3B(a+ia\tan(c+dx))^{2/3}}{2d} - \frac{(a(iA+B))\,\mathrm{Subst}\left(\int \frac{1}{(a-x)\sqrt[3]{a+x}}\,dx, x, ia\,\mathrm{ta}\right.}{d}$$

$$= -\frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}} + \frac{a^{2/3}(iA+B)\log(\cos(c+dx))}{2\sqrt[3]{2}d} + \frac{3B(a+ia\tan(c+d}{2d}$$

$$= -\frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}} + \frac{a^{2/3}(iA+B)\log(\cos(c+dx))}{2\sqrt[3]{2}d} + \frac{3a^{2/3}(iA+B)\log\left(\sqrt[3]{\right.}}{}$$

$$= -\frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}} + \frac{\sqrt{3}a^{2/3}(iA+B)\tan^{-1}\left(\frac{1+\frac{2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{\sqrt[3]{2}d} + \frac{a^{2/3}(iA}{}$$

Mathematica [C] time = 1.05034, size = 91, normalized size = 0.45

$$-\frac{3\left(\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{2/3}\left(-2B+(B+iA)\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)\right)}{2\sqrt[3]{2}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-3*((a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x))))^(2/3)*(-2*B + (I*A
+ B)*Hypergeometric2F1[2/3, 1, 5/3, E^((2*I)*(c + d*x))/(1 + E^((2*I)*(c +
d*x)))]))/(2*2^(1/3)*d)
```

Maple [A] time = 0.015, size = 297, normalized size = 1.5

$$\frac{3B}{2d}(a+ia\tan(dx+c))^{\frac{2}{3}} + \frac{2^{\frac{2}{3}}B}{2d}a^{\frac{2}{3}}\ln\left(\sqrt[3]{a+ia\tan(dx+c)} - \sqrt[3]{2}\sqrt[3]{a}\right) + \frac{\frac{i}{2}2^{\frac{2}{3}}A}{d}a^{\frac{2}{3}}\ln\left(\sqrt[3]{a+ia\tan(dx+c)} - \sqrt[3]{2}\sqrt[3]{a}\right) - \frac{2}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] 3/2*B*(a+I*a*tan(d*x+c))^(2/3)/d+1/2/d*a^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c)
)^(1/3)-2^(1/3)*a^(1/3))*B+1/2*I/d*a^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(1
/3)-2^(1/3)*a^(1/3))*A-1/4/d*a^(2/3)*2^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^
(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2^(2/3)*a^(2/3))*B-1/4*I/d*a^(2/3)*2
^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)
+2^(2/3)*a^(2/3))*A+1/2/d*a^(2/3)*3^(1/2)*2^(2/3)*arctan(1/3*3^(1/2)*(2^(2/
3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+1))*B+1/2*I/d*a^(2/3)*3^(1/2)*2^(2/3)*a
rctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+1))*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.77207, size = 1283, normalized size = 6.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

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

```
3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a\,(i\tan{(c+dx)}+1))^{\frac{2}{3}}\,(A+B\tan{(c+dx)})\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**(2/3)*(A + B*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan{(dx+c)}+A)(i\,a\tan{(dx+c)}+a)^{\frac{2}{3}}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(2/3), x)
```

3.200 $\int \cot(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=289

$$-\frac{\sqrt{3}a^{2/3}(A-iB)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}-\frac{3a^{2/3}(A-iB)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}-\frac{a^{2/3}(A-iB)\log(\mathrm{co}}{2\sqrt[3]{2}d}$$

```
[Out] -(a^(2/3)*(I*A + B)*x)/(2*2^(1/3)) + (Sqrt[3]*a^(2/3)*A*ArcTan[(a^(1/3) + 2
*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/d - (Sqrt[3]*a^(2/3)*(A
- I*B)*ArcTan[(a^(1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(
1/3))])/(2^(1/3)*d) - (a^(2/3)*(A - I*B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) -
 (a^(2/3)*A*Log[Tan[c + d*x]])/(2*d) + (3*a^(2/3)*A*Log[a^(1/3) - (a + I*a*
Tan[c + d*x])^(1/3)])/(2*d) - (3*a^(2/3)*(A - I*B)*Log[2^(1/3)*a^(1/3) - (a
 + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d)
```

Rubi [A] time = 0.373065, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3600, 3481, 55, 617, 204, 31, 3599}

$$-\frac{\sqrt{3}a^{2/3}(A-iB)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}-\frac{3a^{2/3}(A-iB)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{2\sqrt[3]{2}d}-\frac{a^{2/3}(A-iB)\log(\mathrm{co}}{2\sqrt[3]{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(a^(2/3)*(I*A + B)*x)/(2*2^(1/3)) + (Sqrt[3]*a^(2/3)*A*ArcTan[(a^(1/3) + 2
*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/d - (Sqrt[3]*a^(2/3)*(A
- I*B)*ArcTan[(a^(1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(
1/3))])/(2^(1/3)*d) - (a^(2/3)*(A - I*B)*Log[Cos[c + d*x]])/(2*2^(1/3)*d) -
 (a^(2/3)*A*Log[Tan[c + d*x]])/(2*d) + (3*a^(2/3)*A*Log[a^(1/3) - (a + I*a*
Tan[c + d*x])^(1/3)])/(2*d) - (3*a^(2/3)*(A - I*B)*Log[2^(1/3)*a^(1/3) - (a
 + I*a*Tan[c + d*x])^(1/3)])/(2*2^(1/3)*d)
```


Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
```

```
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx = \frac{A\int \cot(c+dx)(a-ia\tan(c+dx))(a+ia\tan(c+dx))^{2/3}}{a}$$

$$= \frac{(aA)\,\text{Subst}\left(\int \frac{1}{x\sqrt[3]{a+iax}}\,dx, x, \tan(c+dx)\right)}{d} + \frac{(a(A-iB))}{}$$

$$= -\frac{a^{2/3}(iA+B)x}{2\sqrt[3]{2}} - \frac{a^{2/3}(A-iB)\log(\cos(c+dx))}{2\sqrt[3]{2}d} - \frac{a^{2/3}A\,\mathrm{l}}{}$$

$$= -\frac{a^{2/3}(iA+B)x}{2\sqrt[3]{2}} - \frac{a^{2/3}(A-iB)\log(\cos(c+dx))}{2\sqrt[3]{2}d} - \frac{a^{2/3}A\,\mathrm{l}}{}$$

$$= -\frac{a^{2/3}(iA+B)x}{2\sqrt[3]{2}} + \frac{\sqrt{3}a^{2/3}A\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{d} - \frac{\sqrt{3}}{}$$

Mathematica [C] time = 1.50193, size = 127, normalized size = 0.44

$$\frac{3\left(\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{2/3}\left((A-iB)\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)-2A\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{2e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)\right)}{2\sqrt[3]{2}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*((a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x))))^(2/3)*((A - I*B)*Hyp
ergeometric2F1[2/3, 1, 5/3, E^((2*I)*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]
- 2*A*Hypergeometric2F1[2/3, 1, 5/3, (2*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]))/(2*2^(1/3)*d)
```

Maple [F] time = 0.167, size = 0, normalized size = 0.

$$\int \cot(dx+c)\,(a+ia\tan(dx+c))^{\frac{2}{3}}\,(A+B\tan(dx+c))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.88981, size = 1848, normalized size = 6.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/2*(1/2)^(1/3)*(-I*sqrt(3) - 1)*(-(A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/
d^3)^(1/3)*log((2^(1/3)*(A^2 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1
))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (1/2)^(2/3)*(I*sqrt(3)*d^2 - d^2)*(-(A^3
 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a))
+ 1/2*(1/2)^(1/3)*(I*sqrt(3) - 1)*(-(A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2
/d^3)^(1/3)*log((2^(1/3)*(A^2 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) +
1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (1/2)^(2/3)*(-I*sqrt(3)*d^2 - d^2)*(-(A
^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)
) + 1/2*(A^3*a^2/d^3)^(1/3)*(I*sqrt(3) - 1)*log(1/2*(2*2^(1/3)*A^2*a*(a/(e^
(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) + (I*sqrt(3)*d^2 + d^
2)*(A^3*a^2/d^3)^(2/3))/(A^2*a)) + 1/2*(A^3*a^2/d^3)^(1/3)*(-I*sqrt(3) - 1)
*log(1/2*(2*2^(1/3)*A^2*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x
+ 2/3*I*c) + (-I*sqrt(3)*d^2 + d^2)*(A^3*a^2/d^3)^(2/3))/(A^2*a)) + (1/2)^(
1/3)*(-(A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2
 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*
```

```
I*c) - 2*(1/2)^(2/3)*d^2*(-(A^3 - 3*I*A^2*B - 3*A*B^2 + I*B^3)*a^2/d^3)^(2/
3))/((A^2 - 2*I*A*B - B^2)*a)) + (A^3*a^2/d^3)^(1/3)*log((2^(1/3)*A^2*a*(a/
(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (A^3*a^2/d^3)^(2
/3)*d^2)/(A^2*a))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{2}{3}}\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(2/3)*cot(d*x + c), x
)
```

3.201 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=342

$$\frac{a^{2/3}(3B+2iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}d}-\frac{\sqrt{3}a^{2/3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}-\frac{a^{2/3}(3B+2iA)\log(\tan(c+}{6d}$$

```
[Out] (a^(2/3)*(A - I*B)*x)/(2*2^(1/3)) + (a^(2/3)*((2*I)*A + 3*B)*ArcTan[(a^(1/3
) + 2*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*d) - (Sqrt
[3]*a^(2/3)*(I*A + B)*ArcTan[(a^(1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3
))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d) - (a^(2/3)*(I*A + B)*Log[Cos[c + d*x]])/
(2*2^(1/3)*d) - (a^(2/3)*((2*I)*A + 3*B)*Log[Tan[c + d*x]])/(6*d) + (a^(2/3
)*((2*I)*A + 3*B)*Log[a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*d) - (3*a
^(2/3)*(I*A + B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^
(1/3)*d) - (A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(2/3))/d
```

Rubi [A] time = 0.590007, antiderivative size = 342, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3598, 3600, 3481, 55, 617, 204, 31, 3599}

$$\frac{a^{2/3}(3B+2iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}d}-\frac{\sqrt{3}a^{2/3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{2}d}-\frac{a^{2/3}(3B+2iA)\log(\tan(c+}{6d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^(2/3)*(A - I*B)*x)/(2*2^(1/3)) + (a^(2/3)*((2*I)*A + 3*B)*ArcTan[(a^(1/3
) + 2*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*d) - (Sqrt
[3]*a^(2/3)*(I*A + B)*ArcTan[(a^(1/3) + 2^(2/3)*(a + I*a*Tan[c + d*x])^(1/3
))/(Sqrt[3]*a^(1/3))])/(2^(1/3)*d) - (a^(2/3)*(I*A + B)*Log[Cos[c + d*x]])/
(2*2^(1/3)*d) - (a^(2/3)*((2*I)*A + 3*B)*Log[Tan[c + d*x]])/(6*d) + (a^(2/3
)*((2*I)*A + 3*B)*Log[a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*d) - (3*a
^(2/3)*(I*A + B)*Log[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(2*2^
(1/3)*d) - (A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^(2/3))/d
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx = -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^{2/3}}{d}+\frac{\int \cot(c+dx)(a \cdots}{\cdots}$$

$$= -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^{2/3}}{d}+(-A+iB)\int(a+\cdots$$

$$= -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^{2/3}}{d}+\frac{(a(iA+B))\,\mathrm{Subs}\cdots}{\cdots}$$

$$= \frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}}-\frac{a^{2/3}(iA+B)\log(\cos(c+dx))}{2\sqrt[3]{2}d}-\frac{a^{2/3}(2iA\cdots}{\cdots}$$

$$= \frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}}-\frac{a^{2/3}(iA+B)\log(\cos(c+dx))}{2\sqrt[3]{2}d}-\frac{a^{2/3}(2iA\cdots}{\cdots}$$

$$= \frac{a^{2/3}(A-iB)x}{2\sqrt[3]{2}}+\frac{a^{2/3}(2iA+3B)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{\sqrt{3}d}-\cdots$$

Mathematica [F] time = 6.24911, size = 0, normalized size = 0.

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.211, size = 0, normalized size = 0.

$$\int \left(\cot \left(dx+c\right)\right)^{2} \left(a+ia\tan \left(dx+c\right)\right)^{\frac{2}{3}} \left(A+B\tan \left(dx+c\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.00936, size = 2824, normalized size = 8.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/6*(3*2^(2/3)*(-2*I*A*e^(2*I*d*x + 2*I*c) - 2*I*A)*(a/(e^(2*I*d*x + 2*I*c)
 + 1))^(2/3)*e^(4/3*I*d*x + 4/3*I*c) + 6*(1/2)^(1/3)*(d*e^(2*I*d*x + 2*I*c)
 - d)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2
```

```
 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*
I*c) + 2*(1/2)^(2/3)*d^2*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(2/3
))/((A^2 - 2*I*A*B - B^2)*a)) + 3*(1/2)^(1/3)*((I*sqrt(3)*d - d)*e^(2*I*d*x
 + 2*I*c) - I*sqrt(3)*d + d)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^
(1/3)*log((2^(1/3)*(A^2 - 2*I*A*B - B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1
/3)*e^(2/3*I*d*x + 2/3*I*c) - (1/2)^(2/3)*(I*sqrt(3)*d^2 + d^2)*((I*A^3 + 3
*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(2/3))/((A^2 - 2*I*A*B - B^2)*a)) + 3*(1
/2)^(1/3)*((-I*sqrt(3)*d - d)*e^(2*I*d*x + 2*I*c) + I*sqrt(3)*d + d)*((I*A^
3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(A^2 - 2*I*A*B -
 B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (1/2)
^(2/3)*(-I*sqrt(3)*d^2 + d^2)*((I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)*a^2/d^3)
^(2/3))/((A^2 - 2*I*A*B - B^2)*a)) + ((-I*sqrt(3)*d - d)*e^(2*I*d*x + 2*I*c
) + I*sqrt(3)*d + d)*((-8*I*A^3 - 36*A^2*B + 54*I*A*B^2 + 27*B^3)*a^2/d^3)^
(1/3)*log((2^(1/3)*(8*A^2 - 24*I*A*B - 18*B^2)*a*(a/(e^(2*I*d*x + 2*I*c) +
1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) + (I*sqrt(3)*d^2 - d^2)*((-8*I*A^3 - 36*A
^2*B + 54*I*A*B^2 + 27*B^3)*a^2/d^3)^(2/3))/((8*A^2 - 24*I*A*B - 18*B^2)*a)
) + ((I*sqrt(3)*d - d)*e^(2*I*d*x + 2*I*c) - I*sqrt(3)*d + d)*((-8*I*A^3 -
36*A^2*B + 54*I*A*B^2 + 27*B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(8*A^2 - 24*I*A
*B - 18*B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c)
+ (-I*sqrt(3)*d^2 - d^2)*((-8*I*A^3 - 36*A^2*B + 54*I*A*B^2 + 27*B^3)*a^2/d
^3)^(2/3))/((8*A^2 - 24*I*A*B - 18*B^2)*a)) + 2*(d*e^(2*I*d*x + 2*I*c) - d)
*((-8*I*A^3 - 36*A^2*B + 54*I*A*B^2 + 27*B^3)*a^2/d^3)^(1/3)*log((2^(1/3)*(
4*A^2 - 12*I*A*B - 9*B^2)*a*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*
x + 2/3*I*c) + d^2*((-8*I*A^3 - 36*A^2*B + 54*I*A*B^2 + 27*B^3)*a^2/d^3)^(2
/3))/((4*A^2 - 12*I*A*B - 9*B^2)*a)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{2}{3}}\cot(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(2/3)*cot(d*x + c)^2,
 x)
```

3.202 $\int \frac{A+B\tan(c+dx)}{\sqrt[3]{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=213

$$\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{2\sqrt[3]{2}\sqrt[3]{a}d}+\frac{3(-B+iA)}{2d\sqrt[3]{a+ia\tan(c+dx)}}+\frac{3(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{4\sqrt[3]{2}\sqrt[3]{a}d}+\frac{(B$$

```
[Out] -((A - I*B)*x)/(4*2^(1/3)*a^(1/3)) + (Sqrt[3]*(I*A + B)*ArcTan[(a^(1/3) + 2
^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2*2^(1/3)*a^(1/3)
*d) + ((I*A + B)*Log[Cos[c + d*x]])/(4*2^(1/3)*a^(1/3)*d) + (3*(I*A + B)*Lo
g[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(4*2^(1/3)*a^(1/3)*d) +
(3*(I*A - B))/(2*d*(a + I*a*Tan[c + d*x])^(1/3))
```

Rubi [A] time = 0.158228, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3526, 3481, 55, 617, 204, 31}

$$\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{2\sqrt[3]{2}\sqrt[3]{a}d}+\frac{3(-B+iA)}{2d\sqrt[3]{a+ia\tan(c+dx)}}+\frac{3(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{4\sqrt[3]{2}\sqrt[3]{a}d}+\frac{(B$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(1/3),x]
```


```
[Out] -((A - I*B)*x)/(4*2^(1/3)*a^(1/3)) + (Sqrt[3]*(I*A + B)*ArcTan[(a^(1/3) + 2
^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2*2^(1/3)*a^(1/3)
*d) + ((I*A + B)*Log[Cos[c + d*x]])/(4*2^(1/3)*a^(1/3)*d) + (3*(I*A + B)*Lo
g[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(4*2^(1/3)*a^(1/3)*d) +
(3*(I*A - B))/(2*d*(a + I*a*Tan[c + d*x])^(1/3))
```


Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \frac{A + B\tan(c+dx)}{\sqrt[3]{a + ia\tan(c+dx)}}\,dx = \frac{3(iA-B)}{2d\sqrt[3]{a+ia\tan(c+dx)}} + \frac{(A-iB)\int (a+ia\tan(c+dx))^{2/3}\,dx}{2a}$$

$$= \frac{3(iA-B)}{2d\sqrt[3]{a+ia\tan(c+dx)}} - \frac{(iA+B)\,\text{Subst}\left(\int \frac{1}{(a-x)\sqrt[3]{a+x}}\,dx, x, ia\tan(c+dx)\right)}{2d}$$

$$= -\frac{(A-iB)x}{4\sqrt[3]{2}\sqrt[3]{a}} + \frac{(iA+B)\log(\cos(c+dx))}{4\sqrt[3]{2}\sqrt[3]{a}d} + \frac{3(iA-B)}{2d\sqrt[3]{a+ia\tan(c+dx)}} + \frac{(3(iA+B))\,\text{Subst}\left(\int \right.}{}$$

$$= -\frac{(A-iB)x}{4\sqrt[3]{2}\sqrt[3]{a}} + \frac{(iA+B)\log(\cos(c+dx))}{4\sqrt[3]{2}\sqrt[3]{a}d} + \frac{3(iA+B)\log\left(\sqrt[3]{2}\sqrt[3]{a} - \sqrt[3]{a+ia\tan(c+dx)}\right)}{4\sqrt[3]{2}\sqrt[3]{a}d} +$$

$$= -\frac{(A-iB)x}{4\sqrt[3]{2}\sqrt[3]{a}} + \frac{\sqrt{3}(iA+B)\tan^{-1}\left(\frac{1+\frac{2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2\sqrt[3]{2}\sqrt[3]{a}d} + \frac{(iA+B)\log(\cos(c+dx))}{4\sqrt[3]{2}\sqrt[3]{a}d} + \frac{3(iA+}{}$$

Mathematica [C] time = 1.07252, size = 137, normalized size = 0.64

$$-\frac{3ie^{-2i(c+dx)}\left(\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{2/3}\left((A-iB)e^{2i(c+dx)}\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)-2(A+iB)\left(1+e^{2i(c+dx)}\right)\right)}{4\sqrt[3]{2}ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(1/3),x]
```

```
[Out] (((-3*I)/4)*((a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x))))^(2/3)*(-2*(
A + I*B)*(1 + E^((2*I)*(c + d*x))) + (A - I*B)*E^((2*I)*(c + d*x))*Hypergeo
metric2F1[2/3, 1, 5/3, E^((2*I)*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]))/(2^
(1/3)*a*d*E^((2*I)*(c + d*x)))
```

Maple [A] time = 0.02, size = 318, normalized size = 1.5

$$\frac{2^{\frac{2}{3}}B}{4d}\ln\left(\sqrt[3]{a+ia\tan(dx+c)}-\sqrt[3]{2}\sqrt[3]{a}\right)\frac{1}{\sqrt[3]{a}}+\frac{\frac{i}{4}2^{\frac{2}{3}}A}{d}\ln\left(\sqrt[3]{a+ia\tan(dx+c)}-\sqrt[3]{2}\sqrt[3]{a}\right)\frac{1}{\sqrt[3]{a}}-\frac{2^{\frac{2}{3}}B}{8d}\ln\left((a+ia\tan(dx+c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/3),x)
```

```
[Out] 1/4/d*2^(2/3)/a^(1/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*B+1/4*I/
d*2^(2/3)/a^(1/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*A-1/8/d*2^(2
/3)/a^(1/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^
(1/3)+2^(2/3)*a^(2/3))*B-1/8*I/d*2^(2/3)/a^(1/3)*ln((a+I*a*tan(d*x+c))^(2/3
)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2^(2/3)*a^(2/3))*A+1/4/d*3^(1/2)
*2^(2/3)/a^(1/3)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/
3)+1))*B+1/4*I/d*3^(1/2)*2^(2/3)/a^(1/3)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3
)*(a+I*a*tan(d*x+c))^(1/3)+1))*A-3/2/d/(a+I*a*tan(d*x+c))^(1/3)*B+3/2*I/d/(
a+I*a*tan(d*x+c))^(1/3)*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.77855, size = 1503, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/3),x, algorithm="fricas")
```

```
[Out] 1/8*(4*(1/2)^(1/3)*a*d*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a*d^3))^(1/3)
*e^(2*I*d*x + 2*I*c)*log((2*(1/2)^(2/3)*a*d^2*((-I*A^3 - 3*A^2*B + 3*I*A*B^
2 + B^3)/(a*d^3))^(2/3) + 2^(1/3)*(A^2 - 2*I*A*B - B^2)*(a/(e^(2*I*d*x + 2*
I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c))/(A^2 - 2*I*A*B - B^2)) + (1/2)^(1
/3)*(2*I*sqrt(3)*a*d - 2*a*d)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a*d^3)
)^(1/3)*e^(2*I*d*x + 2*I*c)*log(1/4*(4*2^(1/3)*(A^2 - 2*I*A*B - B^2)*(a/(e^
(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) - (1/2)^(2/3)*(4*I*sq
rt(3)*a*d^2 + 4*a*d^2)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a*d^3))^(2/3)
)/(A^2 - 2*I*A*B - B^2)) + (1/2)^(1/3)*(-2*I*sqrt(3)*a*d - 2*a*d)*((-I*A^3
```

```
- 3*A^2*B + 3*I*A*B^2 + B^3)/(a*d^3))^(1/3)*e^(2*I*d*x + 2*I*c)*log(1/4*(4*
2^(1/3)*(A^2 - 2*I*A*B - B^2)*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)*e^(2/3*I*
d*x + 2/3*I*c) - (1/2)^(2/3)*(-4*I*sqrt(3)*a*d^2 + 4*a*d^2)*((-I*A^3 - 3*A^
2*B + 3*I*A*B^2 + B^3)/(a*d^3))^(2/3))/(A^2 - 2*I*A*B - B^2)) + 2*2^(2/3)*(
(3*I*A - 3*B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*(a/(e^(2*I*d*x + 2*I*c) +
1))^(2/3)*e^(4/3*I*d*x + 4/3*I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan(c + dx)}{\sqrt[3]{a\,(i\tan(c + dx) + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/3),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(a*(I*tan(c + d*x) + 1))**(1/3), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx + c) + A}{(i\,a\tan(dx + c) + a)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(I*a*tan(d*x + c) + a)^(1/3), x)
```

3.203 $\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{2/3}}\,dx$

Optimal. Leaf size=213

$$-\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{2\,2^{2/3}a^{2/3}d}+\frac{3(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{4\,2^{2/3}a^{2/3}d}+\frac{(B+iA)\log(\cos(c+dx))}{4\,2^{2/3}a^{2/3}d}$$

```
[Out] -((A - I*B)*x)/(4*2^(2/3)*a^(2/3)) - (Sqrt[3]*(I*A + B)*ArcTan[(a^(1/3) + 2
^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2*2^(2/3)*a^(2/3)
*d) + ((I*A + B)*Log[Cos[c + d*x]])/(4*2^(2/3)*a^(2/3)*d) + (3*(I*A + B)*Lo
g[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(4*2^(2/3)*a^(2/3)*d) +
(3*(I*A - B))/(4*d*(a + I*a*Tan[c + d*x])^(2/3))
```

Rubi [A] time = 0.159795, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3526, 3481, 57, 617, 204, 31}

$$-\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{\sqrt[3]{a}+2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt{3}\sqrt[3]{a}}\right)}{2\,2^{2/3}a^{2/3}d}+\frac{3(B+iA)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{4\,2^{2/3}a^{2/3}d}+\frac{(B+iA)\log(\cos(c+dx))}{4\,2^{2/3}a^{2/3}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(2/3),x]
```



```
[Out] -((A - I*B)*x)/(4*2^(2/3)*a^(2/3)) - (Sqrt[3]*(I*A + B)*ArcTan[(a^(1/3) + 2
^(2/3)*(a + I*a*Tan[c + d*x])^(1/3))/(Sqrt[3]*a^(1/3))])/(2*2^(2/3)*a^(2/3)
*d) + ((I*A + B)*Log[Cos[c + d*x]])/(4*2^(2/3)*a^(2/3)*d) + (3*(I*A + B)*Lo
g[2^(1/3)*a^(1/3) - (a + I*a*Tan[c + d*x])^(1/3)])/(4*2^(2/3)*a^(2/3)*d) +
(3*(I*A - B))/(4*d*(a + I*a*Tan[c + d*x])^(2/3))
```


Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 57

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(2/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q^2),
 x] + (-Dist[3/(2*b*q), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/
3)], x] - Dist[3/(2*b*q^2), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x
])] /; FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{2/3}}\,dx = \frac{3(iA-B)}{4d(a+ia\tan(c+dx))^{2/3}} + \frac{(A-iB)\int \sqrt[3]{a+ia\tan(c+dx)}\,dx}{2a}$$

$$= \frac{3(iA-B)}{4d(a+ia\tan(c+dx))^{2/3}} - \frac{(iA+B)\,\text{Subst}\left(\int \frac{1}{(a-x)(a+x)^{2/3}}\,dx, x, ia\tan(c+dx)\right)}{2d}$$

$$= -\frac{(A-iB)x}{4\,2^{2/3}a^{2/3}} + \frac{(iA+B)\log(\cos(c+dx))}{4\,2^{2/3}a^{2/3}d} + \frac{3(iA-B)}{4d(a+ia\tan(c+dx))^{2/3}} - \frac{(3(iA+B))\,\text{Subs}}{}$$

$$= -\frac{(A-iB)x}{4\,2^{2/3}a^{2/3}} + \frac{(iA+B)\log(\cos(c+dx))}{4\,2^{2/3}a^{2/3}d} + \frac{3(iA+B)\log\left(\sqrt[3]{2}\sqrt[3]{a}-\sqrt[3]{a+ia\tan(c+dx)}\right)}{4\,2^{2/3}a^{2/3}d}$$

$$= -\frac{(A-iB)x}{4\,2^{2/3}a^{2/3}} - \frac{\sqrt{3}(iA+B)\tan^{-1}\left(\frac{1+\frac{2^{2/3}\sqrt[3]{a+ia\tan(c+dx)}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2\,2^{2/3}a^{2/3}d} + \frac{(iA+B)\log(\cos(c+dx))}{4\,2^{2/3}a^{2/3}d} + \frac{3(i}{}$$

Mathematica [F] time = 0.628965, size = 0, normalized size = 0.

$$\int \frac{A+B\tan(c+dx)}{(a+ia\tan(c+dx))^{2/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(2/3),x]
```

```
[Out] Integrate[(A + B*Tan[c + d*x])/(a + I*a*Tan[c + d*x])^(2/3), x]
```

Maple [A] time = 0.02, size = 318, normalized size = 1.5

$$\frac{\sqrt[3]{2}B}{4d}\ln\left(\sqrt[3]{a+ia\tan(dx+c)}-\sqrt[3]{2}\sqrt[3]{a}\right)a^{-\frac{2}{3}} + \frac{\frac{i}{4}\sqrt[3]{2}A}{d}\ln\left(\sqrt[3]{a+ia\tan(dx+c)}-\sqrt[3]{2}\sqrt[3]{a}\right)a^{-\frac{2}{3}} - \frac{\sqrt[3]{2}B}{8d}\ln\left((a+ia\tan(dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(2/3),x)
```

```
[Out] 1/4/d*2^(1/3)/a^(2/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*B+1/4*I/
d*2^(1/3)/a^(2/3)*ln((a+I*a*tan(d*x+c))^(1/3)-2^(1/3)*a^(1/3))*A-1/8/d*2^(1
```

```
/3)/a^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^
(1/3)+2^(2/3)*a^(2/3))*B-1/8*I/d*2^(1/3)/a^(2/3)*ln((a+I*a*tan(d*x+c))^(2/3
)+2^(1/3)*a^(1/3)*(a+I*a*tan(d*x+c))^(1/3)+2^(2/3)*a^(2/3))*A-1/4/d*2^(1/3)
/a^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3)*(a+I*a*tan(d*x+c))^(1/
3)+1))*B-1/4*I/d*2^(1/3)/a^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2^(2/3)/a^(1/3
)*(a+I*a*tan(d*x+c))^(1/3)+1))*A+3/4*I/d/(a+I*a*tan(d*x+c))^(2/3)*A-3/4/d/(
a+I*a*tan(d*x+c))^(2/3)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(2/3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.73408, size = 1411, normalized size = 6.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(2/3),x, algorithm="fricas")
```

```
[Out] 1/16*(8*(1/4)^(1/3)*a*d*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a^2*d^3))^(1
/3)*e^(2*I*d*x + 2*I*c)*log(-(2*(1/4)^(1/3)*a*d*((-I*A^3 - 3*A^2*B + 3*I*A*
B^2 + B^3)/(a^2*d^3))^(1/3) - 2^(1/3)*(I*A + B)*(a/(e^(2*I*d*x + 2*I*c) + 1
))^(1/3)*e^(2/3*I*d*x + 2/3*I*c))/(I*A + B)) + (1/4)^(1/3)*(-4*I*sqrt(3)*a*
d - 4*a*d)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a^2*d^3))^(1/3)*e^(2*I*d*
x + 2*I*c)*log(1/2*(2*2^(1/3)*(I*A + B)*(a/(e^(2*I*d*x + 2*I*c) + 1))^(1/3)
*e^(2/3*I*d*x + 2/3*I*c) + (1/4)^(1/3)*(2*I*sqrt(3)*a*d + 2*a*d)*((-I*A^3 -
 3*A^2*B + 3*I*A*B^2 + B^3)/(a^2*d^3))^(1/3))/(I*A + B)) + (1/4)^(1/3)*(4*I
*sqrt(3)*a*d - 4*a*d)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a^2*d^3))^(1/3
)*e^(2*I*d*x + 2*I*c)*log(1/2*(2*2^(1/3)*(I*A + B)*(a/(e^(2*I*d*x + 2*I*c)
+ 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c) + (1/4)^(1/3)*(-2*I*sqrt(3)*a*d + 2*a*d
)*((-I*A^3 - 3*A^2*B + 3*I*A*B^2 + B^3)/(a^2*d^3))^(1/3))/(I*A + B)) + 2*2^
(1/3)*((3*I*A - 3*B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*(a/(e^(2*I*d*x + 2*
```

```
I*c) + 1))^(1/3)*e^(2/3*I*d*x + 2/3*I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan(c + dx)}{(a(i\tan(c + dx) + 1))^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(2/3),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(a*(I*tan(c + d*x) + 1))**(2/3), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx + c) + A}{(i\,a\tan(dx + c) + a)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(2/3),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(I*a*tan(d*x + c) + a)^(2/3), x)
```

3.204 $\int \tan^m(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=290

$$\frac{8a^4(A-iB)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}(1,m+1,m+2,i\tan(c+dx))}{d(m+1)}-\frac{2a^4\left(A\left(2m^3+19m^2+60m+64\right)-\right.}{d(m+1)(m}$$

```
[Out] (-2*a^4*(A*(64 + 60*m + 19*m^2 + 2*m^3) - I*B*(67 + 60*m + 19*m^2 + 2*m^3))
*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(2 + m)*(3 + m)*(4 + m)) + (8*a^4*(A - I*
B)*Hypergeometric2F1[1, 1 + m, 2 + m, I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))
/(d*(1 + m)) + (I*a*B*Tan[c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^3)/(d*(4
+ m)) - ((A*(4 + m) - I*B*(7 + m))*Tan[c + d*x]^(1 + m)*(a^2 + I*a^2*Tan[c
+ d*x])^2)/(d*(3 + m)*(4 + m)) - (2*(A*(4 + m)^2 - I*B*(19 + 8*m + m^2))*Ta
n[c + d*x]^(1 + m)*(a^4 + I*a^4*Tan[c + d*x]))/(d*(2 + m)*(3 + m)*(4 + m))
```

Rubi [A] time = 1.06804, antiderivative size = 290, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3594, 3592, 3537, 12, 64}

$$\frac{8a^4(A-iB)\tan^{m+1}(c+dx)\,_2F_1(1,m+1;m+2;i\tan(c+dx))}{d(m+1)}-\frac{2a^4\left(A\left(2m^3+19m^2+60m+64\right)-iB\left(2m^3+19m^2+\right.\right.}{d(m+1)(m+2)(m+3)(m+}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*a^4*(A*(64 + 60*m + 19*m^2 + 2*m^3) - I*B*(67 + 60*m + 19*m^2 + 2*m^3))
*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(2 + m)*(3 + m)*(4 + m)) + (8*a^4*(A - I*
B)*Hypergeometric2F1[1, 1 + m, 2 + m, I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))
/(d*(1 + m)) + (I*a*B*Tan[c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^3)/(d*(4
+ m)) - ((A*(4 + m) - I*B*(7 + m))*Tan[c + d*x]^(1 + m)*(a^2 + I*a^2*Tan[c
+ d*x])^2)/(d*(3 + m)*(4 + m)) - (2*(A*(4 + m)^2 - I*B*(19 + 8*m + m^2))*Ta
n[c + d*x]^(1 + m)*(a^4 + I*a^4*Tan[c + d*x]))/(d*(2 + m)*(3 + m)*(4 + m))
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
```

```
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 12

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

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{1+m}(c+dx)(a+ia\tan(c+dx))^3}{d(4+m)} + \frac{\int \tan^m(c+dx}{}$$

$$= \frac{iaB\tan^{1+m}(c+dx)(a+ia\tan(c+dx))^3}{d(4+m)} - \frac{(A(4+m)-iB}{}$$

$$= \frac{iaB\tan^{1+m}(c+dx)(a+ia\tan(c+dx))^3}{d(4+m)} - \frac{(A(4+m)-iB}{}$$

$$= -\frac{2a^4\left(A\left(64+60m+19m^2+2m^3\right)-iB\left(67+60m+19m\right.\right.}{d(1+m)\left(24+26m+9m^2+m\right.}$$

$$= -\frac{2a^4\left(A\left(64+60m+19m^2+2m^3\right)-iB\left(67+60m+19m\right.\right.}{d(1+m)\left(24+26m+9m^2+m\right.}$$

$$= -\frac{2a^4\left(A\left(64+60m+19m^2+2m^3\right)-iB\left(67+60m+19m\right.\right.}{d(1+m)\left(24+26m+9m^2+m\right.}$$

$$= -\frac{2a^4\left(A\left(64+60m+19m^2+2m^3\right)-iB\left(67+60m+19m\right.\right.}{d(1+m)\left(24+26m+9m^2+m\right.}$$

Mathematica [F] time = 19.6468, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^4(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^4*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.532, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m\,(a+ia\tan(dx+c))^4\,(A+B\tan(dx+c))\,\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^4\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^4*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{16\left((A-i\,B)a^4e^{(10i\,dx+10i\,c)}+(A+i\,B)a^4e^{(8i\,dx+8i\,c)}\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m}{e^{(10i\,dx+10i\,c)}+5\,e^{(8i\,dx+8i\,c)}+10\,e^{(6i\,dx+6i\,c)}+10\,e^{(4i\,dx+4i\,c)}+5\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(16*((A - I*B)*a^4*e^(10*I*d*x + 10*I*c) + (A + I*B)*a^4*e^(8*I*d*x
 + 8*I*c))*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m/(e^(1
0*I*d*x + 10*I*c) + 5*e^(8*I*d*x + 8*I*c) + 10*e^(6*I*d*x + 6*I*c) + 10*e^(
4*I*d*x + 4*I*c) + 5*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^4\left(\int A\tan^m(c+dx)\,dx+\int -6A\tan^2(c+dx)\tan^m(c+dx)\,dx+\int A\tan^4(c+dx)\tan^m(c+dx)\,dx+\int B\tan(c-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] a**4*(Integral(A*tan(c + d*x)**m, x) + Integral(-6*A*tan(c + d*x)**2*tan(c
+ d*x)**m, x) + Integral(A*tan(c + d*x)**4*tan(c + d*x)**m, x) + Integral(B
*tan(c + d*x)*tan(c + d*x)**m, x) + Integral(-6*B*tan(c + d*x)**3*tan(c + d
*x)**m, x) + Integral(B*tan(c + d*x)**5*tan(c + d*x)**m, x) + Integral(4*I*
A*tan(c + d*x)*tan(c + d*x)**m, x) + Integral(-4*I*A*tan(c + d*x)**3*tan(c
+ d*x)**m, x) + Integral(4*I*B*tan(c + d*x)**2*tan(c + d*x)**m, x) + Integr
al(-4*I*B*tan(c + d*x)**4*tan(c + d*x)**m, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^4\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^4*tan(d*x + c)^m, x)
```

3.205 $\int \tan^m(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=205

$$\frac{4a^3(A-iB)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}(1,m+1,m+2,i\tan(c+dx))}{d(m+1)}-\frac{a^3\left(A\left(2m^2+11m+15\right)-iB\left(2m^2\right.\right.}{d(m+1)(m+2}$$

```
[Out] -((a^3*(A*(15 + 11*m + 2*m^2) - I*B*(17 + 11*m + 2*m^2))*Tan[c + d*x]^(1 +
m))/(d*(1 + m)*(2 + m)*(3 + m))) + (4*a^3*(A - I*B)*Hypergeometric2F1[1, 1
+ m, 2 + m, I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + (I*a*B*Tan[
c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^2)/(d*(3 + m)) - ((A*(3 + m) - I*B*
(5 + m))*Tan[c + d*x]^(1 + m)*(a^3 + I*a^3*Tan[c + d*x]))/(d*(2 + m)*(3 + m
))
```

Rubi [A] time = 0.642078, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3594, 3592, 3537, 12, 64}

$$\frac{4a^3(A-iB)\tan^{m+1}(c+dx)\,{}_2F_1(1,m+1;m+2;i\tan(c+dx))}{d(m+1)}-\frac{a^3\left(A\left(2m^2+11m+15\right)-iB\left(2m^2+11m+17\right)\right)\tan^{m}}{d(m+1)(m+2)(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a^3*(A*(15 + 11*m + 2*m^2) - I*B*(17 + 11*m + 2*m^2))*Tan[c + d*x]^(1 +
m))/(d*(1 + m)*(2 + m)*(3 + m))) + (4*a^3*(A - I*B)*Hypergeometric2F1[1, 1
+ m, 2 + m, I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + (I*a*B*Tan[
c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^2)/(d*(3 + m)) - ((A*(3 + m) - I*B*
(5 + m))*Tan[c + d*x]^(1 + m)*(a^3 + I*a^3*Tan[c + d*x]))/(d*(2 + m)*(3 + m
))
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
```

```
b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] && !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && !LeQ[m, -1]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 12

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

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 && !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{1+m}(c+dx)(a+ia\tan(c+dx))^2}{d(3+m)} + \frac{\int \tan^m(c+d}{}$$

$$= \frac{iaB\tan^{1+m}(c+dx)(a+ia\tan(c+dx))^2}{d(3+m)} - \frac{(A(3+m)-}{}$$

$$= -\frac{a^3\left(A\left(15+11m+2m^2\right)-iB\left(17+11m+2m^2\right)\right)\tan^{1+}}{d(1+m)\left(6+5m+m^2\right)}$$

$$= -\frac{a^3\left(A\left(15+11m+2m^2\right)-iB\left(17+11m+2m^2\right)\right)\tan^{1+}}{d(1+m)\left(6+5m+m^2\right)}$$

$$= -\frac{a^3\left(A\left(15+11m+2m^2\right)-iB\left(17+11m+2m^2\right)\right)\tan^{1+}}{d(1+m)\left(6+5m+m^2\right)}$$

$$= -\frac{a^3\left(A\left(15+11m+2m^2\right)-iB\left(17+11m+2m^2\right)\right)\tan^{1+}}{d(1+m)\left(6+5m+m^2\right)}$$

Mathematica [A] time = 10.8678, size = 374, normalized size = 1.82

$$-\frac{ie^{ic}\left(-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}\right)^m\left(\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{-m}\cos^4(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\left(2e^{-4ic}(m+3)(A-iB)\left(-1+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-I/2)*E^(I*c)*(((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x))
))^m*Cos[c + d*x]^4*(((4*I)*B*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2
*I)*(c + d*x)))^(-3 - m)*(1 + 2*E^((2*I)*(c + d*x))*(2 + m) + E^((4*I)*(c +
 d*x))*(7 + 8*m + 2*m^2)))/E^((4*I)*c) + (2*(A - I*B)*(-1 + E^((2*I)*(c + d
*x)))^(1 + m)*(3 + m)*((1 + E^((2*I)*(c + d*x)))^(-2 - m)*(-5 - 2*m - E^((2
*I)*(c + d*x))*(7 + 4*m)) + 2^(1 - m)*(2 + m)*Hypergeometric2F1[1 + m, 1 +
m, 2 + m, (1 - E^((2*I)*(c + d*x)))/2]))/E^((4*I)*c))*(a + I*a*Tan[c + d*x]
)^3*(A + B*Tan[c + d*x]))/(d*((-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c +
 d*x))))^m*(1 + m)*(2 + m)*(3 + m)*(Cos[d*x] + I*Sin[d*x])^3*(A*Cos[c + d*x
] + B*Sin[c + d*x]))
```

Maple [F] time = 0.383, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^m (a+ia\tan (dx+c))^3 (A+B\tan (dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(i\,a\tan (dx+c)+a)^3 \tan (dx+c)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{8\left((A-i\,B)a^3e^{(8i\,dx+8i\,c)}+(A+i\,B)a^3e^{(6i\,dx+6i\,c)}\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m}{e^{(8i\,dx+8i\,c)}+4\,e^{(6i\,dx+6i\,c)}+6\,e^{(4i\,dx+4i\,c)}+4\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(8*((A - I*B)*a^3*e^(8*I*d*x + 8*I*c) + (A + I*B)*a^3*e^(6*I*d*x +
6*I*c))*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m/(e^(8*I*
d*x + 8*I*c) + 4*e^(6*I*d*x + 6*I*c) + 6*e^(4*I*d*x + 4*I*c) + 4*e^(2*I*d*x
```

```
+ 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\int A\tan^m(c+dx)\,dx+\int -3A\tan^2(c+dx)\tan^m(c+dx)\,dx+\int B\tan(c+dx)\tan^m(c+dx)\,dx+\int -3B\tan^3(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] a**3*(Integral(A*tan(c + d*x)**m, x) + Integral(-3*A*tan(c + d*x)**2*tan(c
+ d*x)**m, x) + Integral(B*tan(c + d*x)*tan(c + d*x)**m, x) + Integral(-3*B
*tan(c + d*x)**3*tan(c + d*x)**m, x) + Integral(3*I*A*tan(c + d*x)*tan(c +
d*x)**m, x) + Integral(-I*A*tan(c + d*x)**3*tan(c + d*x)**m, x) + Integral(
3*I*B*tan(c + d*x)**2*tan(c + d*x)**m, x) + Integral(-I*B*tan(c + d*x)**4*t
an(c + d*x)**m, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^3\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*tan(d*x + c)^m, x)
```

3.206 $\int \tan^m(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=132

$$\frac{2a^2(A-iB)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}(1,m+1,m+2,i\tan(c+dx))}{d(m+1)}+\frac{ia^2(B+(m+2)(B+iA))\tan^{m+1}(c+$$

```
[Out] (I*a^2*(B + (I*A + B)*(2 + m))*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(2 + m)) +
(2*a^2*(A - I*B)*Hypergeometric2F1[1, 1 + m, 2 + m, I*Tan[c + d*x]]*Tan[c +
 d*x]^(1 + m))/(d*(1 + m)) + (I*B*Tan[c + d*x]^(1 + m)*(a^2 + I*a^2*Tan[c +
 d*x]))/(d*(2 + m))
```

Rubi [A] time = 0.359607, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3594, 3592, 3537, 12, 64}

$$\frac{2a^2(A-iB)\tan^{m+1}(c+dx)\,{}_2F_1(1,m+1;m+2;i\tan(c+dx))}{d(m+1)}+\frac{ia^2(B+(m+2)(B+iA))\tan^{m+1}(c+dx)}{d(m+1)(m+2)}+\frac{iB\left(a^2+ia^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (I*a^2*(B + (I*A + B)*(2 + m))*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(2 + m)) +
(2*a^2*(A - I*B)*Hypergeometric2F1[1, 1 + m, 2 + m, I*Tan[c + d*x]]*Tan[c +
 d*x]^(1 + m))/(d*(1 + m)) + (I*B*Tan[c + d*x]^(1 + m)*(a^2 + I*a^2*Tan[c +
 d*x]))/(d*(2 + m))
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 12

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

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{iB\tan^{1+m}(c+dx)\left(a^2+ia^2\tan(c+dx)\right)}{d(2+m)} + \frac{\int \tan^m(c+dx}{}$$

$$= \frac{ia^2(B+(iA+B)(2+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{iB\tan^{1+m}(c+}{}$$

$$= \frac{ia^2(B+(iA+B)(2+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{iB\tan^{1+m}(c+}{}$$

$$= \frac{ia^2(B+(iA+B)(2+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{iB\tan^{1+m}(c+}{}$$

$$= \frac{ia^2(B+(iA+B)(2+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{2a^2(A-iB)\,{}_2}{}$$

Mathematica [B] time = 5.58052, size = 323, normalized size = 2.45

$$-\frac{2ie^{2ic}\left(-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}\right)^m\left(\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{-m}\cos^3(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\left(\frac{e^{-4ic}2^{-m-3}(A-iB)\left(-1+e^{2i(c+dx)}\right)^{m+}}{}\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-2*I)*E^((2*I)*c)*(((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d
*x))))^m*Cos[c + d*x]^3*(((-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*
(c + d*x)))^(-2 - m)*(-(A*m) - I*B*(-1 + E^((2*I)*(c + d*x)))*(1 + m) + A*E
^((2*I)*(c + d*x))*(4 + 3*m)))/(2*E^((4*I)*c)*(1 + m)*(2 + m)) + (2^(-3 - m
)*(A - I*B)*(-1 + E^((2*I)*(c + d*x)))^(3 + m)*Hypergeometric2F1[3 + m, 3 +
 m, 4 + m, (1 - E^((2*I)*(c + d*x)))/2])/(E^((4*I)*c)*(3 + m)))*(a + I*a*Ta
n[c + d*x])^2*(A + B*Tan[c + d*x]))/(d*((-1 + E^((2*I)*(c + d*x)))/(1 + E^(
(2*I)*(c + d*x))))^m*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c +
d*x]))
```

Maple [F] time = 0.346, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+ia\tan(dx+c))^2 (A+B\tan(dx+c))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan{(dx+c)}+A)(i\,a\tan{(dx+c)}+a)^2\tan{(dx+c)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{4\left((A-i\,B)a^2e^{(6i\,dx+6i\,c)}+(A+i\,B)a^2e^{(4i\,dx+4i\,c)}\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m}{e^{(6i\,dx+6i\,c)}+3\,e^{(4i\,dx+4i\,c)}+3\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(4*((A - I*B)*a^2*e^(6*I*d*x + 6*I*c) + (A + I*B)*a^2*e^(4*I*d*x +
4*I*c))*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m/(e^(6*I*
d*x + 6*I*c) + 3*e^(4*I*d*x + 4*I*c) + 3*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int A\tan^m{(c+dx)}\,dx+\int -A\tan^2{(c+dx)}\tan^m{(c+dx)}\,dx+\int B\tan{(c+dx)}\tan^m{(c+dx)}\,dx+\int -B\tan^3{(c-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] a**2*(Integral(A*tan(c + d*x)**m, x) + Integral(-A*tan(c + d*x)**2*tan(c +
d*x)**m, x) + Integral(B*tan(c + d*x)*tan(c + d*x)**m, x) + Integral(-B*tan
(c + d*x)**3*tan(c + d*x)**m, x) + Integral(2*I*A*tan(c + d*x)*tan(c + d*x)
**m, x) + Integral(2*I*B*tan(c + d*x)**2*tan(c + d*x)**m, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^2\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2*tan(d*x + c)^m, x)
```

3.207 $\int \tan^m(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=70

$$\frac{a(A-iB)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}(1,m+1,m+2,i\tan(c+dx))}{d(m+1)}+\frac{iaB\tan^{m+1}(c+dx)}{d(m+1)}$$

```
[Out] (I*a*B*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + (a*(A - I*B)*Hypergeometric2F1[1
, 1 + m, 2 + m, I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m))
```

Rubi [A] time = 0.116656, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {3592, 3537, 64}

$$\frac{a(A-iB)\tan^{m+1}(c+dx)\,{}_2F_1(1,m+1;m+2;i\tan(c+dx))}{d(m+1)}+\frac{iaB\tan^{m+1}(c+dx)}{d(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (I*a*B*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + (a*(A - I*B)*Hypergeometric2F1[1
, 1 + m, 2 + m, I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m))
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{iaB\tan^{1+m}(c+dx)}{d(1+m)} + \int \tan^m(c+dx)(a(A-iB)+a(iA+$$

$$= \frac{iaB\tan^{1+m}(c+dx)}{d(1+m)} + \frac{\left(ia^2(A-iB)^2\right)\text{Subst}\left(\int \frac{\left(\frac{x}{a(iA+B)}\right)}{a^2(iA+B)^2+a(A}\right.}{d}$$

$$= \frac{iaB\tan^{1+m}(c+dx)}{d(1+m)} + \frac{a(A-iB)\,{}_2F_1(1,1+m;2+m;i\tan(}{d(1+m)}$$

Mathematica [B] time = 2.20329, size = 190, normalized size = 2.71

$$-\frac{iae^{-ic}2^{-m-1}\left(-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}\right)^{m+1}\cos^2(c+dx)(1+i\tan(c+dx))(A+B\tan(c+dx))\left(-B2^{m+1}+(B+iA)\left(1+e^{2i(c+dx)}\right)^{m+}\right.}{d(m+1)(\cos(dx)+i\sin(dx))(A\cos(c+dx)+B\sin(c+dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-I)*2^(-1 - m)*a*(((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*
x))))^(1 + m)*Cos[c + d*x]^2*(-(2^(1 + m)*B) + (I*A + B)*(1 + E^((2*I)*(c +
 d*x)))^(1 + m)*Hypergeometric2F1[1 + m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d
*x)))/2])*(1 + I*Tan[c + d*x])*(A + B*Tan[c + d*x]))/(d*E^(I*c)*(1 + m)*(Co
s[d*x] + I*Sin[d*x])*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [F] time = 0.821, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+ia\tan(dx+c))(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{2\left((A-i\,B)ae^{(4i\,dx+4i\,c)}+(A+i\,B)ae^{(2i\,dx+2i\,c)}\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m}{e^{(4i\,dx+4i\,c)}+2\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral(2*((A - I*B)*a*e^(4*I*d*x + 4*I*c) + (A + I*B)*a*e^(2*I*d*x + 2*I*
c))*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m/(e^(4*I*d*x
+ 4*I*c) + 2*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int A\tan^m(c+dx)\,dx+\int B\tan(c+dx)\tan^m(c+dx)\,dx+\int iA\tan(c+dx)\tan^m(c+dx)\,dx+\int iB\tan^2(c+dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(Integral(A*tan(c + d*x)**m, x) + Integral(B*tan(c + d*x)*tan(c + d*x)**m
, x) + Integral(I*A*tan(c + d*x)*tan(c + d*x)**m, x) + Integral(I*B*tan(c +
 d*x)**2*tan(c + d*x)**m, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)*tan(d*x + c)^m, x)
```

3.208 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=168

$$\frac{(A(1-m)-iB(m+1))\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{2ad(m+1)}+\frac{m(-B+iA)\tan^{m+2}(c+$$

```
[Out] ((A*(1 - m) - I*B*(1 + m))*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[
c + d*x]^2]*Tan[c + d*x]^(1 + m))/(2*a*d*(1 + m)) + ((I*A - B)*m*Hypergeome
tric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(2*
a*d*(2 + m)) + ((A + I*B)*Tan[c + d*x]^(1 + m))/(2*d*(a + I*a*Tan[c + d*x])
)
```

Rubi [A] time = 0.220419, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3538, 3476, 364}

$$\frac{(A(1-m)-iB(m+1))\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{2ad(m+1)}+\frac{m(-B+iA)\tan^{m+2}(c+dx)\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+}{2}\right.}{2ad(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] ((A*(1 - m) - I*B*(1 + m))*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[
c + d*x]^2]*Tan[c + d*x]^(1 + m))/(2*a*d*(1 + m)) + ((I*A - B)*m*Hypergeome
tric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(2*
a*d*(2 + m)) + ((A + I*B)*Tan[c + d*x]^(1 + m))/(2*d*(a + I*a*Tan[c + d*x])
)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
```

```
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] && !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{\int \tan^m(c+dx)(a(A(1-m)-iB(1+m))+a(iA-$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{((iA-B)m)\int \tan^{1+m}(c+dx)\,dx}{2a} + \frac{(A-Am-iB}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{2d(a+ia\tan(c+dx))} + \frac{((iA-B)m)\,\mathrm{Subst}\left(\int \frac{x^{1+m}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{2ad} + \frac{(}{}$$

$$= \frac{(A-Am-iB(1+m))\,{}_2F_1\left(1, \frac{1+m}{2}; \frac{3+m}{2}; -\tan^2(c+dx)\right)\tan^{1+m}(c+dx)}{2ad(1+m)} + \frac{(iA}{}$$

Mathematica [F] time = 7.2371, size = 0, normalized size = 0.

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]), x]
```

Maple [F] time = 1.348, size = 0, normalized size = 0.

$$\int \frac{(\tan (dx+c))^{m} (A+B\tan (dx+c))}{a+ia\tan (dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^{m}e^{(-2i\,dx-2i\,c)}}{2\,a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral(1/2*((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*((-I*e^(2*I*d*x + 2*
I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*e^(-2*I*d*x - 2*I*c)/a, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{i\,a\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(I*a*tan(d*x + c) + a), x)
```

3.209 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=226

$$\frac{(1-m)(A(1-m)-iB(m+1))\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{4a^2d(m+1)}+\frac{m(Bm+iA(2-m$$

```
[Out] ((1 - m)*(A*(1 - m) - I*B*(1 + m))*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/
2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(4*a^2*d*(1 + m)) + ((A*(2 - m) -
 I*B*m)*Tan[c + d*x]^(1 + m))/(4*a^2*d*(1 + I*Tan[c + d*x])) + (m*(I*A*(2 -
 m) + B*m)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[
c + d*x]^(2 + m))/(4*a^2*d*(2 + m)) + ((A + I*B)*Tan[c + d*x]^(1 + m))/(4*d
*(a + I*a*Tan[c + d*x])^2)
```

Rubi [A] time = 0.483971, antiderivative size = 226, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3538, 3476, 364}

$$\frac{(1-m)(A(1-m)-iB(m+1))\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{4a^2d(m+1)}+\frac{m(Bm+iA(2-m))\tan^{m+2}(c+dx)}{4a^2d(m$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] ((1 - m)*(A*(1 - m) - I*B*(1 + m))*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/
2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(4*a^2*d*(1 + m)) + ((A*(2 - m) -
 I*B*m)*Tan[c + d*x]^(1 + m))/(4*a^2*d*(1 + I*Tan[c + d*x])) + (m*(I*A*(2 -
 m) + B*m)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[
c + d*x]^(2 + m))/(4*a^2*d*(2 + m)) + ((A + I*B)*Tan[c + d*x]^(1 + m))/(4*d
*(a + I*a*Tan[c + d*x])^2)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
```

```
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] && !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \frac{\tan^m(c+dx)(a(A(3-m)-iB(1+m))-a(iA-B)(1-m)\tan(c+dx))}{a+ia\tan(c+dx)}\,d\ldots}{4a^2}$$

$$= \frac{(A(2-m)-iBm)\tan^{1+m}(c+dx)}{4a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\tan^{1+m}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{\int \tan^m(c+d\ldots}{\ldots}$$

$$= \frac{(A(2-m)-iBm)\tan^{1+m}(c+dx)}{4a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\tan^{1+m}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{(m(iA(2-m)\ldots}{\ldots}$$

$$= \frac{(A(2-m)-iBm)\tan^{1+m}(c+dx)}{4a^2d(1+i\tan(c+dx))} + \frac{(A+iB)\tan^{1+m}(c+dx)}{4d(a+ia\tan(c+dx))^2} + \frac{(m(iA(2-m)\ldots}{\ldots}$$

$$= \frac{(1-m)(A(1-m)-iB(1+m))\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c+dx)\right)\tan^{1+m}(c+d\ldots}{4a^2d(1+m)}$$

Mathematica [B] time = 8.27824, size = 565, normalized size = 2.5

$$-\frac{ie^{-2ic}\left(-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}\right)^m\left(\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{-m}\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(\frac{e^{4ic}2^{1-m}\left(A\left(2m^2-4m+1\right)+iB\left(2m^2\right.\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```

```
[Out] ((-I/16)*(((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x))))^m*((
(A + I*B)*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*(c + d*x)))^(2 -
 m))/E^((4*I)*d*x) + E^((2*I)*(c - d*x))*(-1 + E^((2*I)*(c + d*x)))^(1 + m)
*(1 + E^((2*I)*(c + d*x)))^(2 - m)*(A*(3 - 2*m) - I*(B + 2*B*m)) + (2^(2 -
m)*E^((4*I)*c)*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(A*(-3 + 2*m) + I*(B + 2*
B*m))*Hypergeometric2F1[-1 + m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d*x)))/2])
/(1 + m) + (2^(1 - m)*E^((4*I)*c)*((-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)
*(c + d*x))))^m*(I*B*(-1 + 2*m^2) + A*(1 - 4*m + 2*m^2))*(-(2^m*(1 + m)*Hyp
ergeometric2F1[1, m, 1 + m, (1 - E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*
x)))]) + (1 + E^((2*I)*(c + d*x)))^m*((1 + m)*Hypergeometric2F1[m, m, 1 + m
, (1 - E^((2*I)*(c + d*x)))/2] + (-1 + E^((2*I)*(c + d*x)))*m*Hypergeometri
c2F1[m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d*x)))/2])))/(m*(1 + m)))*Sec[c +
d*x]*(Cos[d*x] + I*Sin[d*x])^2*(A + B*Tan[c + d*x]))/(d*E^((2*I)*c)*((-1 +
E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x))))^m*(A*Cos[c + d*x] + B*Sin[c
 + d*x])*(a + I*a*Tan[c + d*x])^2)
```

Maple [F] time = 1.386, size = 0, normalized size = 0.

$$\int \frac{(\tan(dx+c))^m (A+B\tan(dx+c))}{(a+ia\tan(dx+c))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(4i\,dx+4i\,c)}+2\,Ae^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^{m}e^{(-4i\,dx-4i\,c)}}{4\,a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] integral(1/4*((A - I*B)*e^(4*I*d*x + 4*I*c) + 2*A*e^(2*I*d*x + 2*I*c) + A +
 I*B)*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*e^(-4*I*d*
x - 4*I*c)/a^2, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^{m}}{(i\,a\tan(dx+c)+a)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(I*a*tan(d*x + c) + a)^2, x)
```

3.210 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=308

$$-\frac{(1-m)\left(-A\left(2m^2-7m+3\right)+iB\left(-2m^2+m+3\right)\right)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{24a^3d(m+1)}$$

```
[Out] -((1 - m)*(I*B*(3 + m - 2*m^2) - A*(3 - 7*m + 2*m^2))*Hypergeometric2F1[1,
(1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(24*a^3*d*(1 +
 m)) + ((2 - m)*m*(B + I*A*(5 - 2*m) + 2*B*m)*Hypergeometric2F1[1, (2 + m)/
2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(24*a^3*d*(2 + m)) + (
(A + I*B)*Tan[c + d*x]^(1 + m))/(6*d*(a + I*a*Tan[c + d*x])^3) + ((I*B*(1 -
 2*m) + A*(7 - 2*m))*Tan[c + d*x]^(1 + m))/(24*a*d*(a + I*a*Tan[c + d*x])^2
) + ((2 - m)*(A*(5 - 2*m) - I*(B + 2*B*m))*Tan[c + d*x]^(1 + m))/(24*d*(a^3
 + I*a^3*Tan[c + d*x]))
```

Rubi [A] time = 0.832992, antiderivative size = 308, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3538, 3476, 364}

$$-\frac{(1-m)\left(-A\left(2m^2-7m+3\right)+iB\left(-2m^2+m+3\right)\right)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{24a^3d(m+1)}+\frac{(2-m)m(iA(5}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```



```
[Out] -((1 - m)*(I*B*(3 + m - 2*m^2) - A*(3 - 7*m + 2*m^2))*Hypergeometric2F1[1,
(1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(24*a^3*d*(1 +
 m)) + ((2 - m)*m*(B + I*A*(5 - 2*m) + 2*B*m)*Hypergeometric2F1[1, (2 + m)/
2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(24*a^3*d*(2 + m)) + (
(A + I*B)*Tan[c + d*x]^(1 + m))/(6*d*(a + I*a*Tan[c + d*x])^3) + ((I*B*(1 -
 2*m) + A*(7 - 2*m))*Tan[c + d*x]^(1 + m))/(24*a*d*(a + I*a*Tan[c + d*x])^2
) + ((2 - m)*(A*(5 - 2*m) - I*(B + 2*B*m))*Tan[c + d*x]^(1 + m))/(24*d*(a^3
 + I*a^3*Tan[c + d*x]))
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{\int \frac{\tan^m(c+dx)(a(A(5-m)-iB(1+m))-a(iA-B)(2-m)\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,d}{6a^2}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(iB(1-2m)+A(7-2m))\tan^{1+m}(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \int \frac{\tan}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(iB(1-2m)+A(7-2m))\tan^{1+m}(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{(2-m}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(iB(1-2m)+A(7-2m))\tan^{1+m}(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{(2-m}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{6d(a+ia\tan(c+dx))^3} + \frac{(iB(1-2m)+A(7-2m))\tan^{1+m}(c+dx)}{24ad(a+ia\tan(c+dx))^2} + \frac{(2-m}{}$$

$$= -\frac{(1-m)\left(iB\left(3+m-2m^2\right)-A\left(3-7m+2m^2\right)\right)\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c+\right.}{24a^3d(1+m)}$$

Mathematica [B] time = 113.738, size = 712, normalized size = 2.31

$$-\frac{ie^{-3ic}\left(-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}\right)^m\left(\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{-m}\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{3e^{6ic}2^{3-m}\left(A\left(-2m^2+7m-4\right)+iB\left(-2\right.\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```

```
[Out] ((-I/96)*(((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x))))^m*((
2*(A + I*B)*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*(c + d*x)))^(3
 - m))/E^((6*I)*d*x) + E^((2*I)*(c - 2*d*x))*(-1 + E^((2*I)*(c + d*x)))^(1
+ m)*(1 + E^((2*I)*(c + d*x)))^(3 - m)*(A*(5 - 2*m) - I*(B + 2*B*m)) - (2*(
-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*(c + d*x)))^(3 - m)*(I*B*(2
 + m - 2*m^2) + A*(-4 + 7*m - 2*m^2)))/E^((2*I)*(-2*c + d*x)) + (3*2^(3 - m
)*E^((6*I)*c)*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(I*B*(2 + m - 2*m^2) + A*(
-4 + 7*m - 2*m^2))*Hypergeometric2F1[-2 + m, 1 + m, 2 + m, (1 - E^((2*I)*(c
 + d*x)))/2])/(1 + m) + (2^(1 - m)*E^((6*I)*c)*((-1 + E^((2*I)*(c + d*x)))/
(1 + E^((2*I)*(c + d*x))))^m*(A*(-3 + 20*m - 18*m^2 + 4*m^3) + I*B*(3 - 4*m
 - 6*m^2 + 4*m^3))*(2^m*(1 + m)*Hypergeometric2F1[1, m, 1 + m, (1 - E^((2*I
)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))] - (1 + E^((2*I)*(c + d*x)))^m*(2*(
```

```
-1 + E^((2*I)*(c + d*x)))*m*Hypergeometric2F1[-1 + m, 1 + m, 2 + m, (1 - E^
((2*I)*(c + d*x)))/2] + (1 + m)*Hypergeometric2F1[m, m, 1 + m, (1 - E^((2*I
)*(c + d*x)))/2] + (-1 + E^((2*I)*(c + d*x)))*m*Hypergeometric2F1[m, 1 + m,
 2 + m, (1 - E^((2*I)*(c + d*x)))/2])))/(m*(1 + m)))*Sec[c + d*x]^2*(Cos[d*
x] + I*Sin[d*x])^3*(A + B*Tan[c + d*x]))/(d*E^((3*I)*c)*((-1 + E^((2*I)*(c
+ d*x)))/(1 + E^((2*I)*(c + d*x))))^m*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a
+ I*a*Tan[c + d*x])^3)
```

Maple [F] time = 1.496, size = 0, normalized size = 0.

$$\int \frac{(\tan (dx+c))^m (A+B\tan (dx+c))}{(a+ia\tan (dx+c))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(6i\,dx+6i\,c)}+(3A-iB)e^{(4i\,dx+4i\,c)}+(3A+iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{-ie^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m e^{(-6i\,dx-6i\,c)}}{8a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
fricas")
```

```
[Out] integral(1/8*((A - I*B)*e^(6*I*d*x + 6*I*c) + (3*A - I*B)*e^(4*I*d*x + 4*I*
c) + (3*A + I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*((-I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) + 1))^m*e^(-6*I*d*x - 6*I*c)/a^3, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(i\,a\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(I*a*tan(d*x + c) + a)^3, x)
```

3.211 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4} \, dx$

Optimal. Leaf size=386

$$-\frac{(m^2-4m+3)\left(-A(m^2-4m+1)+iB(1-m^2)\right)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{48a^4d(m+1)}$$

```
[Out] -((3 - 4*m + m^2)*(I*B*(1 - m^2) - A*(1 - 4*m + m^2))*Hypergeometric2F1[1,
(1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(48*a^4*d*(1 +
 m)) - ((I*B*(1 + 3*m - m^2) - A*(13 - 7*m + m^2))*Tan[c + d*x]^(1 + m))/(4
8*a^4*d*(1 + I*Tan[c + d*x])^2) - ((2 - m)*(I*B*(2 + 2*m - m^2) - A*(8 - 6*
m + m^2))*Tan[c + d*x]^(1 + m))/(48*a^4*d*(1 + I*Tan[c + d*x])) + ((2 - m)*
m*(B*(2 + 2*m - m^2) + I*A*(8 - 6*m + m^2))*Hypergeometric2F1[1, (2 + m)/2,
 (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(48*a^4*d*(2 + m)) + ((A
 + I*B)*Tan[c + d*x]^(1 + m))/(8*d*(a + I*a*Tan[c + d*x])^4) + ((I*B*(1 - m
) + A*(5 - m))*Tan[c + d*x]^(1 + m))/(24*a*d*(a + I*a*Tan[c + d*x])^3)
```

Rubi [A] time = 1.20719, antiderivative size = 386, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3596, 3538, 3476, 364}

$$-\frac{(m^2-4m+3)\left(-A(m^2-4m+1)+iB(1-m^2)\right)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{48a^4d(m+1)}+\frac{(2-m)m\left(B\left(-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```


```
[Out] -((3 - 4*m + m^2)*(I*B*(1 - m^2) - A*(1 - 4*m + m^2))*Hypergeometric2F1[1,
(1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(48*a^4*d*(1 +
 m)) - ((I*B*(1 + 3*m - m^2) - A*(13 - 7*m + m^2))*Tan[c + d*x]^(1 + m))/(4
8*a^4*d*(1 + I*Tan[c + d*x])^2) - ((2 - m)*(I*B*(2 + 2*m - m^2) - A*(8 - 6*
m + m^2))*Tan[c + d*x]^(1 + m))/(48*a^4*d*(1 + I*Tan[c + d*x])) + ((2 - m)*
m*(B*(2 + 2*m - m^2) + I*A*(8 - 6*m + m^2))*Hypergeometric2F1[1, (2 + m)/2,
 (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(48*a^4*d*(2 + m)) + ((A
 + I*B)*Tan[c + d*x]^(1 + m))/(8*d*(a + I*a*Tan[c + d*x])^4) + ((I*B*(1 - m
) + A*(5 - m))*Tan[c + d*x]^(1 + m))/(24*a*d*(a + I*a*Tan[c + d*x])^3)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^4}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{\int \frac{\tan^m(c+dx)(a(A(7-m)-iB(1+m))-a(iA-B)(3-m)\tan(c+dx))}{(a+ia\tan(c+dx))^3}}{8a^2}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{8d(a+ia\tan(c+dx))^4} + \frac{(iB(1-m)+A(5-m))\tan^{1+m}(c+dx)}{24ad(a+ia\tan(c+dx))^3} + \frac{\int \frac{\tan^m}{}}{}$$

$$= -\frac{\left(iB\left(1+3m-m^2\right)-A\left(13-7m+m^2\right)\right)\tan^{1+m}(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\tan^{1+m}}{8d(a+ia\tan(c}$$

$$= -\frac{\left(iB\left(1+3m-m^2\right)-A\left(13-7m+m^2\right)\right)\tan^{1+m}(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\tan^{1+m}}{8d(a+ia\tan(c}$$

$$= -\frac{\left(iB\left(1+3m-m^2\right)-A\left(13-7m+m^2\right)\right)\tan^{1+m}(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\tan^{1+m}}{8d(a+ia\tan(c}$$

$$= -\frac{\left(iB\left(1+3m-m^2\right)-A\left(13-7m+m^2\right)\right)\tan^{1+m}(c+dx)}{48a^4d(1+i\tan(c+dx))^2} + \frac{(A+iB)\tan^{1+m}}{8d(a+ia\tan(c}$$

$$= -\frac{\left(3-4m+m^2\right)\left(iB\left(1-m^2\right)-A\left(1-4m+m^2\right)\right)\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c\right.}{48a^4d(1+m)}$$

<u>Mathematica</u> [B] time = 115.997, size = 921, normalized size = 2.39

$$-\frac{ie^{-4ic}\left(-\frac{i\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}\right)^m\left(\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}\right)^{-m}\left(3(A+iB)e^{-8idx}\left(-1+e^{2i(c+dx)}\right)^{m+1}\left(1+e^{2i(c+dx)}\right)^{4-m}+e^{2i(c-3dx)}\left(-1+e^{2i(c+dx)}\right)^{n}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^4,x]
```

```
[Out] ((-I/384)*(((-I)*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c + d*x))))^m*(
(3*(A + I*B)*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*(c + d*x)))^(
4 - m))/E^((8*I)*d*x) + E^((2*I)*(c - 3*d*x))*(-1 + E^((2*I)*(c + d*x)))^(1
 + m)*(1 + E^((2*I)*(c + d*x)))^(4 - m)*(A*(7 - 2*m) - I*(B + 2*B*m)) - E^(
(4*I)*(c - d*x))*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*(c + d*x)
))^(4 - m)*(I*B*(3 + 2*m - 2*m^2) + A*(-9 + 10*m - 2*m^2)) + (((-1 + E^((2*
I)*(c + d*x)))^(1 + m)*(1 + E^((2*I)*(c + d*x)))^(4 - m)*m*(1 + m)*(A*(13 -
 44*m + 26*m^2 - 4*m^3) - I*B*(7 - 4*m - 10*m^2 + 4*m^3)))/E^((2*I)*(-3*c +
 d*x)) - 2^(5 - m)*E^((8*I)*c)*(-1 + E^((2*I)*(c + d*x)))^(1 + m)*m*(A*(13
```

```
- 44*m + 26*m^2 - 4*m^3) - I*B*(7 - 4*m - 10*m^2 + 4*m^3))*Hypergeometric2F
1[-3 + m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d*x)))/2] + 2^(2 - m)*E^((8*I)*c
)*((-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x))))^m*(A*(3 - 32*m + 4
0*m^2 - 16*m^3 + 2*m^4) + I*B*(-3 + 8*m + 4*m^2 - 8*m^3 + 2*m^4))*(-(2^m*(1
 + m)*Hypergeometric2F1[1, m, 1 + m, (1 - E^((2*I)*(c + d*x)))/(1 + E^((2*I
)*(c + d*x)))]) + (1 + E^((2*I)*(c + d*x)))^m*(4*(-1 + E^((2*I)*(c + d*x)))
*m*Hypergeometric2F1[-2 + m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d*x)))/2] + 2
*(-1 + E^((2*I)*(c + d*x)))*m*Hypergeometric2F1[-1 + m, 1 + m, 2 + m, (1 -
E^((2*I)*(c + d*x)))/2] + Hypergeometric2F1[m, m, 1 + m, (1 - E^((2*I)*(c +
 d*x)))/2] + m*Hypergeometric2F1[m, m, 1 + m, (1 - E^((2*I)*(c + d*x)))/2]
- m*Hypergeometric2F1[m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d*x)))/2] + E^((2
*I)*(c + d*x))*m*Hypergeometric2F1[m, 1 + m, 2 + m, (1 - E^((2*I)*(c + d*x)
))/2])))/(m*(1 + m)))*Sec[c + d*x]^3*(Cos[d*x] + I*Sin[d*x])^4*(A + B*Tan[c
 + d*x]))/(d*E^((4*I)*c)*((-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x
))))^m*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^4)
```

Maple [F] time = 0.901, size = 0, normalized size = 0.

$$\int \frac{(\tan(dx+c))^m (A + B\tan(dx+c))}{(a + ia\tan(dx+c))^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left((A - i\,B)e^{(8i\,dx+8i\,c)} + 2\,(2\,A - i\,B)e^{(6i\,dx+6i\,c)} + 6\,Ae^{(4i\,dx+4i\,c)} + 2\,(2\,A + i\,B)e^{(2i\,dx+2i\,c)} + A + i\,B\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right.}{16\,a^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
fricas")
```

```
[Out] integral(1/16*((A - I*B)*e^(8*I*d*x + 8*I*c) + 2*(2*A - I*B)*e^(6*I*d*x + 6
*I*c) + 6*A*e^(4*I*d*x + 4*I*c) + 2*(2*A + I*B)*e^(2*I*d*x + 2*I*c) + A + I
*B)*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*e^(-8*I*d*x
- 8*I*c)/a^4, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**4,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(i\,a\tan(dx+c)+a)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^4,x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(I*a*tan(d*x + c) + a)^4, x)
```

3.212 $\int \tan^m(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=316

$$\frac{2a^2\left(2B\left(4m^2+17m+19\right)+iA\left(8m^2+34m+35\right)\right)\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\text{Hypergeometr}}{d(2m+3)(2m+5)}$$

```
[Out] (4*a^3*(A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c
+ d*x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)*Sqrt[a +
I*a*Tan[c + d*x]]) + (2*a^2*(2*B*(19 + 17*m + 4*m^2) + I*A*(35 + 34*m + 8*m
^2))*Hypergeometric2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqr
t[a + I*a*Tan[c + d*x]])/(d*(3 + 2*m)*(5 + 2*m)*((-I)*Tan[c + d*x])^m) + (2
*a^2*((2*I)*B*(4 + m) - A*(5 + 2*m))*Tan[c + d*x]^(1 + m)*Sqrt[a + I*a*Tan[
c + d*x]])/(d*(3 + 2*m)*(5 + 2*m)) + ((2*I)*a*B*Tan[c + d*x]^(1 + m)*(a + I
*a*Tan[c + d*x])^(3/2))/(d*(5 + 2*m))
```

Rubi [A] time = 0.986155, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3594, 3601, 3564, 135, 133, 3599, 67, 65}

$$\frac{4a^3(A-iB)\sqrt{1+i\tan(c+dx)}\tan^{m+1}(c+dx)F_1\left(m+1;\frac{1}{2},1;m+2;-i\tan(c+dx),i\tan(c+dx)\right)}{d(m+1)\sqrt{a+ia\tan(c+dx)}}+\frac{2a^2\left(2B\left(4m^2+17m\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (4*a^3*(A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c
+ d*x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)*Sqrt[a +
I*a*Tan[c + d*x]]) + (2*a^2*(2*B*(19 + 17*m + 4*m^2) + I*A*(35 + 34*m + 8*m
^2))*Hypergeometric2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqr
t[a + I*a*Tan[c + d*x]])/(d*(3 + 2*m)*(5 + 2*m)*((-I)*Tan[c + d*x])^m) + (2
*a^2*((2*I)*B*(4 + m) - A*(5 + 2*m))*Tan[c + d*x]^(1 + m)*Sqrt[a + I*a*Tan[
c + d*x]])/(d*(3 + 2*m)*(5 + 2*m)) + ((2*I)*a*B*Tan[c + d*x]^(1 + m)*(a + I
*a*Tan[c + d*x])^(3/2))/(d*(5 + 2*m))
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
```

```
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 67

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[((-((b*c)
/d))^IntPart[m]*(b*x)^FracPart[m])/(-((d*x)/c))^FracPart[m], Int[(-((d*x)/c
))^m*(c + d*x)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&
!IntegerQ[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{1+m}(c+dx)(a+ia\tan(c+dx))^{3/2}}{d(5+2m)} + \frac{2\int\tan^m(c}{}$$

$$= \frac{2a^2(2iB(4+m)-A(5+2m))\tan^{1+m}(c+dx)\sqrt{a+ia\tan}}{d(3+2m)(5+2m)}$$

$$= \frac{2a^2(2iB(4+m)-A(5+2m))\tan^{1+m}(c+dx)\sqrt{a+ia\tan}}{d(3+2m)(5+2m)}$$

$$= \frac{2a^2(2iB(4+m)-A(5+2m))\tan^{1+m}(c+dx)\sqrt{a+ia\tan}}{d(3+2m)(5+2m)}$$

$$= \frac{2a^2(2iB(4+m)-A(5+2m))\tan^{1+m}(c+dx)\sqrt{a+ia\tan}}{d(3+2m)(5+2m)}$$

$$= \frac{4a^3(A-iB)F_1\left(1+m;\frac{1}{2},1;2+m;-i\tan(c+dx),i\tan(c\right.}{d(1+m)\sqrt{a+ia\tan(}}$$

Mathematica [F] time = 6.68153, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.51, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+ia\tan(dx+c))^{\frac{5}{2}} (A+B\tan(dx+c))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\tan(dx+c)^m\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*tan(d*x + c)^m,
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{4\sqrt{2}\left((A-iB)a^2e^{(6i\,dx+6i\,c)}+(A+iB)a^2e^{(4i\,dx+4i\,c)}\right)\left(\frac{-ie^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}}{e^{(6i\,dx+6i\,c)}+3\,e^{(4i\,dx+4i\,c)}+3\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(4*sqrt(2)*((A - I*B)*a^2*e^(6*I*d*x + 6*I*c) + (A + I*B)*a^2*e^(4*
I*d*x + 4*I*c))*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)/(e^(6*I*d*x + 6*I*c) + 3*
e^(4*I*d*x + 4*I*c) + 3*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*tan(d*x + c)^m,
 x)
```

3.213 $\int \tan^m(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=227

$$\frac{2a(B+(2m+3)(B+iA))\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\text{Hypergeometric2F1}\left(\frac{1}{2},-m,\frac{3}{2},1+i\tan\right.}{d(2m+3)}$$

```
[Out] (2*a^2*(A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c
+ d*x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)*Sqrt[a +
I*a*Tan[c + d*x]]) + (2*a*(B + (I*A + B)*(3 + 2*m))*Hypergeometric2F1[1/2,
-m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]])/(d*
(3 + 2*m)*((-I)*Tan[c + d*x])^m) + ((2*I)*a*B*Tan[c + d*x]^(1 + m)*Sqrt[a +
 I*a*Tan[c + d*x]])/(d*(3 + 2*m))
```

Rubi [A] time = 0.703497, antiderivative size = 227, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3594, 3601, 3564, 135, 133, 3599, 67, 65}

$$\frac{2a^2(A-iB)\sqrt{1+i\tan(c+dx)}\tan^{m+1}(c+dx)F_1\left(m+1;\frac{1}{2},1;m+2;-i\tan(c+dx),i\tan(c+dx)\right)}{d(m+1)\sqrt{a+ia\tan(c+dx)}}+\frac{2a(B+(2m+3)(B\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (2*a^2*(A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c
+ d*x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)*Sqrt[a +
I*a*Tan[c + d*x]]) + (2*a*(B + (I*A + B)*(3 + 2*m))*Hypergeometric2F1[1/2,
-m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]])/(d*
(3 + 2*m)*((-I)*Tan[c + d*x])^m) + ((2*I)*a*B*Tan[c + d*x]^(1 + m)*Sqrt[a +
 I*a*Tan[c + d*x]])/(d*(3 + 2*m))
```


Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
```

```
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 67

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[((-((b*c)
/d))^IntPart[m]*(b*x)^FracPart[m])/(-((d*x)/c))^FracPart[m], Int[(-((d*x)/c
))^m*(c + d*x)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] &&
!IntegerQ[n] && !GtQ[c, 0] && !GtQ[-(d/(b*c)), 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2iaB\tan^{1+m}(c+dx)\sqrt{a+ia\tan(c+dx)}}{d(3+2m)} + \frac{2\int \tan^m(c}{}$$

$$= \frac{2iaB\tan^{1+m}(c+dx)\sqrt{a+ia\tan(c+dx)}}{d(3+2m)} + (2a(A-iB)$$

$$= \frac{2iaB\tan^{1+m}(c+dx)\sqrt{a+ia\tan(c+dx)}}{d(3+2m)} + \frac{\left(2a^3(iA+\right.}{}$$

$$= \frac{2iaB\tan^{1+m}(c+dx)\sqrt{a+ia\tan(c+dx)}}{d(3+2m)} + \frac{\left(ia^2(B+(i\right.}{}$$

$$= \frac{2a^2(A-iB)F_1\left(1+m;\frac{1}{2},1;2+m;-i\tan(c+dx),i\tan\right.}{d(1+m)\sqrt{a+ia\tan}}$$

Mathematica [F] time = 4.70488, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.488, size = 0, normalized size = 0.

$$\int (\tan (dx + c))^{m} (a + ia \tan (dx + c))^{\frac{3}{2}} (A + B \tan (dx + c)) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(i \, a \tan (dx + c) + a)^{\frac{3}{2}} \tan (dx + c)^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*tan(d*x + c)^m,
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{2 \sqrt{2}\left((A - i B)ae^{(4i \, dx + 4i \, c)} + (A + i B)ae^{(2i \, dx + 2i \, c)}\right) \left(\frac{-i \, e^{(2i \, dx + 2i \, c)} + i}{e^{(2i \, dx + 2i \, c)} + 1}\right)^{m} \sqrt{\frac{a}{e^{(2i \, dx + 2i \, c)} + 1}} e^{(i \, dx + i \, c)}}{e^{(4i \, dx + 4i \, c)} + 2 \, e^{(2i \, dx + 2i \, c)} + 1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(2*sqrt(2)*((A - I*B)*a*e^(4*I*d*x + 4*I*c) + (A + I*B)*a*e^(2*I*d*
x + 2*I*c))*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(I*d*x + I*c)/(e^(4*I*d*x + 4*I*c) + 2*e^(2
*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\tan(dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*tan(d*x + c)^m,
 x)
```

3.214 $\int \tan^m(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=159

$$\frac{2B\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\text{Hypergeometric2F1}\left(\frac{1}{2},-m,\frac{3}{2},1+i\tan(c+dx)\right)}{d}+\frac{a(A-iB)\sqrt{}}{}$$

```
[Out] (a*(A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*
x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)*Sqrt[a + I*a*
Tan[c + d*x]]) + (2*B*Hypergeometric2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*T
an[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]])/(d*((-I)*Tan[c + d*x])^m)
```

Rubi [A] time = 0.365163, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3601, 3564, 135, 133, 3599, 67, 65}

$$\frac{a(A-iB)\sqrt{1+i\tan(c+dx)}\tan^{m+1}(c+dx)F_1\left(m+1;\frac{1}{2},1;m+2;-i\tan(c+dx),i\tan(c+dx)\right)}{d(m+1)\sqrt{a+ia\tan(c+dx)}}+\frac{2B\sqrt{a+ia\tan(c+dx}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```



```
[Out] (a*(A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*
x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(d*(1 + m)*Sqrt[a + I*a*
Tan[c + d*x]]) + (2*B*Hypergeometric2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*T
an[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]])/(d*((-I)*Tan[c + d*x])^m)
```


Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 67

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[((-((b*c)
/d))^IntPart[m]*(b*x)^FracPart[m])/(-((d*x)/c))^FracPart[m], Int[(-((d*x)/c
))^m*(c + d*x)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&
!IntegerQ[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \tan^m(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\left((-A+iB)\int \tan^m(c+dx)\sqrt{a+ia\tan(c+dx)}\,dx\right) + \frac{(iB \cdots}{\cdots}$$

$$= \frac{(iaB)\,\text{Subst}\left(\int \frac{x^m}{\sqrt{a+iax}}\,dx, x, \tan(c+dx)\right)}{d} + \frac{\left(a^2(iA+B)\right)\text{S}\cdots}{\cdots}$$

$$= \frac{(iaB(-i\tan(c+dx))^{-m}\tan^m(c+dx))\,\text{Subst}\left(\int \frac{(-ix)^m}{\sqrt{a+iax}}\,dx, x \cdots\right.}{d}$$

$$= \frac{a(A-iB)F_1\left(1+m;\frac{1}{2},1;2+m;-i\tan(c+dx),i\tan(c+dx \cdots\right.}{d(1+m)\sqrt{a+ia\tan(c+\cdots}}$$

Mathematica [F] time = 3.75752, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.57, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m \sqrt{a+ia\tan(dx+c)}\,(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*tan(d*x + c)^m, x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{2}\left((A-i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(i\,dx+i\,c)}}{e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(sqrt(2)*((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*((-I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*e^(I*d*x + I*c)/(e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a\,(i\tan(c+dx)+1)}\,(A+B\tan(c+dx))\tan^m(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))*tan(c + d*x)**m,
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{ia\tan(dx+c)+a}\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*tan(d*x + c)^m, x
)
```

3.215 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=214

$$\frac{(2m+1)(-B+iA)\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\text{Hypergeometric2F1}\left(\frac{1}{2},-m,\frac{3}{2},1+i\tan(c+d\right.}{ad}$$

```
[Out] ((A + I*B)*Tan[c + d*x]^(1 + m))/(d*Sqrt[a + I*a*Tan[c + d*x]]) + ((A - I*B
)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[1
+ I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(2*d*(1 + m)*Sqrt[a + I*a*Tan[c + d
*x]]) + ((I*A - B)*(1 + 2*m)*Hypergeometric2F1[1/2, -m, 3/2, 1 + I*Tan[c +
d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]])/(a*d*((-I)*Tan[c + d*x])^m
)
```

Rubi [A] time = 0.625167, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3601, 3564, 135, 133, 3599, 67, 65}

$$\frac{(A-iB)\sqrt{1+i\tan(c+dx)}\tan^{m+1}(c+dx)F_1\left(m+1;\frac{1}{2},1;m+2;-i\tan(c+dx),i\tan(c+dx)\right)}{2d(m+1)\sqrt{a+ia\tan(c+dx)}}+\frac{(2m+1)(-B+iA)\sqrt{a}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```


```
[Out] ((A + I*B)*Tan[c + d*x]^(1 + m))/(d*Sqrt[a + I*a*Tan[c + d*x]]) + ((A - I*B
)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[1
+ I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(2*d*(1 + m)*Sqrt[a + I*a*Tan[c + d
*x]]) + ((I*A - B)*(1 + 2*m)*Hypergeometric2F1[1/2, -m, 3/2, 1 + I*Tan[c +
d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c + d*x]])/(a*d*((-I)*Tan[c + d*x])^m
)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
```

```
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 67

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[((-((b*c)
/d))^IntPart[m]*(b*x)^FracPart[m])/(-((d*x)/c))^FracPart[m], Int[(-((d*x)/c
))^m*(c + d*x)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&
!IntegerQ[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{\int \tan^m(c+dx)\sqrt{a+ia\tan(c+dx)}\left(-a(Am+iB\right.}{a^2}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(A-iB)\int \tan^m(c+dx)\sqrt{a+ia\tan(c+dx)}\,dx}{2a} -$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(a(iA+B))\,\text{Subst}\left(\int \frac{\left(-\frac{ix}{a}\right)^m}{\sqrt{a+x}\left(-a^2+ax\right)}\,dx, x, ia\tan(c\right.}{2d}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{((A+iB)(1+2m)(-i\tan(c+dx))^{-m}\tan^m(c+dx}{2d}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(A-iB)F_1\left(1+m;\frac{1}{2},1;2+m;-i\tan(c+dx),i\,\text{ta}\right.}{2d(1+m)\sqrt{a+i}}$$

Mathematica [F] time = 180.003, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],
x]
```

```
[Out] $Aborted
```

Maple [F] time = 0.582, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^{m} (A+B\tan (dx+c)) \frac{1}{\sqrt{a+ia\tan (dx+c)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{2}\left((A-iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^{m}\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(-i\,dx-i\,c)}}{2\,a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="fricas")
```

```
[Out] integral(1/2*sqrt(2)*((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*((-I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*e^(-I*d*x - I*c)/a, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^m(c + dx)}{\sqrt{a(i\tan(c + dx) + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**m/sqrt(a*(I*tan(c + d*x) + 1)),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^m}{\sqrt{i\,a\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/sqrt(I*a*tan(d*x + c) + a), x
)
```

3.216 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=285

$$\frac{(2m+1)(iA(5-4m)+4Bm+B)\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\text{Hypergeometric2F1}\left(\frac{1}{2},-m,\frac{3}{2},1\right.}{6a^2d}$$

```
[Out] ((A + I*B)*Tan[c + d*x]^(1 + m))/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((A*(
5 - 4*m) - I*(B + 4*B*m))*Tan[c + d*x]^(1 + m))/(6*a*d*Sqrt[a + I*a*Tan[c +
 d*x]]) + ((A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Ta
n[c + d*x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(4*a*d*(1 + m)*S
qrt[a + I*a*Tan[c + d*x]]) + ((1 + 2*m)*(B + I*A*(5 - 4*m) + 4*B*m)*Hyperge
ometric2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Ta
n[c + d*x]])/(6*a^2*d*((-I)*Tan[c + d*x])^m)
```

Rubi [A] time = 0.97602, antiderivative size = 285, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3601, 3564, 135, 133, 3599, 67, 65}

$$\frac{(2m+1)(iA(5-4m)+4Bm+B)\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};i\tan(c+dx)+1\right)}{6a^2d}+$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((A + I*B)*Tan[c + d*x]^(1 + m))/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((A*(
5 - 4*m) - I*(B + 4*B*m))*Tan[c + d*x]^(1 + m))/(6*a*d*Sqrt[a + I*a*Tan[c +
 d*x]]) + ((A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Ta
n[c + d*x]]*Sqrt[1 + I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m))/(4*a*d*(1 + m)*S
qrt[a + I*a*Tan[c + d*x]]) + ((1 + 2*m)*(B + I*A*(5 - 4*m) + 4*B*m)*Hyperge
ometric2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Ta
n[c + d*x]])/(6*a^2*d*((-I)*Tan[c + d*x])^m)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
```

```
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 67

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[((-((b*c)
/d))^IntPart[m]*(b*x)^FracPart[m])/(-((d*x)/c))^FracPart[m], Int[(-((d*x)/c
))^m*(c + d*x)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&
!IntegerQ[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{\int \frac{\tan^m(c+dx)\left(a(A(2-m)-iB(1+m))-\frac{1}{2}a(iA-B)(1-2m)\tan(c+dx)\right.}{\sqrt{a+ia\tan(c+dx)}}}{3a^2}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A(5-4m)-i(B+4Bm))\tan^{1+m}(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{\int \tan}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A(5-4m)-i(B+4Bm))\tan^{1+m}(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{(A-}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A(5-4m)-i(B+4Bm))\tan^{1+m}(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{(iA+}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A(5-4m)-i(B+4Bm))\tan^{1+m}(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{((1+}{}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(A(5-4m)-i(B+4Bm))\tan^{1+m}(c+dx)}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{(A-}{}$$

Mathematica [F] time = 15.6552, size = 0, normalized size = 0.

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2
),x]
```

```
[Out] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2
), x]
```

Maple [F] time = 0.482, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^{m} (A+B\tan (dx+c)) (a+ia\tan (dx+c))^{-\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{2}\left((A-iB)e^{(4i\,dx+4i\,c)}+2\,Ae^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{-ie^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^{m}\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(-3i\,dx-3i\,c)}}{4\,a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="fricas")
```

```
[Out] integral(1/4*sqrt(2)*((A - I*B)*e^(4*I*d*x + 4*I*c) + 2*A*e^(2*I*d*x + 2*I*
c) + A + I*B)*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*e^(-3*I*d*x - 3*I*c)/a^2, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(I*a*tan(d*x + c) + a)^(3/2),
 x)
```

3.217 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=363

$$\frac{(2m+1)\left(B\left(-16m^2+12m+13\right)+iA\left(16m^2-52m+37\right)\right)\sqrt{a+ia\tan(c+dx)}\tan^m(c+dx)(-i\tan(c+dx))^{-m}\text{Hyper}}{60a^3d}$$

```
[Out] ((A + I*B)*Tan[c + d*x]^(1 + m))/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + ((I*B
*(1 - 4*m) + A*(11 - 4*m))*Tan[c + d*x]^(1 + m))/(30*a*d*(a + I*a*Tan[c + d
*x])^(3/2)) - ((I*B*(13 + 12*m - 16*m^2) - A*(37 - 52*m + 16*m^2))*Tan[c +
d*x]^(1 + m))/(60*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1
 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[1 + I*Tan[c +
d*x]]*Tan[c + d*x]^(1 + m))/(8*a^2*d*(1 + m)*Sqrt[a + I*a*Tan[c + d*x]]) +
((1 + 2*m)*(B*(13 + 12*m - 16*m^2) + I*A*(37 - 52*m + 16*m^2))*Hypergeometr
ic2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c +
 d*x]])/(60*a^3*d*((-I)*Tan[c + d*x])^m)
```

Rubi [A] time = 1.36868, antiderivative size = 363, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3596, 3601, 3564, 135, 133, 3599, 67, 65}

$$\frac{(A-iB)\sqrt{1+i\tan(c+dx)}\tan^{m+1}(c+dx)F_1\left(m+1;\frac{1}{2},1;m+2;-i\tan(c+dx),i\tan(c+dx)\right)}{8a^2d(m+1)\sqrt{a+ia\tan(c+dx)}}+\frac{(2m+1)\left(B\left(-16m^2+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((A + I*B)*Tan[c + d*x]^(1 + m))/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + ((I*B
*(1 - 4*m) + A*(11 - 4*m))*Tan[c + d*x]^(1 + m))/(30*a*d*(a + I*a*Tan[c + d
*x])^(3/2)) - ((I*B*(13 + 12*m - 16*m^2) - A*(37 - 52*m + 16*m^2))*Tan[c +
d*x]^(1 + m))/(60*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1
 + m, 1/2, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[1 + I*Tan[c +
d*x]]*Tan[c + d*x]^(1 + m))/(8*a^2*d*(1 + m)*Sqrt[a + I*a*Tan[c + d*x]]) +
((1 + 2*m)*(B*(13 + 12*m - 16*m^2) + I*A*(37 - 52*m + 16*m^2))*Hypergeometr
ic2F1[1/2, -m, 3/2, 1 + I*Tan[c + d*x]]*Tan[c + d*x]^m*Sqrt[a + I*a*Tan[c +
 d*x]])/(60*a^3*d*((-I)*Tan[c + d*x])^m)
```


Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
```

```
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 67

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[((-((b*c)
/d))^IntPart[m]*(b*x)^FracPart[m])/(-((d*x)/c))^FracPart[m], Int[(-((d*x)/c
))^m*(c + d*x)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] &&
!IntegerQ[n] && !GtQ[c, 0] && !GtQ[-(d/(b*c)), 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{\int \frac{\tan^m(c+dx)\left(a(A(4-m)-iB(1+m))-\frac{1}{2}a(iA-B)(3-2m)\tan(c+d\ldots\right.}{(a+ia\tan(c+dx))^{3/2}}}{5a^2}$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(iB(1-4m)+A(11-4m))\tan^{1+m}(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} + \ldots$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(iB(1-4m)+A(11-4m))\tan^{1+m}(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \ldots$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(iB(1-4m)+A(11-4m))\tan^{1+m}(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \ldots$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(iB(1-4m)+A(11-4m))\tan^{1+m}(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \ldots$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(iB(1-4m)+A(11-4m))\tan^{1+m}(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \ldots$$

$$= \frac{(A+iB)\tan^{1+m}(c+dx)}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(iB(1-4m)+A(11-4m))\tan^{1+m}(c+dx)}{30ad(a+ia\tan(c+dx))^{3/2}} - \ldots$$

Mathematica [F] time = 72.6787, size = 0, normalized size = 0.

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
),x]
```

```
[Out] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2
), x]
```

Maple [F] time = 0.474, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (A+B\tan(dx+c))(a+ia\tan(dx+c))^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{2}\left((A-iB)e^{(6i\,dx+6i\,c)}+(3A-iB)e^{(4i\,dx+4i\,c)}+(3A+iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{-ie^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^m\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}e^{(-}}{8a^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] integral(1/8*sqrt(2)*((A - I*B)*e^(6*I*d*x + 6*I*c) + (3*A - I*B)*e^(4*I*d*
x + 4*I*c) + (3*A + I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*((-I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))^m*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*e
^(-5*I*d*x - 5*I*c)/a^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(ia\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(I*a*tan(d*x + c) + a)^(5/2),
 x)
```

3.218 $\int \tan^m(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=167

$$\frac{iB\tan^{m+1}(c+dx)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}(m+1,1-n,m+2,-i\tan(c+dx))}{d(m+1)}+$$

```
[Out] ((A - I*B)*AppellF1[1 + m, 1 - n, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*
x]]*Tan[c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^n)/(d*(1 + m)*(1 + I*Tan[c
+ d*x])^n) + (I*B*Hypergeometric2F1[1 + m, 1 - n, 2 + m, (-I)*Tan[c + d*x]]
*Tan[c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^n)/(d*(1 + m)*(1 + I*Tan[c + d
*x])^n)
```

Rubi [A] time = 0.30397, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {3601, 3564, 135, 133, 3599, 66, 64}

$$\frac{(A-iB)\tan^{m+1}(c+dx)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1(m+1;1-n,1;m+2;-i\tan(c+dx),i\tan(c+dx))}{d(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((A - I*B)*AppellF1[1 + m, 1 - n, 1, 2 + m, (-I)*Tan[c + d*x], I*Tan[c + d*
x]]*Tan[c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^n)/(d*(1 + m)*(1 + I*Tan[c
+ d*x])^n) + (I*B*Hypergeometric2F1[1 + m, 1 - n, 2 + m, (-I)*Tan[c + d*x]]
*Tan[c + d*x]^(1 + m)*(a + I*a*Tan[c + d*x])^n)/(d*(1 + m)*(1 + I*Tan[c + d
*x])^n)
```


Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = -\left((-A+iB)\int \tan^m(c+dx)(a+ia\tan(c+dx))^n\,dx\right) + $$

$$= \frac{(iaB)\,\text{Subst}\left(\int x^m(a+iax)^{-1+n}\,dx, x, \tan(c+dx)\right)}{d} + $$

$$= \frac{(iB(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n)\,\text{Subst}\left(\int(1\right.}{d}$$

$$= \frac{(A-iB)F_1(1+m;1-n,1;2+m;-i\tan(c+dx),i\tan(c+}{d(}$$

Mathematica [F] time = 18.1913, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 184.135, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+ia\tan(dx+c))^n (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}\left(\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}\right)^{m}}{e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n*((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) + 1))^m/(e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{n}\tan(dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^m, x)
```

3.219 $\int \tan^3(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=245

$$\frac{(A-iB)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1+i\tan(c+dx))\right)}{2dn}-\frac{\left(An(n+3)-iB\left(n^2+3n+6\right)\right.}{ad(n+1)(n+2}$$

```
[Out] (2*(I*B*n - A*(3 + n))*(a + I*a*Tan[c + d*x])^n)/(d*n*(2 + n)*(3 + n)) + ((
A - I*B)*Hypergeometric2F1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Ta
n[c + d*x])^n)/(2*d*n) - ((I*B*n - A*(3 + n))*Tan[c + d*x]^2*(a + I*a*Tan[c
 + d*x])^n)/(d*(2 + n)*(3 + n)) + (B*Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^
n)/(d*(3 + n)) - ((A*n*(3 + n) - I*B*(6 + 3*n + n^2))*(a + I*a*Tan[c + d*x]
)^(1 + n))/(a*d*(1 + n)*(2 + n)*(3 + n))
```

Rubi [A] time = 0.649361, antiderivative size = 245, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3597, 3592, 3527, 3481, 68}

$$\frac{(A-iB)(a+ia\tan(c+dx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(i\tan(c+dx)+1)\right)}{2dn}-\frac{\left(An(n+3)-iB\left(n^2+3n+6\right)\right)(a+ia\tan(c+dx}{ad(n+1)(n+2)(n+3)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*(I*B*n - A*(3 + n))*(a + I*a*Tan[c + d*x])^n)/(d*n*(2 + n)*(3 + n)) + ((
A - I*B)*Hypergeometric2F1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Ta
n[c + d*x])^n)/(2*d*n) - ((I*B*n - A*(3 + n))*Tan[c + d*x]^2*(a + I*a*Tan[c
 + d*x])^n)/(d*(2 + n)*(3 + n)) + (B*Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^
n)/(d*(3 + n)) - ((A*n*(3 + n) - I*B*(6 + 3*n + n^2))*(a + I*a*Tan[c + d*x]
)^(1 + n))/(a*d*(1 + n)*(2 + n)*(3 + n))
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
```

```
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan^3(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B\tan^3(c+dx)(a+ia\tan(c+dx))^n}{d(3+n)} + \frac{\int \tan^2(c+dx)(a\ \cdots}{}$$

$$= -\frac{(iBn-A(3+n))\tan^2(c+dx)(a+ia\tan(c+dx))^n}{d(2+n)(3+n)} + \frac{B\ \cdots}{}$$

$$= -\frac{(iBn-A(3+n))\tan^2(c+dx)(a+ia\tan(c+dx))^n}{d(2+n)(3+n)} + \frac{B\ \cdots}{}$$

$$= \frac{2(iBn-A(3+n))(a+ia\tan(c+dx))^n}{dn(2+n)(3+n)} - \frac{(iBn-A(3+n\ \cdots}{}$$

$$= \frac{2(iBn-A(3+n))(a+ia\tan(c+dx))^n}{dn(2+n)(3+n)} - \frac{(iBn-A(3+n\ \cdots}{}$$

$$= \frac{2(iBn-A(3+n))(a+ia\tan(c+dx))^n}{dn(2+n)(3+n)} + \frac{(A-iB)\,{}_2F_1\left(1\ \cdots\right.}{}$$

Mathematica [F] time = 21.1936, size = 0, normalized size = 0.

$$\int \tan^3(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^3*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.647, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^3 (a+ia\tan(dx+c))^n (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((iA+B)e^{(8i\,dx+8i\,c)}+(-2i\,A-4\,B)e^{(6i\,dx+6i\,c)}+6\,Be^{(4i\,dx+4i\,c)}+(2i\,A-4\,B)e^{(2i\,dx+2i\,c)}-i\,A+B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}}{e^{(8i\,dx+8i\,c)}+4\,e^{(6i\,dx+6i\,c)}+6\,e^{(4i\,dx+4i\,c)}+4\,e^{(2i\,dx+2i\,c)}+1},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(((I*A + B)*e^(8*I*d*x + 8*I*c) + (-2*I*A - 4*B)*e^(6*I*d*x + 6*I*c
) + 6*B*e^(4*I*d*x + 4*I*c) + (2*I*A - 4*B)*e^(2*I*d*x + 2*I*c) - I*A + B)*
(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n/(e^(8*I*d*x + 8*I*c)
+ 4*e^(6*I*d*x + 6*I*c) + 6*e^(4*I*d*x + 4*I*c) + 4*e^(2*I*d*x + 2*I*c) + 1
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(ia\tan (dx+c)+a)^n\tan (dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^3, x)
```

3.220 $\int \tan^2(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=164

$$\frac{(B+iA)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1+i\tan(c+dx))\right)}{2dn}-\frac{(Bn+iA(n+2))(a+ia\tan(c+dx))^{n+1}}{ad(n+1)(n+2)}$$

```
[Out] (-2*B*(a + I*a*Tan[c + d*x])^n)/(d*n*(2 + n)) + ((I*A + B)*Hypergeometric2F
1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) +
(B*Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^n)/(d*(2 + n)) - ((B*n + I*A*(2 +
n))*(a + I*a*Tan[c + d*x])^(1 + n))/(a*d*(1 + n)*(2 + n))
```

Rubi [A] time = 0.312751, antiderivative size = 164, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3597, 3592, 3527, 3481, 68}

$$\frac{(B+iA)(a+ia\tan(c+dx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(i\tan(c+dx)+1)\right)}{2dn}-\frac{(Bn+iA(n+2))(a+ia\tan(c+dx))^{n+1}}{ad(n+1)(n+2)}+\frac{B\tan^2(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*B*(a + I*a*Tan[c + d*x])^n)/(d*n*(2 + n)) + ((I*A + B)*Hypergeometric2F
1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) +
(B*Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^n)/(d*(2 + n)) - ((B*n + I*A*(2 +
n))*(a + I*a*Tan[c + d*x])^(1 + n))/(a*d*(1 + n)*(2 + n))
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B\tan^2(c+dx)(a+ia\tan(c+dx))^n}{d(2+n)} + \frac{\int \tan(c+dx)(a+\cdots}{\cdots}$$

$$= \frac{B\tan^2(c+dx)(a+ia\tan(c+dx))^n}{d(2+n)} - \frac{(Bn+iA(2+n))(\cdots}{ad(1+\cdots}$$

$$= -\frac{2B(a+ia\tan(c+dx))^n}{dn(2+n)} + \frac{B\tan^2(c+dx)(a+ia\tan(c\cdots}{d(2+n)}$$

$$= -\frac{2B(a+ia\tan(c+dx))^n}{dn(2+n)} + \frac{B\tan^2(c+dx)(a+ia\tan(c\cdots}{d(2+n)}$$

$$= -\frac{2B(a+ia\tan(c+dx))^n}{dn(2+n)} + \frac{(iA+B)\,{}_2F_1\left(1,n;1+n;\frac{1}{2}(1\cdots\right.}{\cdots}$$

Mathematica [F] time = 38.8649, size = 0, normalized size = 0.

$$\int \tan^2(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^2*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 1.212, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^2 (a+ia\tan(dx+c))^n (A+B\tan(dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\tan(dx+c)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left((A-iB)e^{(6i\,dx+6i\,c)}-(A-3i\,B)e^{(4i\,dx+4i\,c)}-(A+3i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n}{e^{(6i\,dx+6i\,c)}+3\,e^{(4i\,dx+4i\,c)}+3\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(-((A - I*B)*e^(6*I*d*x + 6*I*c) - (A - 3*I*B)*e^(4*I*d*x + 4*I*c)
- (A + 3*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2
*I*d*x + 2*I*c) + 1))^n/(e^(6*I*d*x + 6*I*c) + 3*e^(4*I*d*x + 4*I*c) + 3*e^
(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n\tan(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^2, x)
```

3.221 $\int \tan(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=111

$$-\frac{(A-iB)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1+i\tan(c+dx))\right)}{2dn}+\frac{A(a+ia\tan(c+dx))^n}{dn}-\frac{iB(a\cdots}{}$$

```
[Out] (A*(a + I*a*Tan[c + d*x])^n)/(d*n) - ((A - I*B)*Hypergeometric2F1[1, n, 1 +
 n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) - (I*B*(a + I
*a*Tan[c + d*x])^(1 + n))/(a*d*(1 + n))
```

Rubi [A] time = 0.120165, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3592, 3527, 3481, 68}

$$-\frac{(A-iB)(a+ia\tan(c+dx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(i\tan(c+dx)+1)\right)}{2dn}+\frac{A(a+ia\tan(c+dx))^n}{dn}-\frac{iB(a+ia\tan(c+dx))^{n+\cdots}}{ad(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (A*(a + I*a*Tan[c + d*x])^n)/(d*n) - ((A - I*B)*Hypergeometric2F1[1, n, 1 +
 n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) - (I*B*(a + I
*a*Tan[c + d*x])^(1 + n))/(a*d*(1 + n))
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = -\frac{iB(a+ia\tan(c+dx))^{1+n}}{ad(1+n)} + \int (a+ia\tan(c+dx))^n(-B$$

$$= \frac{A(a+ia\tan(c+dx))^n}{dn} - \frac{iB(a+ia\tan(c+dx))^{1+n}}{ad(1+n)} - (iA$$

$$= \frac{A(a+ia\tan(c+dx))^n}{dn} - \frac{iB(a+ia\tan(c+dx))^{1+n}}{ad(1+n)} - \frac{(a(A}{}$$

$$= \frac{A(a+ia\tan(c+dx))^n}{dn} - \frac{(A-iB)\,{}_2F_1\left(1,n;1+n;\frac{1}{2}(1+i\right.}{2}$$

Mathematica [B] time = 30.0093, size = 270, normalized size = 2.43

$$2^{n-1}e^{-2idnx}\left(e^{idx}\right)^n\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^n\sec^{-n}(c+dx)(\cos(dx)+i\sin(dx))^{-n}(a+ia\tan(c+dx))^n\left(\frac{(A+iB)e^{2idnx}\left(1+e^{2i(c+dx)}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2^(-1 + n)*(E^(I*d*x))^n*(E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^n*(((
A + I*B)*E^((2*I)*d*n*x)*(1 + E^((2*I)*(c + d*x)))^n*Hypergeometric2F1[n, 2
```

```
 + n, 1 + n, -E^((2*I)*(c + d*x))])/(d*n) + (E^((2*I)*c)*(((-2*I)*B*E^((2*I
)*d*(1 + n)*x))/((1 + E^((2*I)*(c + d*x)))*(1 + n)) - ((A - I*B)*E^((2*I)*(
c + d*(2 + n)*x))*(1 + E^((2*I)*(c + d*x)))^n*Hypergeometric2F1[2 + n, 2 +
n, 3 + n, -E^((2*I)*(c + d*x))])/(2 + n)))/d)*(a + I*a*Tan[c + d*x])^n)/(E^
((2*I)*d*n*x)*Sec[c + d*x]^n*(Cos[d*x] + I*Sin[d*x])^n)
```

Maple [F] time = 0.998, size = 0, normalized size = 0.

$$\int \tan(dx+c)\,(a+ia\tan(dx+c))^n\,(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\tan(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((-i\,A-B)e^{(4i\,dx+4i\,c)}+2\,Be^{(2i\,dx+2i\,c)}+i\,A-B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n}{e^{(4i\,dx+4i\,c)}+2\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral(((-I*A - B)*e^(4*I*d*x + 4*I*c) + 2*B*e^(2*I*d*x + 2*I*c) + I*A -
B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n/(e^(4*I*d*x + 4*I*
c) + 2*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a (i \tan (c + dx) + 1))^n (A + B \tan (c + dx)) \tan (c + dx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**n*(A + B*tan(c + d*x))*tan(c + d*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(i a \tan (dx + c) + a)^n \tan (dx + c) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c), x)
```

3.222 $\int (a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=78

$$\frac{B(a+ia\tan(c+dx))^n}{dn}-\frac{(B+iA)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1+i\tan(c+dx))\right)}{2dn}$$

```
[Out] (B*(a + I*a*Tan[c + d*x])^n)/(d*n) - ((I*A + B)*Hypergeometric2F1[1, n, 1 +
 n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n)
```

Rubi [A] time = 0.0656323, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3527, 3481, 68}

$$\frac{B(a+ia\tan(c+dx))^n}{dn}-\frac{(B+iA)(a+ia\tan(c+dx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(i\tan(c+dx)+1)\right)}{2dn}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (B*(a + I*a*Tan[c + d*x])^n)/(d*n) - ((I*A + B)*Hypergeometric2F1[1, n, 1 +
 n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n)
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
```

```
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int (a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B(a+ia\tan(c+dx))^n}{dn} - (-A+iB)\int (a+ia\tan(c+dx))^n\,dx$$

$$= \frac{B(a+ia\tan(c+dx))^n}{dn} - \frac{(a(iA+B))\,\text{Subst}\left(\int \frac{(a+x)^{-1+n}}{a-x}\,dx, x, ia\tan(c}{d}$$

$$= \frac{B(a+ia\tan(c+dx))^n}{dn} - \frac{(iA+B)\,{}_2F_1\left(1,n;1+n;\frac{1}{2}(1+i\tan(c+dx))\right.}{2dn}$$

Mathematica [A] time = 7.15504, size = 152, normalized size = 1.95

$$\frac{2^{n-1}\left(e^{idx}\right)^n\left(\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}\right)^n\sec^{-n}(c+dx)(\cos(dx)+i\sin(dx))^{-n}(a+ia\tan(c+dx))^n\left((n+1)(B-iA)-in(A-iB)e^{2i(c+dx)}\right.}{dn(n+1)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2^(-1 + n)*(E^(I*d*x))^n*(E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x))))^n*(((
-I)*A + B)*(1 + n) - I*(A - I*B)*E^((2*I)*(c + d*x))*n*Hypergeometric2F1[1,
 1, 2 + n, -E^((2*I)*(c + d*x))])*(a + I*a*Tan[c + d*x])^n)/(d*n*(1 + n)*Se
c[c + d*x]^n*(Cos[d*x] + I*Sin[d*x])^n)
```

Maple [F] time = 0.787, size = 0, normalized size = 0.

$$\int (a+ia\tan(dx+c))^n(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(i\,a\tan (dx+c)+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n}{e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n/(e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a\,(i\tan (c+dx)+1))^n\,(A+B\tan (c+dx))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((a*(I*tan(c + d*x) + 1))**n*(A + B*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n, x)
```

3.223 $\int \cot(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=97

$$\frac{(A-iB)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1+i\tan(c+dx))\right)}{2dn}-\frac{A(a+ia\tan(c+dx))^n\text{Hyperge}}{}$$

```
[Out] ((A - I*B)*Hypergeometric2F1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*
Tan[c + d*x])^n)/(2*d*n) - (A*Hypergeometric2F1[1, n, 1 + n, 1 + I*Tan[c +
d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*n)
```

Rubi [A] time = 0.178412, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3600, 3481, 68, 3599, 65}

$$\frac{(A-iB)(a+ia\tan(c+dx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(i\tan(c+dx)+1)\right)}{2dn}-\frac{A(a+ia\tan(c+dx))^n\,{}_2F_1(1,n;n+1;i\tan(c+dx)}{dn}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((A - I*B)*Hypergeometric2F1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*
Tan[c + d*x])^n)/(2*d*n) - (A*Hypergeometric2F1[1, n, 1 + n, 1 + I*Tan[c +
d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*n)
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
```

```
c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \cot(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{A\int \cot(c+dx)(a-ia\tan(c+dx))(a+ia\tan(c+dx))^n\,d}{a}$$

$$= \frac{(aA)\,\mathrm{Subst}\left(\int \frac{(a+iax)^{-1+n}}{x}\,dx, x, \tan(c+dx)\right)}{d} + \frac{(a(A-iB)}{}$$

$$= \frac{(A-iB)\,{}_2F_1\left(1,n;1+n;\frac{1}{2}(1+i\tan(c+dx))\right)(a+ia\tan(}{2dn}$$

Mathematica [F] time = 23.956, size = 0, normalized size = 0.

$$\int \cot(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.745, size = 0, normalized size = 0.

$$\int \cot (dx + c) (a + ia \tan (dx + c))^n (A + B \tan (dx + c)) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(i a \tan (dx + c) + a)^n \cot (dx + c) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left((i A + B)e^{(2i dx + 2i c)} + i A - B\right)\left(\frac{2 ae^{(2i dx + 2i c)}}{e^{(2i dx + 2i c)} + 1}\right)^n}{e^{(2i dx + 2i c)} - 1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral(((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A - B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n/(e^(2*I*d*x + 2*I*c) - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c), x)
```

3.224 $\int \cot^2(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=131

$$\frac{(B+iA)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1+i\tan(c+dx))\right)}{2dn}-\frac{(B+iAn)(a+ia\tan(c+dx))^n\text{H}}{}$$

```
[Out] -((A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n)/d) + ((I*A + B)*Hypergeometric2
F1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) -
 ((B + I*A*n)*Hypergeometric2F1[1, n, 1 + n, 1 + I*Tan[c + d*x]]*(a + I*a*T
an[c + d*x])^n)/(d*n)
```

Rubi [A] time = 0.326724, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {3598, 3600, 3481, 68, 3599, 65}

$$\frac{(B+iA)(a+ia\tan(c+dx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(i\tan(c+dx)+1)\right)}{2dn}-\frac{(B+iAn)(a+ia\tan(c+dx))^n\,{}_2F_1(1,n;n+1;i\tan}{dn}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((A*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n)/d) + ((I*A + B)*Hypergeometric2
F1[1, n, 1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) -
 ((B + I*A*n)*Hypergeometric2F1[1, n, 1 + n, 1 + I*Tan[c + d*x]]*(a + I*a*T
an[c + d*x])^n)/(d*n)
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^n}{d} + \frac{\int \cot(c+dx)(a+i}{}$$

$$= -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^n}{d} + (-A+iB)\int (a+ia$$

$$= -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^n}{d} + \frac{(a(iA+B))\,\mathrm{Subst}\Big(}{}$$

$$= -\frac{A\cot(c+dx)(a+ia\tan(c+dx))^n}{d} + \frac{(iA+B)\,{}_2F_1\Big(1,n;1}{}$$

Mathematica [F] time = 44.2511, size = 0, normalized size = 0.

$$\int \cot^2(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Cot[c + d*x]^2*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.761, size = 0, normalized size = 0.

$$\int (\cot(dx+c))^2\,(a+ia\tan(dx+c))^n\,(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\cot(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left((A-iB)e^{(4i\,dx+4i\,c)}+2\,Ae^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}}{e^{(4i\,dx+4i\,c)}-2\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(-((A - I*B)*e^(4*I*d*x + 4*I*c) + 2*A*e^(2*I*d*x + 2*I*c) + A + I*
B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n/(e^(4*I*d*x + 4*I*
c) - 2*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{n}\cot(dx+c)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^2, x)
```

3.225 $\int \cot^3(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=185

$$-\frac{\left(-A\left(n^2-n+2\right)+2iBn\right)(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}(1,n,n+1,1+i\tan(c+dx))}{2dn}-\frac{(A-iB)(a+ia}{}$$

```
[Out] -((2*B + I*A*n)*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n)/(2*d) - (A*Cot[c + d
*x]^2*(a + I*a*Tan[c + d*x])^n)/(2*d) - ((A - I*B)*Hypergeometric2F1[1, n,
1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) - (((2*I)*
B*n - A*(2 - n + n^2))*Hypergeometric2F1[1, n, 1 + n, 1 + I*Tan[c + d*x]]*(
a + I*a*Tan[c + d*x])^n)/(2*d*n)
```

Rubi [A] time = 0.582882, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {3598, 3600, 3481, 68, 3599, 65}

$$-\frac{\left(-A\left(n^2-n+2\right)+2iBn\right)(a+ia\tan(c+dx))^n\,{}_2F_1(1,n;n+1;i\tan(c+dx)+1)}{2dn}-\frac{(A-iB)(a+ia\tan(c+dx))^n\,{}_2F_1\left(\right.}{2dn}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((2*B + I*A*n)*Cot[c + d*x]*(a + I*a*Tan[c + d*x])^n)/(2*d) - (A*Cot[c + d
*x]^2*(a + I*a*Tan[c + d*x])^n)/(2*d) - ((A - I*B)*Hypergeometric2F1[1, n,
1 + n, (1 + I*Tan[c + d*x])/2]*(a + I*a*Tan[c + d*x])^n)/(2*d*n) - (((2*I)*
B*n - A*(2 - n + n^2))*Hypergeometric2F1[1, n, 1 + n, 1 + I*Tan[c + d*x]]*(
a + I*a*Tan[c + d*x])^n)/(2*d*n)
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
```

```
] && LtQ[n, -1]
```

Rule 3600

```
Int[(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(
A*b + a*B)/(b*c + a*d), Int[(a + b*Tan[e + f*x])^m, x], x] - Dist[(B*c - A*
d)/(b*c + a*d), Int[((a + b*Tan[e + f*x])^m*(a - b*Tan[e + f*x]))/(c + d*Ta
n[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a
*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3481

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Dist[b/d, Su
bst[Int[(a + x)^(n - 1)/(a - x), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b,
 c, d, n}, x] && EqQ[a^2 + b^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = -\frac{A\cot^2(c+dx)(a+ia\tan(c+dx))^n}{2d} + \frac{\int \cot^2(c+dx)(a$$

$$= -\frac{(2B+iAn)\cot(c+dx)(a+ia\tan(c+dx))^n}{2d} - \frac{A\cot^2(c$$

$$= -\frac{(2B+iAn)\cot(c+dx)(a+ia\tan(c+dx))^n}{2d} - \frac{A\cot^2(c$$

$$= -\frac{(2B+iAn)\cot(c+dx)(a+ia\tan(c+dx))^n}{2d} - \frac{A\cot^2(c$$

$$= -\frac{(2B+iAn)\cot(c+dx)(a+ia\tan(c+dx))^n}{2d} - \frac{A\cot^2(c$$

Mathematica [F] time = 64.7095, size = 0, normalized size = 0.

$$\int \cot^3(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Cot[c + d*x]^3*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.942, size = 0, normalized size = 0.

$$\int (\cot(dx+c))^3 (a+ia\tan(dx+c))^n (A+B\tan(dx+c))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\cot(dx+c)^3\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((-i\,A-B)e^{(6i\,dx+6i\,c)}+(-3i\,A-B)e^{(4i\,dx+4i\,c)}+(-3i\,A+B)e^{(2i\,dx+2i\,c)}-i\,A+B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}}{e^{(6i\,dx+6i\,c)}-3\,e^{(4i\,dx+4i\,c)}+3\,e^{(2i\,dx+2i\,c)}-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(((-I*A - B)*e^(6*I*d*x + 6*I*c) + (-3*I*A - B)*e^(4*I*d*x + 4*I*c)
 + (-3*I*A + B)*e^(2*I*d*x + 2*I*c) - I*A + B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^
(2*I*d*x + 2*I*c) + 1))^n/(e^(6*I*d*x + 6*I*c) - 3*e^(4*I*d*x + 4*I*c) + 3*
e^(2*I*d*x + 2*I*c) - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{n}\cot(dx+c)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^3, x)
```

3.226 $\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=383

$$-\frac{2\left(4Bn\left(2n^2+8n+9\right)+iA\left(8n^3+32n^2+36n+15\right)\right)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hyperge}}{d(2n+1)(2n+3)(2n+5)}$$

```
[Out] (-2*((2*I)*A*n*(5 + 2*n) + B*(15 + 10*n + 4*n^2))*Sqrt[Tan[c + d*x]]*(a + I
*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*(5 + 2*n)) + (2*(I*A + B)*Appell
F1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*x]
]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) - (2*(4*B*n*(9 + 8*n
 + 2*n^2) + I*A*(15 + 36*n + 32*n^2 + 8*n^3))*Hypergeometric2F1[1/2, 1 - n,
 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1
 + 2*n)*(3 + 2*n)*(5 + 2*n)*(1 + I*Tan[c + d*x])^n) - (2*((2*I)*B*n - A*(5
+ 2*n))*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n)*(5 + 2*n)
) + (2*B*Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n)/(d*(5 + 2*n))
```

Rubi [A] time = 1.13789, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3597, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$\frac{2(B+iA)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d}-\frac{2\left(4Bn\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*((2*I)*A*n*(5 + 2*n) + B*(15 + 10*n + 4*n^2))*Sqrt[Tan[c + d*x]]*(a + I
*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*(5 + 2*n)) + (2*(I*A + B)*Appell
F1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*x]
]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) - (2*(4*B*n*(9 + 8*n
 + 2*n^2) + I*A*(15 + 36*n + 32*n^2 + 8*n^3))*Hypergeometric2F1[1/2, 1 - n,
 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1
 + 2*n)*(3 + 2*n)*(5 + 2*n)*(1 + I*Tan[c + d*x])^n) - (2*((2*I)*B*n - A*(5
+ 2*n))*Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n)*(5 + 2*n)
) + (2*B*Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n)/(d*(5 + 2*n))
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
```

```
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{2B\tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n}{d(5+2n)} + \frac{2\int \tan^{\frac{3}{2}}(c+dx}{}$$

$$= -\frac{2(2iBn-A(5+2n))\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)}$$

$$= -\frac{2\left(2iAn(5+2n)+B\left(15+10n+4n^2\right)\right)\sqrt{\tan(c+dx)}(a}{d(1+2n)(3+2n)(5+2n)}$$

$$= -\frac{2\left(2iAn(5+2n)+B\left(15+10n+4n^2\right)\right)\sqrt{\tan(c+dx)}(a}{d(1+2n)(3+2n)(5+2n)}$$

$$= -\frac{2\left(2iAn(5+2n)+B\left(15+10n+4n^2\right)\right)\sqrt{\tan(c+dx)}(a}{d(1+2n)(3+2n)(5+2n)}$$

$$= -\frac{2\left(2iAn(5+2n)+B\left(15+10n+4n^2\right)\right)\sqrt{\tan(c+dx)}(a}{d(1+2n)(3+2n)(5+2n)}$$

$$= -\frac{2\left(2iAn(5+2n)+B\left(15+10n+4n^2\right)\right)\sqrt{\tan(c+dx)}(a}{d(1+2n)(3+2n)(5+2n)}$$

$$= -\frac{2\left(2iAn(5+2n)+B\left(15+10n+4n^2\right)\right)\sqrt{\tan(c+dx)}(a}{d(1+2n)(3+2n)(5+2n)}$$

Mathematica [F] time = 15.2754, size = 0, normalized size = 0.

$$\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Tan[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.336, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^{\frac{5}{2}} (a+ia\tan (dx+c))^{n} (A+B\tan (dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(i\,a\tan (dx+c)+a)^{n}\tan (dx+c)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^(5/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\left((A-i\,B)e^{(6i\,dx+6i\,c)}-(A-3i\,B)e^{(4i\,dx+4i\,c)}-(A+3i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}}{e^{(6i\,dx+6i\,c)}+3\,e^{(4i\,dx+4i\,c)}+3\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(-((A - I*B)*e^(6*I*d*x + 6*I*c) - (A - 3*I*B)*e^(4*I*d*x + 4*I*c)
- (A + 3*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2
*I*d*x + 2*I*c) + 1))^n*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) + 1))/(e^(6*I*d*x + 6*I*c) + 3*e^(4*I*d*x + 4*I*c) + 3*e^(2*I*d*x + 2*I
```

```
*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n\tan(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^(5/2),
 x)
```

3.227 $\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=291

$$\frac{2\left(2An(2n+3)-iB\left(4n^2+6n+3\right)\right)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1\right.}{d(2n+1)(2n+3)}$$

```
[Out] (-2*((2*I)*B*n - A*(3 + 2*n))*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/
(d*(1 + 2*n)*(3 + 2*n)) - (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Ta
n[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d
*(1 + I*Tan[c + d*x])^n) + (2*(2*A*n*(3 + 2*n) - I*B*(3 + 6*n + 4*n^2))*Hyp
ergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*(a +
I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*(1 + I*Tan[c + d*x])^n) + (2*B*
Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n))
```

Rubi [A] time = 0.779276, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3597, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$-\frac{2(A-iB)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d}+\frac{2\left(2A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*((2*I)*B*n - A*(3 + 2*n))*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/
(d*(1 + 2*n)*(3 + 2*n)) - (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Ta
n[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d
*(1 + I*Tan[c + d*x])^n) + (2*(2*A*n*(3 + 2*n) - I*B*(3 + 6*n + 4*n^2))*Hyp
ergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*(a +
I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*(1 + I*Tan[c + d*x])^n) + (2*B*
Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n))
```


Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{2B\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n}{d(3+2n)} + \frac{2\int \sqrt{\tan(c+dx)}}{}$$

$$= -\frac{2(2iBn-A(3+2n))\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)(3+2n)}$$

$$= -\frac{2(2iBn-A(3+2n))\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)(3+2n)}$$

$$= -\frac{2(2iBn-A(3+2n))\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)(3+2n)}$$

$$= -\frac{2(2iBn-A(3+2n))\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)(3+2n)}$$

$$= -\frac{2(2iBn-A(3+2n))\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)(3+2n)}$$

$$= -\frac{2(2iBn-A(3+2n))\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)(3+2n)}$$

Mathematica [F] time = 16.5604, size = 0, normalized size = 0.

$$\int \tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Tan[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.327, size = 0, normalized size = 0.

$$\int \left(\tan \left(dx+c\right)\right)^{\frac{3}{2}} \left(a+ia\tan \left(dx+c\right)\right)^{n} \left(A+B\tan \left(dx+c\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{n}\tan(dx+c)^{\frac{3}{2}}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^(3/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left((-i\,A-B)e^{(4i\,dx+4i\,c)}+2\,Be^{(2i\,dx+2i\,c)}+i\,A-B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}}{e^{(4i\,dx+4i\,c)}+2\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(((-I*A - B)*e^(4*I*d*x + 4*I*c) + 2*B*e^(2*I*d*x + 2*I*c) + I*A -
B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((-I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))/(e^(4*I*d*x + 4*I*c) + 2*e^(2*I*
```

```
d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\tan(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*tan(d*x + c)^(3/2),
 x)
```

3.228 $\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=215

$$\frac{2(2Bn+iA(2n+1))\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+\right.}{d(2n+1)}$$

```
[Out] (2*B*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)) - (2*(I*A +
 B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Ta
n[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) + (2*(2*B*
n + I*A*(1 + 2*n))*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sq
rt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(1 + I*Tan[c + d*x]
)^n)
```

Rubi [A] time = 0.494958, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3597, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$-\frac{2(B+iA)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d}+\frac{2(2B}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*B*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)) - (2*(I*A +
 B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Ta
n[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) + (2*(2*B*
n + I*A*(1 + 2*n))*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sq
rt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(1 + I*Tan[c + d*x]
)^n)
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
```

```
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
```

```
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{2B\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)} + \frac{2\int \frac{(a+ia\tan(c+dx))}{}}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)} + (-iA-B)\int \frac{(a+}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)} + \frac{\left(a^2(A-iB)\right)\mathrm{Sub}}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)} + \frac{\left(2a^3(iA+B)\right)\mathrm{Su}}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)} + \frac{2(2Bn+iA(1+2}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n}{d(1+2n)} - \frac{2(iA+B)F_1\left(\frac{1}{2};1\right.}{}$$

Mathematica [F] time = 20.2892, size = 0, normalized size = 0.

$$\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.347, size = 0, normalized size = 0.

$$\int \sqrt{\tan(dx+c)}\,(a+ia\tan(dx+c))^n\,(A+B\tan(dx+c))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*sqrt(tan(d*x + c)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}}{e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) + 1))/(e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{n}\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*sqrt(tan(d*x + c)),
 x)
```

3.229 $\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=158

$$\frac{2iB\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+dx)\right)}{d}+\frac{2(A-$$

```
[Out] (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]
]*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) +
 ((2*I)*B*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c
+ d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.308457, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3601, 3564, 130, 430, 429, 3599, 66, 64}

$$\frac{2(A-iB)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d}+\frac{2iB\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]
]*Sqrt[Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) +
 ((2*I)*B*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c
+ d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n)
```


Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
```

```
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
```

```
/; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 && !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = -\left((-A+iB)\int \frac{(a+ia\tan(c+dx))^n}{\sqrt{\tan(c+dx)}}\,dx\right) + \frac{(iB)\int \frac{(a-ia\tan(c+dx))(a+ia\,\mathrm{t}}{\sqrt{\tan(c+dx)}}}{a}$$

$$= \frac{(iaB)\,\mathrm{Subst}\left(\int \frac{(a+iax)^{-1+n}}{\sqrt{x}}\,dx, x, \tan(c+dx)\right)}{d} + \frac{\left(a^2(iA+B)\right)\mathrm{Subst}\Big(}{}$$

$$= -\frac{\left(2a^3(A-iB)\right)\mathrm{Subst}\left(\int \frac{\left(a+iax^2\right)^{-1+n}}{-a^2+ia^2x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} + \frac{(iB(1+i}{}$$

$$= \frac{2iB\,{}_2F_1\left(\frac{1}{2}, 1-n; \frac{3}{2}; -i\tan(c+dx)\right)(1+i\tan(c+dx))^{-n}\sqrt{\tan(c+dx}}{d}$$

$$= \frac{2(A-iB)F_1\left(\frac{1}{2}; 1-n, 1; \frac{3}{2}; -i\tan(c+dx), i\tan(c+dx)\right)(1+i\tan(c}{d}$$

Mathematica [F] time = 19.692, size = 0, normalized size = 0.

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]
],x]
```

```
[Out] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]
], x]
```

Maple [F] time = 0.369, size = 0, normalized size = 0.

$$\int (a+ia\tan(dx+c))^n (A+B\tan(dx+c)) \frac{1}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/sqrt(tan(d*x + c)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((iA+B)e^{(2i\,dx+2i\,c)}+iA-B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}}{e^{(2i\,dx+2i\,c)}-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="fricas")
```

```
[Out] integral((((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A - B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) + 1))/(e^(2*I*d*x + 2*I*c) - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan{(dx+c)}+A)(i\,a\tan{(dx+c)}+a)^n}{\sqrt{\tan{(dx+c)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/sqrt(tan(d*x + c)),
 x)
```

3.230 $\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=194

$$-\frac{2iA(1-2n)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+dx)\right)}{d}+$$

```
[Out] (-2*A*(a + I*a*Tan[c + d*x])^n)/(d*Sqrt[Tan[c + d*x]]) + (2*(I*A + B)*Appel
lF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*x
]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) - ((2*I)*A*(1 - 2*n
)*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*
(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.489736, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3598, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$\frac{2(B+iA)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d}-\frac{2iA(1}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```


```
[Out] (-2*A*(a + I*a*Tan[c + d*x])^n)/(d*Sqrt[Tan[c + d*x]]) + (2*(I*A + B)*Appel
lF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*x
]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) - ((2*I)*A*(1 - 2*n
)*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[Tan[c + d*x]]*
(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n)
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
```

```
] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
```

```
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] && !IntegerQ
[n] && !GtQ[c, 0] && !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] && !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) || !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 && !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2A(a+ia\tan(c+dx))^n}{d\sqrt{\tan(c+dx)}} + \frac{2\int \frac{(a+ia\tan(c+dx))^n\left(\frac{1}{2}a(B+2iAn)-\frac{1}{2}aA(1-2n)\tan(\right.}{\sqrt{\tan(c+dx)}}}{a}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{d\sqrt{\tan(c+dx)}} + (iA+B)\int \frac{(a+ia\tan(c+dx))^n}{\sqrt{\tan(c+dx)}}\,dx - \frac{(iA}{}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{d\sqrt{\tan(c+dx)}} - \frac{\left(a^2(A-iB)\right)\text{Subst}\left(\int \frac{(a+x)^{-1+n}}{\sqrt{-\frac{ix}{a}}\left(-a^2+ax\right)}\,dx, x, i\right.}{d}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{d\sqrt{\tan(c+dx)}} - \frac{\left(2a^3(iA+B)\right)\text{Subst}\left(\int \frac{\left(a+iax^2\right)^{-1+n}}{-a^2+ia^2x^2}\,dx, x, \right.}{d}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{d\sqrt{\tan(c+dx)}} - \frac{2iA(1-2n)\,{}_2F_1\left(\frac{1}{2},1-n;\frac{3}{2};-i\tan(c+dx\right.}{}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{d\sqrt{\tan(c+dx)}} + \frac{2(iA+B)F_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),\right.}{}$$

Mathematica [F] time = 9.51597, size = 0, normalized size = 0.

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2
),x]
```

```
[Out] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2
), x]
```

Maple [F] time = 0.327, size = 0, normalized size = 0.

$$\int (a+ia\tan(dx+c))^n\,(A+B\tan(dx+c))\,(\tan(dx+c))^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left((A-iB)e^{(4i\,dx+4i\,c)}+2\,Ae^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n\sqrt{\frac{-i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}+1}}}{e^{(4i\,dx+4i\,c)}-2\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="fricas")
```

```
[Out] integral(-((A - I*B)*e^(4*I*d*x + 4*I*c) + 2*A*e^(2*I*d*x + 2*I*c) + A + I*
B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((-I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) + 1))/(e^(4*I*d*x + 4*I*c) - 2*e^(2*I*
d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n}{\tan(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/tan(d*x + c)^(3/2),
 x)
```

3.231 $\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=247

$$-\frac{2(1-2n)(-2An+3iB)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan\right.}{3d}$$

```
[Out] (-2*A*(a + I*a*Tan[c + d*x])^n)/(3*d*Tan[c + d*x]^(3/2)) - (2*(3*B + (2*I)*
A*n)*(a + I*a*Tan[c + d*x])^n)/(3*d*Sqrt[Tan[c + d*x]]) - (2*(A - I*B)*Appe
llF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*
x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) - (2*(1 - 2*n)*((3
*I)*B - 2*A*n)*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[T
an[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(3*d*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.722917, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3598, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$-\frac{2(A-iB)\sqrt{\tan(c+dx)}(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n F_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d}-\frac{2(1}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```



```
[Out] (-2*A*(a + I*a*Tan[c + d*x])^n)/(3*d*Tan[c + d*x]^(3/2)) - (2*(3*B + (2*I)*
A*n)*(a + I*a*Tan[c + d*x])^n)/(3*d*Sqrt[Tan[c + d*x]]) - (2*(A - I*B)*Appe
llF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*Sqrt[Tan[c + d*
x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + I*Tan[c + d*x])^n) - (2*(1 - 2*n)*((3
*I)*B - 2*A*n)*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*Sqrt[T
an[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(3*d*(1 + I*Tan[c + d*x])^n)
```


Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
```

```
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\int \frac{(a+ia\tan(c+dx))^n\left(\frac{1}{2}a(3B+2iAn)-\frac{1}{2}aA(3-2n)\tan \cdots\right.}{\tan^{\frac{3}{2}}(c+dx)}}{3a}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(3B+2iAn)(a+ia\tan(c+dx))^n}{3d\sqrt{\tan(c+dx)}} + \frac{4\int \cdots}{\cdots}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(3B+2iAn)(a+ia\tan(c+dx))^n}{3d\sqrt{\tan(c+dx)}} + (-A \cdots$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(3B+2iAn)(a+ia\tan(c+dx))^n}{3d\sqrt{\tan(c+dx)}} - \frac{\left(a^2(\cdots\right.}{\cdots}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(3B+2iAn)(a+ia\tan(c+dx))^n}{3d\sqrt{\tan(c+dx)}} + \frac{\left(2a^3 \cdots\right.}{\cdots}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(3B+2iAn)(a+ia\tan(c+dx))^n}{3d\sqrt{\tan(c+dx)}} - \frac{2(1 \cdots}{\cdots}$$

$$= -\frac{2A(a+ia\tan(c+dx))^n}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(3B+2iAn)(a+ia\tan(c+dx))^n}{3d\sqrt{\tan(c+dx)}} - \frac{2(A \cdots}{\cdots}$$

Mathematica [F] time = 12.6783, size = 0, normalized size = 0.

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2
),x]
```

```
[Out] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2
), x]
```

Maple [F] time = 0.326, size = 0, normalized size = 0.

$$\int (a+ia\tan(dx+c))^{n}(A+B\tan(dx+c))(\tan(dx+c))^{-\frac{5}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{n}}{\tan(dx+c)^{\frac{5}{2}}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/tan(d*x + c)^(5/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((-iA-B)e^{(6idx+6ic)}+(-3iA-B)e^{(4idx+4ic)}+(-3iA+B)e^{(2idx+2ic)}-iA+B\right)\left(\frac{2ae^{(2idx+2ic)}}{e^{(2idx+2ic)}+1}\right)^{n}\sqrt{\frac{-ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}+1}}}{e^{(6idx+6ic)}-3e^{(4idx+4ic)}+3e^{(2idx+2ic)}-1}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="fricas")
```

```
[Out] integral(((-I*A - B)*e^(6*I*d*x + 6*I*c) + (-3*I*A - B)*e^(4*I*d*x + 4*I*c)
 + (-3*I*A + B)*e^(2*I*d*x + 2*I*c) - I*A + B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^
(2*I*d*x + 2*I*c) + 1))^n*sqrt((-I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
```

```
*I*c) + 1))/(e^(6*I*d*x + 6*I*c) - 3*e^(4*I*d*x + 4*I*c) + 3*e^(2*I*d*x + 2
*I*c) - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n}{\tan(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/tan(d*x + c)^(5/2),
 x)
```

3.232 $\int \tan^2(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=87

$$\frac{(aB+Ab)\tan^2(c+dx)}{2d}+\frac{(aA-bB)\tan(c+dx)}{d}+\frac{(aB+Ab)\log(\cos(c+dx))}{d}-x(aA-bB)+\frac{bB\tan^3(c+dx)}{3d}$$

```
[Out] -((a*A - b*B)*x) + ((A*b + a*B)*Log[Cos[c + d*x]])/d + ((a*A - b*B)*Tan[c +
 d*x])/d + ((A*b + a*B)*Tan[c + d*x]^2)/(2*d) + (b*B*Tan[c + d*x]^3)/(3*d)
```

Rubi [A] time = 0.117472, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3592, 3528, 3525, 3475}

$$\frac{(aB+Ab)\tan^2(c+dx)}{2d}+\frac{(aA-bB)\tan(c+dx)}{d}+\frac{(aB+Ab)\log(\cos(c+dx))}{d}-x(aA-bB)+\frac{bB\tan^3(c+dx)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a*A - b*B)*x) + ((A*b + a*B)*Log[Cos[c + d*x]])/d + ((a*A - b*B)*Tan[c +
 d*x])/d + ((A*b + a*B)*Tan[c + d*x]^2)/(2*d) + (b*B*Tan[c + d*x]^3)/(3*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{bB\tan^3(c+dx)}{3d} + \int \tan^2(c+dx)(aA-bB+(Ab+aB)\tan$$

$$= \frac{(Ab+aB)\tan^2(c+dx)}{2d} + \frac{bB\tan^3(c+dx)}{3d} + \int \tan(c+dx)$$

$$= -(aA-bB)x + \frac{(aA-bB)\tan(c+dx)}{d} + \frac{(Ab+aB)\tan^2(c+}{2d}$$

$$= -(aA-bB)x + \frac{(Ab+aB)\log(\cos(c+dx))}{d} + \frac{(aA-bB)\tan}{d}$$

Mathematica [A] time = 0.546877, size = 86, normalized size = 0.99

$$\frac{3(aB+Ab)\tan^2(c+dx)+(6bB-6aA)\tan^{-1}(\tan(c+dx))+6(aA-bB)\tan(c+dx)+6(aB+Ab)\log(\cos(c+dx))+2}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-6*a*A + 6*b*B)*ArcTan[Tan[c + d*x]] + 6*(A*b + a*B)*Log[Cos[c + d*x]] +
6*(a*A - b*B)*Tan[c + d*x] + 3*(A*b + a*B)*Tan[c + d*x]^2 + 2*b*B*Tan[c + d
*x]^3)/(6*d)
```

Maple [A] time = 0.012, size = 135, normalized size = 1.6

$$\frac{Bb(\tan(dx+c))^3}{3d} + \frac{A(\tan(dx+c))^2 b}{2d} + \frac{aB(\tan(dx+c))^2}{2d} + \frac{Aa\tan(dx+c)}{d} - \frac{bB\tan(dx+c)}{d} - \frac{\ln\left(1+(\tan(dx+c\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/3*b*B*tan(d*x+c)^3/d+1/2/d*A*tan(d*x+c)^2*b+1/2/d*a*B*tan(d*x+c)^2+1/d*a*
A*tan(d*x+c)-b*B*tan(d*x+c)/d-1/2/d*ln(1+tan(d*x+c)^2)*A*b-1/2/d*a*ln(1+tan
(d*x+c)^2)*B-1/d*a*A*arctan(tan(d*x+c))+1/d*B*arctan(tan(d*x+c))*b
```

Maxima [A] time = 1.5071, size = 116, normalized size = 1.33

$$\frac{2\,Bb\tan\left(dx+c\right)^{3}+3\,(Ba+Ab)\tan\left(dx+c\right)^{2}-6\,(Aa-Bb)(dx+c)-3\,(Ba+Ab)\log\left(\tan\left(dx+c\right)^{2}+1\right)+6\,(Aa-B}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 1.88914, size = 208, normalized size = 2.39

$$\frac{2\,Bb\tan\left(dx+c\right)^{3}-6\,(Aa-Bb)dx+3\,(Ba+Ab)\tan\left(dx+c\right)^{2}+3\,(Ba+Ab)\log\left(\frac{1}{\tan(dx+c)^{2}+1}\right)+6\,(Aa-Bb)\tan\left(dx+\right.}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 0.456794, size = 136, normalized size = 1.56

$$\begin{cases} -Aax + \frac{Aa\tan(c+dx)}{d} - \frac{Ab\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Ab\tan^2(c+dx)}{2d} - \frac{Ba\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Ba\tan^2(c+dx)}{2d} + Bbx + \frac{Bb\tan^3(c+dx)}{3d} - \frac{Bb\tan \\ x(A+B\tan(c))(a+b\tan(c))\tan^2(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a*x + A*a*tan(c + d*x)/d - A*b*log(tan(c + d*x)**2 + 1)/(2*d)
 + A*b*tan(c + d*x)**2/(2*d) - B*a*log(tan(c + d*x)**2 + 1)/(2*d) + B*a*tan
(c + d*x)**2/(2*d) + B*b*x + B*b*tan(c + d*x)**3/(3*d) - B*b*tan(c + d*x)/d
, Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))*tan(c)**2, True))
```

Giac [B] time = 2.47706, size = 1373, normalized size = 15.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/6*(6*A*a*d*x*tan(d*x)^3*tan(c)^3 - 6*B*b*d*x*tan(d*x)^3*tan(c)^3 - 3*B*a
*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)
^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 3*
A*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d
*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 -
 18*A*a*d*x*tan(d*x)^2*tan(c)^2 + 18*B*b*d*x*tan(d*x)^2*tan(c)^2 - 3*B*a*ta
n(d*x)^3*tan(c)^3 - 3*A*b*tan(d*x)^3*tan(c)^3 + 9*B*a*log(4*(tan(c)^2 + 1)/
(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)
^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 9*A*b*log(4*(tan(c)^2 +
1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d
*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 6*A*a*tan(d*x)^3*tan(
c)^2 - 6*B*b*tan(d*x)^3*tan(c)^2 + 6*A*a*tan(d*x)^2*tan(c)^3 - 6*B*b*tan(d*
x)^2*tan(c)^3 + 18*A*a*d*x*tan(d*x)*tan(c) - 18*B*b*d*x*tan(d*x)*tan(c) - 3
*B*a*tan(d*x)^3*tan(c) - 3*A*b*tan(d*x)^3*tan(c) + 3*B*a*tan(d*x)^2*tan(c)^
2 + 3*A*b*tan(d*x)^2*tan(c)^2 - 3*B*a*tan(d*x)*tan(c)^3 - 3*A*b*tan(d*x)*ta
n(c)^3 + 2*B*b*tan(d*x)^3 - 9*B*a*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1))*tan(d*x)*tan(c) - 9*A*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
```

```
- 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c
) + 1))*tan(d*x)*tan(c) - 12*A*a*tan(d*x)^2*tan(c) + 18*B*b*tan(d*x)^2*tan(
c) - 12*A*a*tan(d*x)*tan(c)^2 + 18*B*b*tan(d*x)*tan(c)^2 + 2*B*b*tan(c)^3 -
 6*A*a*d*x + 6*B*b*d*x + 3*B*a*tan(d*x)^2 + 3*A*b*tan(d*x)^2 - 3*B*a*tan(d*
x)*tan(c) - 3*A*b*tan(d*x)*tan(c) + 3*B*a*tan(c)^2 + 3*A*b*tan(c)^2 + 3*B*a
*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)
^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 3*A*b*log(4*(tan(c)^2
+ 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan
(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 6*A*a*tan(d*x) - 6*B*b*tan(d*x) + 6*A*a
*tan(c) - 6*B*b*tan(c) + 3*B*a + 3*A*b)/(d*tan(d*x)^3*tan(c)^3 - 3*d*tan(d*
x)^2*tan(c)^2 + 3*d*tan(d*x)*tan(c) - d)
```

3.233 $\int \tan(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=65

$$\frac{(aB+Ab)\tan(c+dx)}{d}-\frac{(aA-bB)\log(\cos(c+dx))}{d}-x(aB+Ab)+\frac{bB\tan^2(c+dx)}{2d}$$

```
[Out] -((A*b + a*B)*x) - ((a*A - b*B)*Log[Cos[c + d*x]])/d + ((A*b + a*B)*Tan[c +
 d*x])/d + (b*B*Tan[c + d*x]^2)/(2*d)
```

Rubi [A] time = 0.0585006, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3592, 3525, 3475}

$$\frac{(aB+Ab)\tan(c+dx)}{d}-\frac{(aA-bB)\log(\cos(c+dx))}{d}-x(aB+Ab)+\frac{bB\tan^2(c+dx)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((A*b + a*B)*x) - ((a*A - b*B)*Log[Cos[c + d*x]])/d + ((A*b + a*B)*Tan[c +
 d*x])/d + (b*B*Tan[c + d*x]^2)/(2*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{bB\tan^2(c+dx)}{2d} + \int \tan(c+dx)(aA-bB+(Ab+aB)\tan$$
$$= -(Ab+aB)x + \frac{(Ab+aB)\tan(c+dx)}{d} + \frac{bB\tan^2(c+dx)}{2d} +$$
$$= -(Ab+aB)x - \frac{(aA-bB)\log(\cos(c+dx))}{d} + \frac{(Ab+aB)\tan}{d}$$

Mathematica [A] time = 0.271831, size = 67, normalized size = 1.03

$$\frac{-2(aB+Ab)\tan^{-1}(\tan(c+dx)) + 2(aB+Ab)\tan(c+dx) + 2(bB-aA)\log(\cos(c+dx)) + bB\tan^2(c+dx)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*(A*b + a*B)*ArcTan[Tan[c + d*x]] + 2*(-(a*A) + b*B)*Log[Cos[c + d*x]] +
 2*(A*b + a*B)*Tan[c + d*x] + b*B*Tan[c + d*x]^2)/(2*d)
```

Maple [A] time = 0.013, size = 105, normalized size = 1.6

$$\frac{B(\tan(dx+c))^2 b}{2d} + \frac{A\tan(dx+c)\,b}{d} + \frac{B\tan(dx+c)\,a}{d} + \frac{a\ln\left(1+(\tan(dx+c))^2\right)A}{2d} - \frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2*b*B*tan(d*x+c)^2/d+1/d*A*tan(d*x+c)*b+1/d*a*B*tan(d*x+c)+1/2/d*a*ln(1+t
an(d*x+c)^2)*A-1/2/d*ln(1+tan(d*x+c)^2)*B*b-1/d*A*arctan(tan(d*x+c))*b-1/d*
a*B*arctan(tan(d*x+c))
```

Maxima [A] time = 1.49162, size = 89, normalized size = 1.37

$$\frac{Bb\tan\left(dx+c\right)^{2}-2\left(Ba+Ab\right)\left(dx+c\right)+\left(Aa-Bb\right)\log\left(\tan\left(dx+c\right)^{2}+1\right)+2\left(Ba+Ab\right)\tan\left(dx+c\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxima
")
```

```
[Out] 1/2*(B*b*tan(d*x + c)^2 - 2*(B*a + A*b)*(d*x + c) + (A*a - B*b)*log(tan(d*x
 + c)^2 + 1) + 2*(B*a + A*b)*tan(d*x + c))/d
```

Fricas [A] time = 1.93071, size = 161, normalized size = 2.48

$$\frac{Bb\tan\left(dx+c\right)^{2}-2\left(Ba+Ab\right)dx-\left(Aa-Bb\right)\log\left(\frac{1}{\tan\left(dx+c\right)^{2}+1}\right)+2\left(Ba+Ab\right)\tan\left(dx+c\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fricas
")
```

```
[Out] 1/2*(B*b*tan(d*x + c)^2 - 2*(B*a + A*b)*d*x - (A*a - B*b)*log(1/(tan(d*x +
c)^2 + 1)) + 2*(B*a + A*b)*tan(d*x + c))/d
```

Sympy [A] time = 0.297419, size = 104, normalized size = 1.6

$$\begin{cases} \frac{Aa\log\left(\tan^{2}\left(c+dx\right)+1\right)}{2d}-Abx+\frac{Ab\tan\left(c+dx\right)}{d}-Bax+\frac{Ba\tan\left(c+dx\right)}{d}-\frac{Bb\log\left(\tan^{2}\left(c+dx\right)+1\right)}{2d}+\frac{Bb\tan^{2}\left(c+dx\right)}{2d} & \text{for}\: d\neq 0\\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right)\tan\left(c\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a*log(tan(c + d*x)**2 + 1)/(2*d) - A*b*x + A*b*tan(c + d*x)/d
- B*a*x + B*a*tan(c + d*x)/d - B*b*log(tan(c + d*x)**2 + 1)/(2*d) + B*b*tan
(c + d*x)**2/(2*d), Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))*tan(c), Tru
```

```
e))
```

Giac [B] time = 1.6015, size = 832, normalized size = 12.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*B*a*d*x*tan(d*x)^2*tan(c)^2 + 2*A*b*d*x*tan(d*x)^2*tan(c)^2 + A*a*l
og(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2
*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - B*b*
log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^
2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 4*B
*a*d*x*tan(d*x)*tan(c) - 4*A*b*d*x*tan(d*x)*tan(c) - B*b*tan(d*x)^2*tan(c)^
2 - 2*A*a*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
 tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c)
 + 2*B*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c)
+ 2*B*a*tan(d*x)^2*tan(c) + 2*A*b*tan(d*x)^2*tan(c) + 2*B*a*tan(d*x)*tan(c)
^2 + 2*A*b*tan(d*x)*tan(c)^2 + 2*B*a*d*x + 2*A*b*d*x - B*b*tan(d*x)^2 - B*b
*tan(c)^2 + A*a*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*ta
n(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - B*b*log
(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 2*B*a*tan(d*x) - 2*A*b*tan
(d*x) - 2*B*a*tan(c) - 2*A*b*tan(c) - B*b)/(d*tan(d*x)^2*tan(c)^2 - 2*d*tan
(d*x)*tan(c) + d)
```

3.234 $\int (a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=42

$$-\frac{(aB+Ab)\log(\cos(c+dx))}{d}+x(aA-bB)+\frac{bB\tan(c+dx)}{d}$$

```
[Out] (a*A - b*B)*x - ((A*b + a*B)*Log[Cos[c + d*x]])/d + (b*B*Tan[c + d*x])/d
```

Rubi [A] time = 0.0251823, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {3525, 3475}

$$-\frac{(aB+Ab)\log(\cos(c+dx))}{d}+x(aA-bB)+\frac{bB\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a*A - b*B)*x - ((A*b + a*B)*Log[Cos[c + d*x]])/d + (b*B*Tan[c + d*x])/d
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int (a+b\tan(c+dx))(A+B\tan(c+dx))\,dx &= (aA-bB)x+\frac{bB\tan(c+dx)}{d}+(Ab+aB)\int \tan(c+dx)\,dx\\ &= (aA-bB)x-\frac{(Ab+aB)\log(\cos(c+dx))}{d}+\frac{bB\tan(c+dx)}{d}\end{aligned}$$

Mathematica [A] time = 0.0269696, size = 59, normalized size = 1.4

$$aAx - \frac{aB\log(\cos(c+dx))}{d} - \frac{Ab\log(\cos(c+dx))}{d} - \frac{bB\tan^{-1}(\tan(c+dx))}{d} + \frac{bB\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] a*A*x - (b*B*ArcTan[Tan[c + d*x]])/d - (A*b*Log[Cos[c + d*x]])/d - (a*B*Log
[Cos[c + d*x]])/d + (b*B*Tan[c + d*x])/d
```

Maple [A] time = 0.012, size = 77, normalized size = 1.8

$$\frac{bB\tan(dx+c)}{d} + \frac{\ln\left(1+(\tan(dx+c))^2\right)Ab}{2d} + \frac{a\ln\left(1+(\tan(dx+c))^2\right)B}{2d} + \frac{Aa\arctan(\tan(dx+c))}{d} - \frac{B\arctan(\mathrm{ta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] b*B*tan(d*x+c)/d+1/2/d*ln(1+tan(d*x+c)^2)*A*b+1/2/d*a*ln(1+tan(d*x+c)^2)*B+
1/d*a*A*arctan(tan(d*x+c))-1/d*B*arctan(tan(d*x+c))*b
```

Maxima [A] time = 1.47176, size = 68, normalized size = 1.62

$$\frac{2Bb\tan(dx+c) + 2(Aa-Bb)(dx+c) + (Ba+Ab)\log\left(\tan(dx+c)^2+1\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(2*B*b*tan(d*x + c) + 2*(A*a - B*b)*(d*x + c) + (B*a + A*b)*log(tan(d*x
 + c)^2 + 1))/d
```

Fricas [A] time = 1.97173, size = 122, normalized size = 2.9

$$\frac{2\,(Aa-Bb)dx+2\,Bb\tan\left(dx+c\right)-(Ba+Ab)\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(A*a - B*b)*d*x + 2*B*b*tan(d*x + c) - (B*a + A*b)*log(1/(tan(d*x +
c)^2 + 1)))/d
```

Sympy [A] time = 0.215695, size = 73, normalized size = 1.74

$$\begin{cases} Aax+\frac{Ab\log\left(\tan^2\left(c+dx\right)+1\right)}{2d}+\frac{Ba\log\left(\tan^2\left(c+dx\right)+1\right)}{2d}-Bbx+\frac{Bb\tan\left(c+dx\right)}{d} & \text{for } d\neq 0\\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a*x + A*b*log(tan(c + d*x)**2 + 1)/(2*d) + B*a*log(tan(c + d*x
)**2 + 1)/(2*d) - B*b*x + B*b*tan(c + d*x)/d, Ne(d, 0)), (x*(A + B*tan(c))*
(a + b*tan(c)), True))
```

Giac [B] time = 1.32685, size = 444, normalized size = 10.57

$$2\,Aadx\tan\left(dx\right)\tan\left(c\right)-2\,Bbdx\tan\left(dx\right)\tan\left(c\right)-Ba\log\left(\frac{4\left(\tan(c)^2+1\right)}{\tan(dx)^4\tan(c)^2-2\,\tan(dx)^3\tan(c)+\tan(dx)^2\tan(c)^2+\tan(dx)^2-2\,\tan(dx)\tan\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac")
```

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

```
^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 +
tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 2*A*a*d*x + 2*B*b*d*
x + B*a*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + t
an(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + A*b*log(4*(tan(
c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
+ tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 2*B*b*tan(d*x) - 2*B*b*tan(c))/(d*
tan(d*x)*tan(c) - d)
```

3.235 $\int \cot(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=37

$$x(aB+Ab)+\frac{aA\log(\sin(c+dx))}{d}-\frac{bB\log(\cos(c+dx))}{d}$$

```
[Out] (A*b + a*B)*x - (b*B*Log[Cos[c + d*x]])/d + (a*A*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.0687638, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3589, 3475, 3531}

$$x(aB+Ab)+\frac{aA\log(\sin(c+dx))}{d}-\frac{bB\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (A*b + a*B)*x - (b*B*Log[Cos[c + d*x]])/d + (a*A*Log[Sin[c + d*x]])/d
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
```

```
Q[a*c + b*d, 0]
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = (bB)\int \tan(c+dx)\,dx + \int \cot(c+dx)(aA+(Ab+aB)\tan$$
$$= (Ab+aB)x - \frac{bB\log(\cos(c+dx))}{d} + (aA)\int \cot(c+dx)\,dx$$
$$= (Ab+aB)x - \frac{bB\log(\cos(c+dx))}{d} + \frac{aA\log(\sin(c+dx))}{d}$$

Mathematica [A] time = 0.0720034, size = 44, normalized size = 1.19

$$\frac{aA(\log(\tan(c+dx))+\log(\cos(c+dx)))}{d} + aBx + Abx - \frac{bB\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] A*b*x + a*B*x - (b*B*Log[Cos[c + d*x]])/d + (a*A*(Log[Cos[c + d*x]] + Log[T
an[c + d*x]]))/d
```

Maple [A] time = 0.056, size = 51, normalized size = 1.4

$$Axb + aBx + \frac{Aa\ln(\sin(dx+c))}{d} + \frac{Abc}{d} - \frac{Bb\ln(\cos(dx+c))}{d} + \frac{Bac}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] A*x*b+a*B*x+a*A*ln(sin(d*x+c))/d+1/d*A*b*c-b*B*ln(cos(d*x+c))/d+1/d*B*a*c
```

Maxima [A] time = 1.49574, size = 70, normalized size = 1.89

$$\frac{2\,Aa\log(\tan(dx+c)) + 2\,(Ba+Ab)(dx+c) - (Aa-Bb)\log\left(\tan(dx+c)^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxima
")
```

```
[Out] 1/2*(2*A*a*log(tan(d*x + c)) + 2*(B*a + A*b)*(d*x + c) - (A*a - B*b)*log(ta
n(d*x + c)^2 + 1))/d
```

Fricas [A] time = 2.02036, size = 146, normalized size = 3.95

$$\frac{2\,(Ba + Ab)dx + Aa\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right) - Bb\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fricas
")
```

```
[Out] 1/2*(2*(B*a + A*b)*d*x + A*a*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1)) - B*b
*log(1/(tan(d*x + c)^2 + 1)))/d
```

Sympy [A] time = 0.671062, size = 78, normalized size = 2.11

$$\begin{cases} -\frac{Aa\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Aa\log(\tan(c+dx))}{d} + Abx + Bax + \frac{Bb\log\left(\tan^2(c+dx)+1\right)}{2d} & \text{for } d \neq 0 \\ x\,(A + B\tan(c))\,(a + b\tan(c))\cot(c) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a*log(tan(c + d*x)**2 + 1)/(2*d) + A*a*log(tan(c + d*x))/d +
A*b*x + B*a*x + B*b*log(tan(c + d*x)**2 + 1)/(2*d), Ne(d, 0)), (x*(A + B*ta
n(c))*(a + b*tan(c))*cot(c), True))
```

Giac [A] time = 1.17955, size = 72, normalized size = 1.95

$$\frac{2\,Aa\log\left(\left|\tan\left(dx+c\right)\right|\right)+2\,(Ba+Ab)(dx+c)-(Aa-Bb)\log\left(\tan\left(dx+c\right)^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*A*a*log(abs(tan(d*x + c))) + 2*(B*a + A*b)*(d*x + c) - (A*a - B*b)*l
og(tan(d*x + c)^2 + 1))/d
```

3.236 $\int \cot^2(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=43

$$\frac{(aB+Ab)\log(\sin(c+dx))}{d}+x(-(aA-bB))-\frac{aA\cot(c+dx)}{d}$$

```
[Out] -((a*A - b*B)*x) - (a*A*Cot[c + d*x])/d + ((A*b + a*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.082227, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {3591, 3531, 3475}

$$\frac{(aB+Ab)\log(\sin(c+dx))}{d}+x(-(aA-bB))-\frac{aA\cot(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a*A - b*B)*x) - (a*A*Cot[c + d*x])/d + ((A*b + a*B)*Log[Sin[c + d*x]])/d
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)}{d} + \int \cot(c+dx)(Ab+aB-(aA-bB)\tan$$
$$= -(aA-bB)x - \frac{aA\cot(c+dx)}{d} + (Ab+aB)\int \cot(c+dx)$$
$$= -(aA-bB)x - \frac{aA\cot(c+dx)}{d} + \frac{(Ab+aB)\log(\sin(c+dx$$

Mathematica [C] time = 0.174416, size = 78, normalized size = 1.81

$$-\frac{aA\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},-\tan^2(c+dx)\right)}{d} + \frac{aB(\log(\tan(c+dx))+\log(\cos(c+dx)))}{d} + \frac{Ab(\log$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] b*B*x - (a*A*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1, 1/2, -Tan[c + d*x]^2])
/d + (A*b*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]]))/d + (a*B*(Log[Cos[c + d*
x]] + Log[Tan[c + d*x]]))/d
```

Maple [A] time = 0.052, size = 65, normalized size = 1.5

$$-Axa + Bbx - \frac{Aa\cot(dx+c)}{d} + \frac{Ab\ln(\sin(dx+c))}{d} - \frac{Aac}{d} + \frac{aB\ln(\sin(dx+c))}{d} + \frac{Bbc}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*x*a+B*b*x-a*A*cot(d*x+c)/d+1/d*A*b*ln(sin(d*x+c))-1/d*A*a*c+1/d*a*B*ln(s
in(d*x+c))+1/d*B*b*c
```

Maxima [A] time = 1.45873, size = 92, normalized size = 2.14

$$-\frac{2\,(Aa-Bb)(dx+c)+(Ba+Ab)\log\left(\tan\left(dx+c\right)^{2}+1\right)-2\,(Ba+Ab)\log\left(\tan\left(dx+c\right)\right)+\frac{2\,Aa}{\tan(dx+c)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] -1/2*(2*(A*a - B*b)*(d*x + c) + (B*a + A*b)*log(tan(d*x + c)^2 + 1) - 2*(B*
a + A*b)*log(tan(d*x + c)) + 2*A*a/tan(d*x + c))/d
```

Fricas [A] time = 1.98403, size = 178, normalized size = 4.14

$$-\frac{2\,(Aa-Bb)dx\tan\left(dx+c\right)-(Ba+Ab)\log\left(\frac{\tan(dx+c)^{2}}{\tan(dx+c)^{2}+1}\right)\tan\left(dx+c\right)+2\,Aa}{2\,d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] -1/2*(2*(A*a - B*b)*d*x*tan(d*x + c) - (B*a + A*b)*log(tan(d*x + c)^2/(tan(
d*x + c)^2 + 1))*tan(d*x + c) + 2*A*a)/(d*tan(d*x + c))
```

Sympy [A] time = 1.5604, size = 122, normalized size = 2.84

$$\begin{cases} \tilde{\infty}Aax & \text{for}\ (c = 0 \vee c \\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right)\cot^{2}\left(c\right) & \text{for}\ d = 0 \\ -Aax-\frac{Aa}{d\tan\left(c+dx\right)}-\frac{Ab\log\left(\tan^{2}\left(c+dx\right)+1\right)}{2d}+\frac{Ab\log\left(\tan\left(c+dx\right)\right)}{d}-\frac{Ba\log\left(\tan^{2}\left(c+dx\right)+1\right)}{2d}+\frac{Ba\log\left(\tan\left(c+dx\right)\right)}{d}+Bbx & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x))),
 (x*(A + B*tan(c))*(a + b*tan(c))*cot(c)**2, Eq(d, 0)), (-A*a*x - A*a/(d*ta
n(c + d*x)) - A*b*log(tan(c + d*x)**2 + 1)/(2*d) + A*b*log(tan(c + d*x))/d
- B*a*log(tan(c + d*x)**2 + 1)/(2*d) + B*a*log(tan(c + d*x))/d + B*b*x, Tru
e))
```

Giac [B] time = 1.27816, size = 161, normalized size = 3.74

$$\frac{Aa\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-2\,(Aa-Bb)(dx+c)-2\,(Ba+Ab)\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}+1\right)+2\,(Ba+Ab)\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\right.\right.\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] 1/2*(A*a*tan(1/2*d*x + 1/2*c) - 2*(A*a - B*b)*(d*x + c) - 2*(B*a + A*b)*log
(tan(1/2*d*x + 1/2*c)^2 + 1) + 2*(B*a + A*b)*log(abs(tan(1/2*d*x + 1/2*c)))
 - (2*B*a*tan(1/2*d*x + 1/2*c) + 2*A*b*tan(1/2*d*x + 1/2*c) + A*a)/tan(1/2*
d*x + 1/2*c))/d
```

3.237 $\int \cot^3(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=66

$$-\frac{(aB+Ab)\cot(c+dx)}{d}-\frac{(aA-bB)\log(\sin(c+dx))}{d}-x(aB+Ab)-\frac{aA\cot^2(c+dx)}{2d}$$

```
[Out] -((A*b + a*B)*x) - ((A*b + a*B)*Cot[c + d*x])/d - (a*A*Cot[c + d*x]^2)/(2*d
) - ((a*A - b*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.119839, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3591, 3529, 3531, 3475}

$$-\frac{(aB+Ab)\cot(c+dx)}{d}-\frac{(aA-bB)\log(\sin(c+dx))}{d}-x(aB+Ab)-\frac{aA\cot^2(c+dx)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((A*b + a*B)*x) - ((A*b + a*B)*Cot[c + d*x])/d - (a*A*Cot[c + d*x]^2)/(2*d
) - ((a*A - b*B)*Log[Sin[c + d*x]])/d
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
```

```
b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^3(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx &= -\frac{aA\cot^2(c+dx)}{2d}+\int \cot^2(c+dx)(Ab+aB-(aA-bB)\\ &= -\frac{(Ab+aB)\cot(c+dx)}{d}-\frac{aA\cot^2(c+dx)}{2d}+\int \cot(c+dx\\ &= -(Ab+aB)x-\frac{(Ab+aB)\cot(c+dx)}{d}-\frac{aA\cot^2(c+dx)}{2d}+\\ &= -(Ab+aB)x-\frac{(Ab+aB)\cot(c+dx)}{d}-\frac{aA\cot^2(c+dx)}{2d}-\end{aligned}$$

Mathematica [C] time = 0.450458, size = 77, normalized size = 1.17

$$-\frac{2(aB+Ab)\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},-\tan^2(c+dx)\right)+2(aA-bB)(\log(\tan(c+dx))+\log(\cos(c+}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(a*A*Cot[c + d*x]^2 + 2*(A*b + a*B)*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1
, 1/2, -Tan[c + d*x]^2] + 2*(a*A - b*B)*(Log[Cos[c + d*x]] + Log[Tan[c + d*
x]]))/(2*d)
```

Maple [A] time = 0.069, size = 96, normalized size = 1.5

$$-Axb-\frac{A\cot(dx+c)\,b}{d}-\frac{Abc}{d}+\frac{Bb\ln(\sin(dx+c))}{d}-\frac{A(\cot(dx+c))^2\,a}{2d}-\frac{Aa\ln(\sin(dx+c))}{d}-aBx-\frac{B\cot(dx+c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*x*b-1/d*A*cot(d*x+c)*b-1/d*A*b*c+1/d*B*b*ln(sin(d*x+c))-1/2*a*A*cot(d*x+
c)^2/d-a*A*ln(sin(d*x+c))/d-a*B*x-1/d*B*cot(d*x+c)*a-1/d*B*a*c
```

Maxima [A] time = 1.47187, size = 116, normalized size = 1.76

$$-\frac{2(Ba+Ab)(dx+c)-(Aa-Bb)\log\left(\tan(dx+c)^2+1\right)+2(Aa-Bb)\log(\tan(dx+c))+\frac{Aa+2(Ba+Ab)\tan(dx+c)}{\tan(dx+c)^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] -1/2*(2*(B*a + A*b)*(d*x + c) - (A*a - B*b)*log(tan(d*x + c)^2 + 1) + 2*(A*
a - B*b)*log(tan(d*x + c)) + (A*a + 2*(B*a + A*b)*tan(d*x + c))/tan(d*x + c
)^2)/d
```

Fricas [A] time = 1.89189, size = 234, normalized size = 3.55

$$-\frac{(Aa-Bb)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^2+(2(Ba+Ab)dx+Aa)\tan(dx+c)^2+Aa+2(Ba+Ab)\tan(dx+c)}{2d\tan(dx+c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] -1/2*((A*a - B*b)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^2 +
 (2*(B*a + A*b)*d*x + A*a)*tan(d*x + c)^2 + A*a + 2*(B*a + A*b)*tan(d*x + c
```

```
))/(d*tan(d*x + c)^2)
```

Sympy [A] time = 2.81901, size = 150, normalized size = 2.27

$$\begin{cases} \tilde{\infty} Aax \\ x(A + B\tan(c))(a + b\tan(c))\cot^3(c) \\ \frac{Aa\log(\tan^2(c+dx)+1)}{2d} - \frac{Aa\log(\tan(c+dx))}{d} - \frac{Aa}{2d\tan^2(c+dx)} - Abx - \frac{Ab}{d\tan(c+dx)} - Bax - \frac{Ba}{d\tan(c+dx)} - \frac{Bb\log(\tan^2(c+dx)+1)}{2d} + \frac{Bb\log}{} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x))),
 (x*(A + B*tan(c))*(a + b*tan(c))*cot(c)**3, Eq(d, 0)), (A*a*log(tan(c + d*
x)**2 + 1)/(2*d) - A*a*log(tan(c + d*x))/d - A*a/(2*d*tan(c + d*x)**2) - A*
b*x - A*b/(d*tan(c + d*x)) - B*a*x - B*a/(d*tan(c + d*x)) - B*b*log(tan(c +
 d*x)**2 + 1)/(2*d) + B*b*log(tan(c + d*x))/d, True))
```

Giac [B] time = 1.27892, size = 242, normalized size = 3.67

$$-\frac{Aa\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^2 - 4Ba\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) - 4Ab\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) + 8(Ba + Ab)(dx + c) - 8(Aa - Bb)\log\left(\tan\left(\frac{1}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/8*(A*a*tan(1/2*d*x + 1/2*c)^2 - 4*B*a*tan(1/2*d*x + 1/2*c) - 4*A*b*tan(1
/2*d*x + 1/2*c) + 8*(B*a + A*b)*(d*x + c) - 8*(A*a - B*b)*log(tan(1/2*d*x +
 1/2*c)^2 + 1) + 8*(A*a - B*b)*log(abs(tan(1/2*d*x + 1/2*c))) - (12*A*a*tan
(1/2*d*x + 1/2*c)^2 - 12*B*b*tan(1/2*d*x + 1/2*c)^2 - 4*B*a*tan(1/2*d*x + 1
/2*c) - 4*A*b*tan(1/2*d*x + 1/2*c) - A*a)/tan(1/2*d*x + 1/2*c)^2)/d
```

3.238 $\int \cot^4(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=87

$$-\frac{(aB+Ab)\cot^2(c+dx)}{2d}+\frac{(aA-bB)\cot(c+dx)}{d}-\frac{(aB+Ab)\log(\sin(c+dx))}{d}+x(aA-bB)-\frac{aA\cot^3(c+dx)}{3d}$$

```
[Out] (a*A - b*B)*x + ((a*A - b*B)*Cot[c + d*x])/d - ((A*b + a*B)*Cot[c + d*x]^2)
/(2*d) - (a*A*Cot[c + d*x]^3)/(3*d) - ((A*b + a*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.153354, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3591, 3529, 3531, 3475}

$$-\frac{(aB+Ab)\cot^2(c+dx)}{2d}+\frac{(aA-bB)\cot(c+dx)}{d}-\frac{(aB+Ab)\log(\sin(c+dx))}{d}+x(aA-bB)-\frac{aA\cot^3(c+dx)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a*A - b*B)*x + ((a*A - b*B)*Cot[c + d*x])/d - ((A*b + a*B)*Cot[c + d*x]^2)
/(2*d) - (a*A*Cot[c + d*x]^3)/(3*d) - ((A*b + a*B)*Log[Sin[c + d*x]])/d
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
```

```
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)}{3d} + \int \cot^3(c+dx)(Ab+aB-(aA-bB)\text{t}$$

$$= -\frac{(Ab+aB)\cot^2(c+dx)}{2d} - \frac{aA\cot^3(c+dx)}{3d} + \int \cot^2(c+$$

$$= \frac{(aA-bB)\cot(c+dx)}{d} - \frac{(Ab+aB)\cot^2(c+dx)}{2d} - \frac{aA\cot^3}{3}$$

$$= (aA-bB)x + \frac{(aA-bB)\cot(c+dx)}{d} - \frac{(Ab+aB)\cot^2(c+}{2d}$$

$$= (aA-bB)x + \frac{(aA-bB)\cot(c+dx)}{d} - \frac{(Ab+aB)\cot^2(c+}{2d}$$

Mathematica [C] time = 1.02253, size = 101, normalized size = 1.16

$$-\frac{2aA\cot^3(c+dx)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},-\tan^2(c+dx)\right)+6bB\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2}\right.}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(2*a*A*Cot[c + d*x]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[c + d*x]^2] +
6*b*B*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1, 1/2, -Tan[c + d*x]^2] + 3*(A*
b + a*B)*(Cot[c + d*x]^2 + 2*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]])))/(6*d
```

)

Maple [A] time = 0.069, size = 124, normalized size = 1.4

$$-\frac{Ab\left(\cot\left(dx+c\right)\right)^{2}}{2d}-\frac{Ab\ln\left(\sin\left(dx+c\right)\right)}{d}-Bbx-\frac{B\cot\left(dx+c\right)b}{d}-\frac{Bbc}{d}-\frac{Aa\left(\cot\left(dx+c\right)\right)^{3}}{3d}+\frac{Aa\cot\left(dx+c\right)}{d}+Axa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*A*b*cot(d*x+c)^2-1/d*A*b*ln(sin(d*x+c))-B*b*x-1/d*B*cot(d*x+c)*b-1/d
*B*b*c-1/3*a*A*cot(d*x+c)^3/d+a*A*cot(d*x+c)/d+A*x*a+1/d*A*a*c-1/2/d*a*B*co
t(d*x+c)^2-1/d*a*B*ln(sin(d*x+c))
```

Maxima [A] time = 1.49429, size = 140, normalized size = 1.61

$$\frac{6\left(Aa-Bb\right)\left(dx+c\right)+3\left(Ba+Ab\right)\log\left(\tan\left(dx+c\right)^{2}+1\right)-6\left(Ba+Ab\right)\log\left(\tan\left(dx+c\right)\right)+\frac{6\left(Aa-Bb\right)\tan\left(dx+c\right)^{2}-2\,Aa-3\left(Ba+\right.}{\tan\left(dx+c\right)^{3}}}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 1.97517, size = 292, normalized size = 3.36

$$-\frac{3\left(Ba+Ab\right)\log\left(\frac{\tan\left(dx+c\right)^{2}}{\tan\left(dx+c\right)^{2}+1}\right)\tan\left(dx+c\right)^{3}-3\left(2\left(Aa-Bb\right)dx-Ba-Ab\right)\tan\left(dx+c\right)^{3}-6\left(Aa-Bb\right)\tan\left(dx+c\right)^{2}+2}{6d\tan\left(dx+c\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 4.91225, size = 180, normalized size = 2.07

$$\begin{cases} \tilde{\infty} Aax \\ x(A + B\tan(c))(a + b\tan(c))\cot^4(c) \\ Aax + \frac{Aa}{d\tan(c+dx)} - \frac{Aa}{3d\tan^3(c+dx)} + \frac{Ab\log(\tan^2(c+dx)+1)}{2d} - \frac{Ab\log(\tan(c+dx))}{d} - \frac{Ab}{2d\tan^2(c+dx)} + \frac{Ba\log(\tan^2(c+dx)+1)}{2d} - \frac{Ba\log(\tan}{d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x))),
 (x*(A + B*tan(c))*(a + b*tan(c))*cot(c)**4, Eq(d, 0)), (A*a*x + A*a/(d*tan
(c + d*x)) - A*a/(3*d*tan(c + d*x)**3) + A*b*log(tan(c + d*x)**2 + 1)/(2*d)
 - A*b*log(tan(c + d*x))/d - A*b/(2*d*tan(c + d*x)**2) + B*a*log(tan(c + d*
x)**2 + 1)/(2*d) - B*a*log(tan(c + d*x))/d - B*a/(2*d*tan(c + d*x)**2) - B*
b*x - B*b/(d*tan(c + d*x)), True))
```

Giac [B] time = 1.2835, size = 320, normalized size = 3.68

$$\frac{Aa\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^3 - 3Ba\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^2 - 3Ab\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^2 - 15Aa\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) + 12Bb\tan\left(\frac{1}{2}dx + \frac{1}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] 1/24*(A*a*tan(1/2*d*x + 1/2*c)^3 - 3*B*a*tan(1/2*d*x + 1/2*c)^2 - 3*A*b*tan
(1/2*d*x + 1/2*c)^2 - 15*A*a*tan(1/2*d*x + 1/2*c) + 12*B*b*tan(1/2*d*x + 1/
```

```
2*c) + 24*(A*a - B*b)*(d*x + c) + 24*(B*a + A*b)*log(tan(1/2*d*x + 1/2*c)^2
 + 1) - 24*(B*a + A*b)*log(abs(tan(1/2*d*x + 1/2*c))) + (44*B*a*tan(1/2*d*x
 + 1/2*c)^3 + 44*A*b*tan(1/2*d*x + 1/2*c)^3 + 15*A*a*tan(1/2*d*x + 1/2*c)^2
 - 12*B*b*tan(1/2*d*x + 1/2*c)^2 - 3*B*a*tan(1/2*d*x + 1/2*c) - 3*A*b*tan(1
/2*d*x + 1/2*c) - A*a)/tan(1/2*d*x + 1/2*c)^3)/d
```

3.239 $\int \cot^5(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=108

$$-\frac{(aB+Ab)\cot^3(c+dx)}{3d}+\frac{(aA-bB)\cot^2(c+dx)}{2d}+\frac{(aB+Ab)\cot(c+dx)}{d}+\frac{(aA-bB)\log(\sin(c+dx))}{d}+x(aB+Ab$$

```
[Out] (A*b + a*B)*x + ((A*b + a*B)*Cot[c + d*x])/d + ((a*A - b*B)*Cot[c + d*x]^2)
/(2*d) - ((A*b + a*B)*Cot[c + d*x]^3)/(3*d) - (a*A*Cot[c + d*x]^4)/(4*d) +
((a*A - b*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.18726, antiderivative size = 108, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3591, 3529, 3531, 3475}

$$-\frac{(aB+Ab)\cot^3(c+dx)}{3d}+\frac{(aA-bB)\cot^2(c+dx)}{2d}+\frac{(aB+Ab)\cot(c+dx)}{d}+\frac{(aA-bB)\log(\sin(c+dx))}{d}+x(aB+Ab$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (A*b + a*B)*x + ((A*b + a*B)*Cot[c + d*x])/d + ((a*A - b*B)*Cot[c + d*x]^2)
/(2*d) - ((A*b + a*B)*Cot[c + d*x]^3)/(3*d) - (a*A*Cot[c + d*x]^4)/(4*d) +
((a*A - b*B)*Log[Sin[c + d*x]])/d
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
```

```
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^5(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx &= -\frac{aA\cot^4(c+dx)}{4d}+\int \cot^4(c+dx)(Ab+aB-(aA-bB)\mathrm{ta}\\
&= -\frac{(Ab+aB)\cot^3(c+dx)}{3d}-\frac{aA\cot^4(c+dx)}{4d}+\int \cot^3(c+d\\
&= \frac{(aA-bB)\cot^2(c+dx)}{2d}-\frac{(Ab+aB)\cot^3(c+dx)}{3d}-\frac{aA\cot^4}{4}\\
&= \frac{(Ab+aB)\cot(c+dx)}{d}+\frac{(aA-bB)\cot^2(c+dx)}{2d}-\frac{(Ab+aB}{}\\
&= (Ab+aB)x+\frac{(Ab+aB)\cot(c+dx)}{d}+\frac{(aA-bB)\cot^2(c+d}{2d}\\
&= (Ab+aB)x+\frac{(Ab+aB)\cot(c+dx)}{d}+\frac{(aA-bB)\cot^2(c+d}{2d}\end{aligned}$$

Mathematica [C] time = 1.16954, size = 100, normalized size = 0.93

$$-\frac{4(aB+Ab)\cot^3(c+dx)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},-\tan^2(c+dx)\right)+3\left((2bB-2aA)\cot^2(c+dx)-4(aA-bB)\right.}{12d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(4*(A*b + a*B)*Cot[c + d*x]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[c + d*
x]^2] + 3*((-2*a*A + 2*b*B)*Cot[c + d*x]^2 + a*A*Cot[c + d*x]^4 - 4*(a*A -
b*B)*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]])))/(12*d)
```

Maple [A] time = 0.066, size = 150, normalized size = 1.4

$$-\frac{Ab(\cot(dx+c))^3}{3d}+\frac{A\cot(dx+c)\,b}{d}+Axb+\frac{Abc}{d}-\frac{Bb(\cot(dx+c))^2}{2d}-\frac{Bb\ln(\sin(dx+c))}{d}-\frac{Aa(\cot(dx+c))^4}{4d}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3/d*A*b*cot(d*x+c)^3+1/d*A*cot(d*x+c)*b+A*x*b+1/d*A*b*c-1/2/d*B*b*cot(d*
x+c)^2-1/d*B*b*ln(sin(d*x+c))-1/4*a*A*cot(d*x+c)^4/d+1/2*a*A*cot(d*x+c)^2/d
+a*A*ln(sin(d*x+c))/d-1/3/d*a*B*cot(d*x+c)^3+1/d*B*cot(d*x+c)*a+a*B*x+1/d*B
*a*c
```

Maxima [A] time = 1.47806, size = 165, normalized size = 1.53

$$\frac{12(Ba+Ab)(dx+c)-6(Aa-Bb)\log\left(\tan(dx+c)^2+1\right)+12(Aa-Bb)\log(\tan(dx+c))+\frac{12(Ba+Ab)\tan(dx+c)^3+6(Aa-}{}}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/12*(12*(B*a + A*b)*(d*x + c) - 6*(A*a - B*b)*log(tan(d*x + c)^2 + 1) + 12
*(A*a - B*b)*log(tan(d*x + c)) + (12*(B*a + A*b)*tan(d*x + c)^3 + 6*(A*a -
B*b)*tan(d*x + c)^2 - 3*A*a - 4*(B*a + A*b)*tan(d*x + c))/tan(d*x + c)^4)/d
```

Fricas [A] time = 2.06044, size = 340, normalized size = 3.15

$$\frac{6(Aa-Bb)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^4+3(4(Ba+Ab)dx+3Aa-2Bb)\tan(dx+c)^4+12(Ba+Ab)\tan(dx+c}{12d\tan(dx+c)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/12*(6*(A*a - B*b)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^4
 + 3*(4*(B*a + A*b)*d*x + 3*A*a - 2*B*b)*tan(d*x + c)^4 + 12*(B*a + A*b)*ta
n(d*x + c)^3 + 6*(A*a - B*b)*tan(d*x + c)^2 - 3*A*a - 4*(B*a + A*b)*tan(d*x
 + c))/(d*tan(d*x + c)^4)
```

Sympy [A] time = 8.45852, size = 211, normalized size = 1.95

$$\begin{cases} \tilde{\infty} Aax \\ x (A + B\tan(c)) (a + b\tan(c)) \cot^5(c) \\ -\frac{Aa\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Aa\log(\tan(c+dx))}{d} + \frac{Aa}{2d\tan^2(c+dx)} - \frac{Aa}{4d\tan^4(c+dx)} + Abx + \frac{Ab}{d\tan(c+dx)} - \frac{Ab}{3d\tan^3(c+dx)} + Bax + \frac{Ba}{d\tan(c+dx} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x))),
 (x*(A + B*tan(c))*(a + b*tan(c))*cot(c)**5, Eq(d, 0)), (-A*a*log(tan(c + d
*x)**2 + 1)/(2*d) + A*a*log(tan(c + d*x))/d + A*a/(2*d*tan(c + d*x)**2) - A
*a/(4*d*tan(c + d*x)**4) + A*b*x + A*b/(d*tan(c + d*x)) - A*b/(3*d*tan(c +
d*x)**3) + B*a*x + B*a/(d*tan(c + d*x)) - B*a/(3*d*tan(c + d*x)**3) + B*b*l
og(tan(c + d*x)**2 + 1)/(2*d) - B*b*log(tan(c + d*x))/d - B*b/(2*d*tan(c +
d*x)**2), True))
```

Giac [B] time = 1.36492, size = 404, normalized size = 3.74

$$-\frac{3\,Aa\tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^4 - 8\,Ba\tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^3 - 8\,Ab\tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^3 - 36\,Aa\tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^2 + 24\,Bb\tan\left(\frac{1}{2}\,dx + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/192*(3*A*a*tan(1/2*d*x + 1/2*c)^4 - 8*B*a*tan(1/2*d*x + 1/2*c)^3 - 8*A*b
*tan(1/2*d*x + 1/2*c)^3 - 36*A*a*tan(1/2*d*x + 1/2*c)^2 + 24*B*b*tan(1/2*d*
x + 1/2*c)^2 + 120*B*a*tan(1/2*d*x + 1/2*c) + 120*A*b*tan(1/2*d*x + 1/2*c)
- 192*(B*a + A*b)*(d*x + c) + 192*(A*a - B*b)*log(tan(1/2*d*x + 1/2*c)^2 +
1) - 192*(A*a - B*b)*log(abs(tan(1/2*d*x + 1/2*c))) + (400*A*a*tan(1/2*d*x
+ 1/2*c)^4 - 400*B*b*tan(1/2*d*x + 1/2*c)^4 - 120*B*a*tan(1/2*d*x + 1/2*c)^
3 - 120*A*b*tan(1/2*d*x + 1/2*c)^3 - 36*A*a*tan(1/2*d*x + 1/2*c)^2 + 24*B*b
*tan(1/2*d*x + 1/2*c)^2 + 8*B*a*tan(1/2*d*x + 1/2*c) + 8*A*b*tan(1/2*d*x +
1/2*c) + 3*A*a)/tan(1/2*d*x + 1/2*c)^4)/d
```

3.240 $\int \tan^2(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=148

$$\frac{\left(a^2B+2aAb-b^2B\right)\log(\cos(c+dx))}{d}-x\left(a^2A-2abB-Ab^2\right)+\frac{(4Ab-aB)(a+b\tan(c+dx))^3}{12b^2d}-\frac{b(aB+Ab)\tan(c+d}{d}$$

```
[Out] -((a^2*A - A*b^2 - 2*a*b*B)*x) + ((2*a*A*b + a^2*B - b^2*B)*Log[Cos[c + d*x
]])/d - (b*(A*b + a*B)*Tan[c + d*x])/d - (B*(a + b*Tan[c + d*x])^2)/(2*d) +
 ((4*A*b - a*B)*(a + b*Tan[c + d*x])^3)/(12*b^2*d) + (B*Tan[c + d*x]*(a + b
*Tan[c + d*x])^3)/(4*b*d)
```

Rubi [A] time = 0.268616, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3607, 3630, 3528, 3525, 3475}

$$\frac{\left(a^2B+2aAb-b^2B\right)\log(\cos(c+dx))}{d}-x\left(a^2A-2abB-Ab^2\right)+\frac{(4Ab-aB)(a+b\tan(c+dx))^3}{12b^2d}-\frac{b(aB+Ab)\tan(c+d}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a^2*A - A*b^2 - 2*a*b*B)*x) + ((2*a*A*b + a^2*B - b^2*B)*Log[Cos[c + d*x
]])/d - (b*(A*b + a*B)*Tan[c + d*x])/d - (B*(a + b*Tan[c + d*x])^2)/(2*d) +
 ((4*A*b - a*B)*(a + b*Tan[c + d*x])^3)/(12*b^2*d) + (B*Tan[c + d*x]*(a + b
*Tan[c + d*x])^3)/(4*b*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
```

```
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{B\tan(c+dx)(a+b\tan(c+dx))^3}{4bd} + \frac{\int(a+b\tan(c+dx))^2}{}$$
$$= \frac{(4Ab-aB)(a+b\tan(c+dx))^3}{12b^2d} + \frac{B\tan(c+dx)(a+b\tan(}{4bd}$$
$$= -\frac{B(a+b\tan(c+dx))^2}{2d} + \frac{(4Ab-aB)(a+b\tan(c+dx))^3}{12b^2d}$$
$$= -\left(a^2A-Ab^2-2abB\right)x - \frac{b(Ab+aB)\tan(c+dx)}{d} - \frac{B(a+}{}$$
$$= -\left(a^2A-Ab^2-2abB\right)x + \frac{\left(2aAb+a^2B-b^2B\right)\log(\cos(c+}{d}$$

Mathematica [C] time = 6.19758, size = 221, normalized size = 1.49

$$\frac{B\tan(c+dx)(a+b\tan(c+dx))^3}{4bd} + \frac{\frac{(4Ab-aB)(a+b\tan(c+dx))^3}{3bd} + \frac{2\left((Ab-aB)\left(-i(a-ib)^2\log(\tan(c+dx)+i)+i(a+ib)^2\log(-\tan(c+dx)+i)-2b^2\tan(\right.\right.}{}}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (B*Tan[c + d*x]*(a + b*Tan[c + d*x])^3)/(4*b*d) + (((4*A*b - a*B)*(a + b*Ta
n[c + d*x])^3)/(3*b*d) + (2*((A*b - a*B)*(I*(a + I*b)^2*Log[I - Tan[c + d*x
]] - I*(a - I*b)^2*Log[I + Tan[c + d*x]] - 2*b^2*Tan[c + d*x]) - B*((I*a -
b)^3*Log[I - Tan[c + d*x]] - (I*a + b)^3*Log[I + Tan[c + d*x]] + 6*a*b^2*Ta
n[c + d*x] + b^3*Tan[c + d*x]^2)))/d)/(4*b)
```

Maple [A] time = 0.013, size = 249, normalized size = 1.7

$$\frac{b^2B(\tan(dx+c))^4}{4d} + \frac{A(\tan(dx+c))^3b^2}{3d} + \frac{2B(\tan(dx+c))^3ab}{3d} + \frac{A(\tan(dx+c))^2ab}{d} + \frac{a^2B(\tan(dx+c))^2}{2d} - \frac{b^2B(t}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4/d*b^2*B*tan(d*x+c)^4+1/3/d*A*tan(d*x+c)^3*b^2+2/3/d*B*tan(d*x+c)^3*a*b+
1/d*A*tan(d*x+c)^2*a*b+1/2/d*a^2*B*tan(d*x+c)^2-1/2/d*b^2*B*tan(d*x+c)^2+1/
```

```
d*a^2*A*tan(d*x+c)-1/d*A*b^2*tan(d*x+c)-2/d*B*a*b*tan(d*x+c)-1/d*ln(1+tan(d
*x+c)^2)*A*a*b-1/2/d*a^2*B*ln(1+tan(d*x+c)^2)+1/2/d*ln(1+tan(d*x+c)^2)*b^2*
B-1/d*a^2*A*arctan(tan(d*x+c))+1/d*A*arctan(tan(d*x+c))*b^2+2/d*B*arctan(ta
n(d*x+c))*a*b
```

Maxima [A] time = 1.46813, size = 198, normalized size = 1.34

$$\frac{3\,Bb^2\tan\left(dx+c\right)^4+4\left(2\,Bab+Ab^2\right)\tan\left(dx+c\right)^3+6\left(Ba^2+2\,Aab-Bb^2\right)\tan\left(dx+c\right)^2-12\left(Aa^2-2\,Bab-Ab^2\right)(dx}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/12*(3*B*b^2*tan(d*x + c)^4 + 4*(2*B*a*b + A*b^2)*tan(d*x + c)^3 + 6*(B*a^
2 + 2*A*a*b - B*b^2)*tan(d*x + c)^2 - 12*(A*a^2 - 2*B*a*b - A*b^2)*(d*x + c
) - 6*(B*a^2 + 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1) + 12*(A*a^2 - 2*B*a
*b - A*b^2)*tan(d*x + c))/d
```

Fricas [A] time = 1.97992, size = 340, normalized size = 2.3

$$\frac{3\,Bb^2\tan\left(dx+c\right)^4+4\left(2\,Bab+Ab^2\right)\tan\left(dx+c\right)^3-12\left(Aa^2-2\,Bab-Ab^2\right)dx+6\left(Ba^2+2\,Aab-Bb^2\right)\tan\left(dx+c\right)^2}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/12*(3*B*b^2*tan(d*x + c)^4 + 4*(2*B*a*b + A*b^2)*tan(d*x + c)^3 - 12*(A*a
^2 - 2*B*a*b - A*b^2)*d*x + 6*(B*a^2 + 2*A*a*b - B*b^2)*tan(d*x + c)^2 + 6*
(B*a^2 + 2*A*a*b - B*b^2)*log(1/(tan(d*x + c)^2 + 1)) + 12*(A*a^2 - 2*B*a*b
 - A*b^2)*tan(d*x + c))/d
```

Sympy [A] time = 0.77296, size = 246, normalized size = 1.66

$$\begin{cases} -Aa^2x + \frac{Aa^2\tan(c+dx)}{d} - \frac{Aab\log\left(\tan^2(c+dx)+1\right)}{d} + \frac{Aab\tan^2(c+dx)}{d} + Ab^2x + \frac{Ab^2\tan^3(c+dx)}{3d} - \frac{Ab^2\tan(c+dx)}{d} - \frac{Ba^2\log\left(\tan^2(c+dx)+1\right)}{2d} \\ x\left(A + B\tan(c)\right)\left(a + b\tan(c)\right)^2\tan^2(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a**2*x + A*a**2*tan(c + d*x)/d - A*a*b*log(tan(c + d*x)**2 +
1)/d + A*a*b*tan(c + d*x)**2/d + A*b**2*x + A*b**2*tan(c + d*x)**3/(3*d) -
A*b**2*tan(c + d*x)/d - B*a**2*log(tan(c + d*x)**2 + 1)/(2*d) + B*a**2*tan(
c + d*x)**2/(2*d) + 2*B*a*b*x + 2*B*a*b*tan(c + d*x)**3/(3*d) - 2*B*a*b*tan
(c + d*x)/d + B*b**2*log(tan(c + d*x)**2 + 1)/(2*d) + B*b**2*tan(c + d*x)**
4/(4*d) - B*b**2*tan(c + d*x)**2/(2*d), Ne(d, 0)), (x*(A + B*tan(c))*(a + b
*tan(c))**2*tan(c)**2, True))
```

Giac [B] time = 4.91977, size = 3008, normalized size = 20.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/12*(12*A*a^2*d*x*tan(d*x)^4*tan(c)^4 - 24*B*a*b*d*x*tan(d*x)^4*tan(c)^4
- 12*A*b^2*d*x*tan(d*x)^4*tan(c)^4 - 6*B*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)
^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*ta
n(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 12*A*a*b*log(4*(tan(c)^2 + 1)/(ta
n(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2
- 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 + 6*B*b^2*log(4*(tan(c)^2 + 1
)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*
x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 48*A*a^2*d*x*tan(d*x)^
3*tan(c)^3 + 96*B*a*b*d*x*tan(d*x)^3*tan(c)^3 + 48*A*b^2*d*x*tan(d*x)^3*tan
(c)^3 - 6*B*a^2*tan(d*x)^4*tan(c)^4 - 12*A*a*b*tan(d*x)^4*tan(c)^4 + 9*B*b^
2*tan(d*x)^4*tan(c)^4 + 24*B*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
- 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c
) + 1))*tan(d*x)^3*tan(c)^3 + 48*A*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan
(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)
*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 24*B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)
```

^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*ta
n(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 12*A*a^2*tan(d*x)^4*tan(c)^3 - 24
*B*a*b*tan(d*x)^4*tan(c)^3 - 12*A*b^2*tan(d*x)^4*tan(c)^3 + 12*A*a^2*tan(d*
x)^3*tan(c)^4 - 24*B*a*b*tan(d*x)^3*tan(c)^4 - 12*A*b^2*tan(d*x)^3*tan(c)^4
 + 72*A*a^2*d*x*tan(d*x)^2*tan(c)^2 - 144*B*a*b*d*x*tan(d*x)^2*tan(c)^2 - 7
2*A*b^2*d*x*tan(d*x)^2*tan(c)^2 - 6*B*a^2*tan(d*x)^4*tan(c)^2 - 12*A*a*b*ta
n(d*x)^4*tan(c)^2 + 6*B*b^2*tan(d*x)^4*tan(c)^2 + 12*B*a^2*tan(d*x)^3*tan(c
)^3 + 24*A*a*b*tan(d*x)^3*tan(c)^3 - 24*B*b^2*tan(d*x)^3*tan(c)^3 - 6*B*a^2
*tan(d*x)^2*tan(c)^4 - 12*A*a*b*tan(d*x)^2*tan(c)^4 + 6*B*b^2*tan(d*x)^2*ta
n(c)^4 + 8*B*a*b*tan(d*x)^4*tan(c) + 4*A*b^2*tan(d*x)^4*tan(c) - 36*B*a^2*l
og(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2
*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 72*A
*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(
d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2
+ 36*B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
+ tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan
(c)^2 - 36*A*a^2*tan(d*x)^3*tan(c)^2 + 96*B*a*b*tan(d*x)^3*tan(c)^2 + 48*A*
b^2*tan(d*x)^3*tan(c)^2 - 36*A*a^2*tan(d*x)^2*tan(c)^3 + 96*B*a*b*tan(d*x)^
2*tan(c)^3 + 48*A*b^2*tan(d*x)^2*tan(c)^3 + 8*B*a*b*tan(d*x)*tan(c)^4 + 4*A
*b^2*tan(d*x)*tan(c)^4 - 3*B*b^2*tan(d*x)^4 - 48*A*a^2*d*x*tan(d*x)*tan(c)
+ 96*B*a*b*d*x*tan(d*x)*tan(c) + 48*A*b^2*d*x*tan(d*x)*tan(c) + 12*B*a^2*ta
n(d*x)^3*tan(c) + 24*A*a*b*tan(d*x)^3*tan(c) - 24*B*b^2*tan(d*x)^3*tan(c) -
 12*B*a^2*tan(d*x)^2*tan(c)^2 - 24*A*a*b*tan(d*x)^2*tan(c)^2 + 12*B*b^2*tan
(d*x)^2*tan(c)^2 + 12*B*a^2*tan(d*x)*tan(c)^3 + 24*A*a*b*tan(d*x)*tan(c)^3
- 24*B*b^2*tan(d*x)*tan(c)^3 - 3*B*b^2*tan(c)^4 - 8*B*a*b*tan(d*x)^3 - 4*A*
b^2*tan(d*x)^3 + 24*B*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan
(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))
*tan(d*x)*tan(c) + 48*A*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
))*tan(d*x)*tan(c) - 24*B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2
*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) +
 1))*tan(d*x)*tan(c) + 36*A*a^2*tan(d*x)^2*tan(c) - 96*B*a*b*tan(d*x)^2*tan
(c) - 48*A*b^2*tan(d*x)^2*tan(c) + 36*A*a^2*tan(d*x)*tan(c)^2 - 96*B*a*b*ta
n(d*x)*tan(c)^2 - 48*A*b^2*tan(d*x)*tan(c)^2 - 8*B*a*b*tan(c)^3 - 4*A*b^2*t
an(c)^3 + 12*A*a^2*d*x - 24*B*a*b*d*x - 12*A*b^2*d*x - 6*B*a^2*tan(d*x)^2 -
 12*A*a*b*tan(d*x)^2 + 6*B*b^2*tan(d*x)^2 + 12*B*a^2*tan(d*x)*tan(c) + 24*A
*a*b*tan(d*x)*tan(c) - 24*B*b^2*tan(d*x)*tan(c) - 6*B*a^2*tan(c)^2 - 12*A*a
*b*tan(c)^2 + 6*B*b^2*tan(c)^2 - 6*B*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*t
an(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*
x)*tan(c) + 1)) - 12*A*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*ta
n(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)
) + 6*B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 12*A*a^2*ta
n(d*x) + 24*B*a*b*tan(d*x) + 12*A*b^2*tan(d*x) - 12*A*a^2*tan(c) + 24*B*a*b
*tan(c) + 12*A*b^2*tan(c) - 6*B*a^2 - 12*A*a*b + 9*B*b^2)/(d*tan(d*x)^4*tan

```
(c)^4 - 4*d*tan(d*x)^3*tan(c)^3 + 6*d*tan(d*x)^2*tan(c)^2 - 4*d*tan(d*x)*ta
n(c) + d)
```

3.241 $\int \tan(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=112

$$-\frac{(a^2A-2abB-Ab^2)\log(\cos(c+dx))}{d}-x\left(a^2B+2aAb-b^2B\right)+\frac{b(aA-bB)\tan(c+dx)}{d}+\frac{A(a+b\tan(c+dx))^2}{2d}+$$

```
[Out] -((2*a*A*b + a^2*B - b^2*B)*x) - ((a^2*A - A*b^2 - 2*a*b*B)*Log[Cos[c + d*x
]])/d + (b*(a*A - b*B)*Tan[c + d*x])/d + (A*(a + b*Tan[c + d*x])^2)/(2*d) +
 (B*(a + b*Tan[c + d*x])^3)/(3*b*d)
```

Rubi [A] time = 0.124009, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3592, 3528, 3525, 3475}

$$-\frac{(a^2A-2abB-Ab^2)\log(\cos(c+dx))}{d}-x\left(a^2B+2aAb-b^2B\right)+\frac{b(aA-bB)\tan(c+dx)}{d}+\frac{A(a+b\tan(c+dx))^2}{2d}+$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((2*a*A*b + a^2*B - b^2*B)*x) - ((a^2*A - A*b^2 - 2*a*b*B)*Log[Cos[c + d*x
]])/d + (b*(a*A - b*B)*Tan[c + d*x])/d + (A*(a + b*Tan[c + d*x])^2)/(2*d) +
 (B*(a + b*Tan[c + d*x])^3)/(3*b*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
```

```
0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{B(a+b\tan(c+dx))^3}{3bd} + \int(-B+A\tan(c+dx))(a+b\tan(c$$

$$= \frac{A(a+b\tan(c+dx))^2}{2d} + \frac{B(a+b\tan(c+dx))^3}{3bd} + \int(a+b\,\mathrm{ta}$$

$$= -\left(2aAb+a^2B-b^2B\right)x + \frac{b(aA-bB)\tan(c+dx)}{d} + \frac{A(a+}{}$$

$$= -\left(2aAb+a^2B-b^2B\right)x - \frac{\left(a^2A-Ab^2-2abB\right)\log(\cos(c+}{d}$$

Mathematica [C] time = 1.74485, size = 172, normalized size = 1.54

$$\frac{3(aA+bB)\left(-2b^2\tan(c+dx)+i\left((a+ib)^2\log(-\tan(c+dx)+i)-(a-ib)^2\log(\tan(c+dx)+i)\right)\right)+3A\left(6ab^2\tan(c+}{6bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*B*(a + b*Tan[c + d*x])^3 + 3*(a*A + b*B)*(I*((a + I*b)^2*Log[I - Tan[c +
 d*x]] - (a - I*b)^2*Log[I + Tan[c + d*x]]) - 2*b^2*Tan[c + d*x]) + 3*A*((I
*a - b)^3*Log[I - Tan[c + d*x]] - (I*a + b)^3*Log[I + Tan[c + d*x]] + 6*a*b
^2*Tan[c + d*x] + b^3*Tan[c + d*x]^2))/(6*b*d)
```

Maple [A] time = 0.012, size = 199, normalized size = 1.8

$$\frac{b^2B(\tan(dx+c))^3}{3d}+\frac{A(\tan(dx+c))^2b^2}{2d}+\frac{B(\tan(dx+c))^2ab}{d}+2\frac{A\tan(dx+c)ab}{d}+\frac{a^2B\tan(dx+c)}{d}-\frac{b^2B\tan(}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/3/d*b^2*B*tan(d*x+c)^3+1/2/d*A*tan(d*x+c)^2*b^2+1/d*B*tan(d*x+c)^2*a*b+2/
d*A*tan(d*x+c)*a*b+1/d*a^2*B*tan(d*x+c)-b^2*B*tan(d*x+c)/d+1/2/d*a^2*A*ln(1
+tan(d*x+c)^2)-1/2/d*ln(1+tan(d*x+c)^2)*A*b^2-1/d*ln(1+tan(d*x+c)^2)*B*a*b-
2/d*A*arctan(tan(d*x+c))*a*b-1/d*a^2*B*arctan(tan(d*x+c))+1/d*B*arctan(tan(
d*x+c))*b^2
```

Maxima [A] time = 1.46054, size = 162, normalized size = 1.45

$$\frac{2Bb^2\tan(dx+c)^3+3\left(2Bab+Ab^2\right)\tan(dx+c)^2-6\left(Ba^2+2Aab-Bb^2\right)(dx+c)+3\left(Aa^2-2Bab-Ab^2\right)\log\left(\tan\right.}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 2.01975, size = 275, normalized size = 2.46

$$\frac{2Bb^2\tan(dx+c)^3-6\left(Ba^2+2Aab-Bb^2\right)dx+3\left(2Bab+Ab^2\right)\tan(dx+c)^2-3\left(Aa^2-2Bab-Ab^2\right)\log\left(\frac{1}{\tan(dx+c)^2+}\right.}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 0.560071, size = 192, normalized size = 1.71

$$\begin{cases} \frac{Aa^2\log\left(\tan^2(c+dx)+1\right)}{2d} - 2Aabx + \frac{2Aab\tan(c+dx)}{d} - \frac{Ab^2\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Ab^2\tan^2(c+dx)}{2d} - Ba^2x + \frac{Ba^2\tan(c+dx)}{d} - \frac{Bab\log\left(\tan^2(c\right.}{d} \\ x\left(A+B\tan(c)\right)\left(a+b\tan(c)\right)^2\tan(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a**2*log(tan(c + d*x)**2 + 1)/(2*d) - 2*A*a*b*x + 2*A*a*b*tan(
c + d*x)/d - A*b**2*log(tan(c + d*x)**2 + 1)/(2*d) + A*b**2*tan(c + d*x)**2
/(2*d) - B*a**2*x + B*a**2*tan(c + d*x)/d - B*a*b*log(tan(c + d*x)**2 + 1)/
d + B*a*b*tan(c + d*x)**2/d + B*b**2*x + B*b**2*tan(c + d*x)**3/(3*d) - B*b
**2*tan(c + d*x)/d, Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))**2*tan(c),
True))
```

Giac [B] time = 2.8668, size = 2037, normalized size = 18.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/6*(6*B*a^2*d*x*tan(d*x)^3*tan(c)^3 + 12*A*a*b*d*x*tan(d*x)^3*tan(c)^3 -
6*B*b^2*d*x*tan(d*x)^3*tan(c)^3 + 3*A*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*
tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d
*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 6*B*a*b*log(4*(tan(c)^2 + 1)/(tan(d*
x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*
tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 3*A*b^2*log(4*(tan(c)^2 + 1)/(t
an(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2
 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 18*B*a^2*d*x*tan(d*x)^2*ta
n(c)^2 - 36*A*a*b*d*x*tan(d*x)^2*tan(c)^2 + 18*B*b^2*d*x*tan(d*x)^2*tan(c)^
2 - 6*B*a*b*tan(d*x)^3*tan(c)^3 - 3*A*b^2*tan(d*x)^3*tan(c)^3 - 9*A*a^2*log
```

```
(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 18*B*a
*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*
x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 +
9*A*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + t
an(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)
^2 + 6*B*a^2*tan(d*x)^3*tan(c)^2 + 12*A*a*b*tan(d*x)^3*tan(c)^2 - 6*B*b^2*t
an(d*x)^3*tan(c)^2 + 6*B*a^2*tan(d*x)^2*tan(c)^3 + 12*A*a*b*tan(d*x)^2*tan(
c)^3 - 6*B*b^2*tan(d*x)^2*tan(c)^3 + 18*B*a^2*d*x*tan(d*x)*tan(c) + 36*A*a*
b*d*x*tan(d*x)*tan(c) - 18*B*b^2*d*x*tan(d*x)*tan(c) - 6*B*a*b*tan(d*x)^3*t
an(c) - 3*A*b^2*tan(d*x)^3*tan(c) + 6*B*a*b*tan(d*x)^2*tan(c)^2 + 3*A*b^2*t
an(d*x)^2*tan(c)^2 - 6*B*a*b*tan(d*x)*tan(c)^3 - 3*A*b^2*tan(d*x)*tan(c)^3
+ 2*B*b^2*tan(d*x)^3 + 9*A*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 -
2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c)
+ 1))*tan(d*x)*tan(c) - 18*B*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
- 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c
) + 1))*tan(d*x)*tan(c) - 9*A*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1))*tan(d*x)*tan(c) - 12*B*a^2*tan(d*x)^2*tan(c) - 24*A*a*b*tan(d*x)^2
*tan(c) + 18*B*b^2*tan(d*x)^2*tan(c) - 12*B*a^2*tan(d*x)*tan(c)^2 - 24*A*a*
b*tan(d*x)*tan(c)^2 + 18*B*b^2*tan(d*x)*tan(c)^2 + 2*B*b^2*tan(c)^3 - 6*B*a
^2*d*x - 12*A*a*b*d*x + 6*B*b^2*d*x + 6*B*a*b*tan(d*x)^2 + 3*A*b^2*tan(d*x)
^2 - 6*B*a*b*tan(d*x)*tan(c) - 3*A*b^2*tan(d*x)*tan(c) + 6*B*a*b*tan(c)^2 +
 3*A*b^2*tan(c)^2 - 3*A*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
)) + 6*B*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c
) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 3*A*b^2*lo
g(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*
tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 6*B*a^2*tan(d*x) + 12*A*a
*b*tan(d*x) - 6*B*b^2*tan(d*x) + 6*B*a^2*tan(c) + 12*A*a*b*tan(c) - 6*B*b^2
*tan(c) + 6*B*a*b + 3*A*b^2)/(d*tan(d*x)^3*tan(c)^3 - 3*d*tan(d*x)^2*tan(c)
^2 + 3*d*tan(d*x)*tan(c) - d)
```

3.242 $\int (a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=87

$$-\frac{(a^2B+2aAb-b^2B)\log(\cos(c+dx))}{d}+x\left(a^2A-2abB-Ab^2\right)+\frac{b(aB+Ab)\tan(c+dx)}{d}+\frac{B(a+b\tan(c+dx))^2}{2d}$$

```
[Out] (a^2*A - A*b^2 - 2*a*b*B)*x - ((2*a*A*b + a^2*B - b^2*B)*Log[Cos[c + d*x]])
/d + (b*(A*b + a*B)*Tan[c + d*x])/d + (B*(a + b*Tan[c + d*x])^2)/(2*d)
```

Rubi [A] time = 0.0757501, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3528, 3525, 3475}

$$-\frac{(a^2B+2aAb-b^2B)\log(\cos(c+dx))}{d}+x\left(a^2A-2abB-Ab^2\right)+\frac{b(aB+Ab)\tan(c+dx)}{d}+\frac{B(a+b\tan(c+dx))^2}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*A - A*b^2 - 2*a*b*B)*x - ((2*a*A*b + a^2*B - b^2*B)*Log[Cos[c + d*x]])
/d + (b*(A*b + a*B)*Tan[c + d*x])/d + (B*(a + b*Tan[c + d*x])^2)/(2*d)
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{B(a+b\tan(c+dx))^2}{2d} + \int (a+b\tan(c+dx))(aA-bB+(Ab+aB)\tan$$
$$= \left(a^2A-Ab^2-2abB\right)x + \frac{b(Ab+aB)\tan(c+dx)}{d} + \frac{B(a+b\tan(c+dx}{2d}$$
$$= \left(a^2A-Ab^2-2abB\right)x - \frac{\left(2aAb+a^2B-b^2B\right)\log(\cos(c+dx))}{d} + \frac{b(Ab}{}$$

Mathematica [C] time = 0.441482, size = 96, normalized size = 1.1

$$\frac{2b(2aB+Ab)\tan(c+dx)+(a-ib)^2(B+iA)\log(\tan(c+dx)+i)+(a+ib)^2(B-iA)\log(-\tan(c+dx)+i)+b^2B\tan}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a + I*b)^2*((-I)*A + B)*Log[I - Tan[c + d*x]] + (a - I*b)^2*(I*A + B)*Log
[I + Tan[c + d*x]] + 2*b*(A*b + 2*a*B)*Tan[c + d*x] + b^2*B*Tan[c + d*x]^2)
/(2*d)
```

Maple [A] time = 0.013, size = 151, normalized size = 1.7

$$\frac{b^2B(\tan(dx+c))^2}{2d} + \frac{Ab^2\tan(dx+c)}{d} + 2\frac{Bab\tan(dx+c)}{d} + \frac{\ln\left(1+(\tan(dx+c))^2\right)Aab}{d} + \frac{a^2B\ln\left(1+(\tan(dx+c}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*b^2*B*tan(d*x+c)^2+1/d*A*b^2*tan(d*x+c)+2/d*B*a*b*tan(d*x+c)+1/d*ln(1
+tan(d*x+c)^2)*A*a*b+1/2/d*a^2*B*ln(1+tan(d*x+c)^2)-1/2/d*ln(1+tan(d*x+c)^2
)*b^2*B+1/d*a^2*A*arctan(tan(d*x+c))-1/d*A*arctan(tan(d*x+c))*b^2-2/d*B*arc
tan(tan(d*x+c))*a*b
```

Maxima [A] time = 1.47194, size = 123, normalized size = 1.41

$$\frac{Bb^2\tan(dx+c)^2 + 2\left(Aa^2 - 2\,Bab - Ab^2\right)(dx+c) + \left(Ba^2 + 2\,Aab - Bb^2\right)\log\left(\tan(dx+c)^2 + 1\right) + 2\left(2\,Bab + Ab^2\right)\tan}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(B*b^2*tan(d*x + c)^2 + 2*(A*a^2 - 2*B*a*b - A*b^2)*(d*x + c) + (B*a^2
+ 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1) + 2*(2*B*a*b + A*b^2)*tan(d*x +
c))/d
```

Fricas [A] time = 2.03688, size = 209, normalized size = 2.4

$$\frac{Bb^2\tan(dx+c)^2 + 2\left(Aa^2 - 2\,Bab - Ab^2\right)dx - \left(Ba^2 + 2\,Aab - Bb^2\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right) + 2\left(2\,Bab + Ab^2\right)\tan(dx+c)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*tan(d*x + c)^2 + 2*(A*a^2 - 2*B*a*b - A*b^2)*d*x - (B*a^2 + 2*A*
a*b - B*b^2)*log(1/(tan(d*x + c)^2 + 1)) + 2*(2*B*a*b + A*b^2)*tan(d*x + c)
)/d
```

Sympy [A] time = 0.371607, size = 143, normalized size = 1.64

$$\begin{cases} Aa^2x + \frac{Aab\log\left(\tan^2(c+dx)+1\right)}{d} - Ab^2x + \frac{Ab^2\tan(c+dx)}{d} + \frac{Ba^2\log\left(\tan^2(c+dx)+1\right)}{2d} - 2Babx + \frac{2Bab\tan(c+dx)}{d} - \frac{Bb^2\log\left(\tan^2(c+dx)+1\right)}{2d} \\ x\left(A + B\tan(c)\right)\left(a + b\tan(c)\right)^2 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a**2*x + A*a*b*log(tan(c + d*x)**2 + 1)/d - A*b**2*x + A*b**2*
tan(c + d*x)/d + B*a**2*log(tan(c + d*x)**2 + 1)/(2*d) - 2*B*a*b*x + 2*B*a*
```

```
b*tan(c + d*x)/d - B*b**2*log(tan(c + d*x)**2 + 1)/(2*d) + B*b**2*tan(c + d
*x)**2/(2*d), Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))**2, True))
```

Giac [B] time = 1.93693, size = 1216, normalized size = 13.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*A*a^2*d*x*tan(d*x)^2*tan(c)^2 - 4*B*a*b*d*x*tan(d*x)^2*tan(c)^2 - 2*
A*b^2*d*x*tan(d*x)^2*tan(c)^2 - B*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(
c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*
tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 2*A*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4
*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(
d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x
)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*t
an(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 4*A*a^2*d*x*tan(d*x)*tan(c) + 8*
B*a*b*d*x*tan(d*x)*tan(c) + 4*A*b^2*d*x*tan(d*x)*tan(c) + B*b^2*tan(d*x)^2*
tan(c)^2 + 2*B*a^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3
*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*
x)*tan(c) + 4*A*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^
3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d
*x)*tan(c) - 2*B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)
^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(
d*x)*tan(c) - 4*B*a*b*tan(d*x)^2*tan(c) - 2*A*b^2*tan(d*x)^2*tan(c) - 4*B*a
*b*tan(d*x)*tan(c)^2 - 2*A*b^2*tan(d*x)*tan(c)^2 + 2*A*a^2*d*x - 4*B*a*b*d*
x - 2*A*b^2*d*x + B*b^2*tan(d*x)^2 + B*b^2*tan(c)^2 - B*a^2*log(4*(tan(c)^2
 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + ta
n(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 2*A*a*b*log(4*(tan(c)^2 + 1)/(tan(d*x)
^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*ta
n(d*x)*tan(c) + 1)) + B*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
)) + 4*B*a*b*tan(d*x) + 2*A*b^2*tan(d*x) + 4*B*a*b*tan(c) + 2*A*b^2*tan(c)
+ B*b^2)/(d*tan(d*x)^2*tan(c)^2 - 2*d*tan(d*x)*tan(c) + d)
```

3.243 $\int \cot(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=70

$$x\left(a^2B+2aAb-b^2B\right)+\frac{a^2A\log(\sin(c+dx))}{d}-\frac{b(2aB+Ab)\log(\cos(c+dx))}{d}+\frac{b^2B\tan(c+dx)}{d}$$

```
[Out] (2*a*A*b + a^2*B - b^2*B)*x - (b*(A*b + 2*a*B)*Log[Cos[c + d*x]])/d + (a^2*
A*Log[Sin[c + d*x]])/d + (b^2*B*Tan[c + d*x])/d
```

Rubi [A] time = 0.11392, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {3606, 3624, 3475}

$$x\left(a^2B+2aAb-b^2B\right)+\frac{a^2A\log(\sin(c+dx))}{d}-\frac{b(2aB+Ab)\log(\cos(c+dx))}{d}+\frac{b^2B\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*a*A*b + a^2*B - b^2*B)*x - (b*(A*b + 2*a*B)*Log[Cos[c + d*x]])/d + (a^2*
A*Log[Sin[c + d*x]])/d + (b^2*B*Tan[c + d*x])/d
```

Rule 3606

```
Int[(((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (
f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(b^
2*B*Tan[e + f*x])/(d*f), x] + Dist[1/d, Int[(a^2*A*d - b^2*B*c + (2*a*A*b +
 B*(a^2 - b^2))*d*Tan[e + f*x] + (A*b^2*d - b*B*(b*c - 2*a*d))*Tan[e + f*x]
^2)/(c + d*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && N
eQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{b^2B\tan(c+dx)}{d} + \int \cot(c+dx)\left(a^2A+\left(2aAb+\left(a^2-b^2\right.\right.\right.$$

$$= \left(2aAb+a^2B-b^2B\right)x + \frac{b^2B\tan(c+dx)}{d} + \left(a^2A\right)\int \cot(c$$

$$= \left(2aAb+a^2B-b^2B\right)x - \frac{b(Ab+2aB)\log(\cos(c+dx))}{d} + \frac{a^2}{}$$

Mathematica [C] time = 0.288218, size = 93, normalized size = 1.33

$$-\frac{-2a^2A\log(\tan(c+dx))+(a+ib)^2(A+iB)\log(-\tan(c+dx)+i)+(a-ib)^2(A-iB)\log(\tan(c+dx)+i)-2bB(a+}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a + I*b)^2*(A + I*B)*Log[I - Tan[c + d*x]] - 2*a^2*A*Log[Tan[c + d*x]] +
 (a - I*b)^2*(A - I*B)*Log[I + Tan[c + d*x]] - 2*b*B*(a + b*Tan[c + d*x]))/
(2*d)
```

Maple [A] time = 0.062, size = 109, normalized size = 1.6

$$2\,Axab+a^2Bx-b^2Bx-\frac{Ab^2\ln(\cos(dx+c))}{d}+\frac{a^2A\ln(\sin(dx+c))}{d}+2\,\frac{Aabc}{d}+\frac{b^2B\tan(dx+c)}{d}-2\,\frac{Bab\ln(\cos(dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*A*x*a*b+a^2*B*x-b^2*B*x-1/d*A*b^2*ln(cos(d*x+c))+a^2*A*ln(sin(d*x+c))/d+2
/d*A*a*b*c+b^2*B*tan(d*x+c)/d-2/d*B*a*b*ln(cos(d*x+c))+1/d*B*a^2*c-1/d*B*b^
2*c
```

Maxima [A] time = 1.48323, size = 115, normalized size = 1.64

$$\frac{2\,Aa^2\log\left(\tan\left(dx+c\right)\right)+2\,Bb^2\tan\left(dx+c\right)+2\left(Ba^2+2\,Aab-Bb^2\right)(dx+c)-\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\tan\left(dx+c\right)^2 -\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/2*(2*A*a^2*log(tan(d*x + c)) + 2*B*b^2*tan(d*x + c) + 2*(B*a^2 + 2*A*a*b
- B*b^2)*(d*x + c) - (A*a^2 - 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1))/d
```

Fricas [A] time = 2.06469, size = 217, normalized size = 3.1

$$\frac{Aa^2\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)+2\,Bb^2\tan\left(dx+c\right)+2\left(Ba^2+2\,Aab-Bb^2\right)dx-\left(2\,Bab+Ab^2\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/2*(A*a^2*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1)) + 2*B*b^2*tan(d*x + c)
+ 2*(B*a^2 + 2*A*a*b - B*b^2)*d*x - (2*B*a*b + A*b^2)*log(1/(tan(d*x + c)^2
 + 1)))/d
```

Sympy [A] time = 1.41, size = 129, normalized size = 1.84

$$\begin{cases} -\frac{Aa^2\log\left(\tan^2\left(c+dx\right)+1\right)}{2d}+\frac{Aa^2\log\left(\tan\left(c+dx\right)\right)}{d}+2Aabx+\frac{Ab^2\log\left(\tan^2\left(c+dx\right)+1\right)}{2d}+Ba^2x+\frac{Bab\log\left(\tan^2\left(c+dx\right)+1\right)}{d}-Bb^2x+\frac{Bb^2\tan\left(c\right.}{d} \\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right)^2\cot\left(c\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a**2*log(tan(c + d*x)**2 + 1)/(2*d) + A*a**2*log(tan(c + d*x)
)/d + 2*A*a*b*x + A*b**2*log(tan(c + d*x)**2 + 1)/(2*d) + B*a**2*x + B*a*b*
log(tan(c + d*x)**2 + 1)/d - B*b**2*x + B*b**2*tan(c + d*x)/d, Ne(d, 0)), (
x*(A + B*tan(c))*(a + b*tan(c))**2*cot(c), True))
```

Giac [A] time = 1.34912, size = 116, normalized size = 1.66

$$\frac{2\,Aa^2\log\left(\left|\tan\left(dx+c\right)\right|\right)+2\,Bb^2\tan\left(dx+c\right)+2\left(Ba^2+2\,Aab-Bb^2\right)\left(dx+c\right)-\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\tan\left(dx+c\right)\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] 1/2*(2*A*a^2*log(abs(tan(d*x + c))) + 2*B*b^2*tan(d*x + c) + 2*(B*a^2 + 2*A
*a*b - B*b^2)*(d*x + c) - (A*a^2 - 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)
)/d
```

3.244 $\int \cot^2(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=72

$$-x\left(a^2A-2abB-Ab^2\right)-\frac{a^2A\cot(c+dx)}{d}+\frac{a(aB+2Ab)\log(\sin(c+dx))}{d}-\frac{b^2B\log(\cos(c+dx))}{d}$$

```
[Out] -((a^2*A - A*b^2 - 2*a*b*B)*x) - (a^2*A*Cot[c + d*x])/d - (b^2*B*Log[Cos[c
+ d*x]])/d + (a*(2*A*b + a*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.133096, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {3604, 3624, 3475}

$$-x\left(a^2A-2abB-Ab^2\right)-\frac{a^2A\cot(c+dx)}{d}+\frac{a(aB+2Ab)\log(\sin(c+dx))}{d}-\frac{b^2B\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a^2*A - A*b^2 - 2*a*b*B)*x) - (a^2*A*Cot[c + d*x])/d - (b^2*B*Log[Cos[c
+ d*x]])/d + (a*(2*A*b + a*B)*Log[Sin[c + d*x]])/d
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
```

```
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{a^2A\cot(c+dx)}{d} + \int \cot(c+dx)\left(a(2Ab+aB)-\left(a^2A\right.\right.$$
$$= -\left(a^2A-Ab^2-2abB\right)x - \frac{a^2A\cot(c+dx)}{d} + \left(b^2B\right)\int \tan$$
$$= -\left(a^2A-Ab^2-2abB\right)x - \frac{a^2A\cot(c+dx)}{d} - \frac{b^2B\log(\cos}{d}$$

Mathematica [C] time = 0.262046, size = 100, normalized size = 1.39

$$\frac{-2a^2A\cot(c+dx)+2a(aB+2Ab)\log(\tan(c+dx))+i(a+ib)^2(A+iB)\log(-\tan(c+dx)+i)-(a-ib)^2(B+iA)\log}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^2*A*Cot[c + d*x] + I*(a + I*b)^2*(A + I*B)*Log[I - Tan[c + d*x]] + 2*
a*(2*A*b + a*B)*Log[Tan[c + d*x]] - (a - I*b)^2*(I*A + B)*Log[I + Tan[c + d
*x]])/(2*d)
```

Maple [A] time = 0.066, size = 110, normalized size = 1.5

$$-a^2Ax+Ab^2x+2\,Babx-\frac{a^2A\cot(dx+c)}{d}+2\,\frac{Aab\ln(\sin(dx+c))}{d}-\frac{Aa^2c}{d}+\frac{Ab^2c}{d}+\frac{a^2B\ln(\sin(dx+c))}{d}-\frac{b^2B\ln(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -a^2*A*x+A*b^2*x+2*B*a*b*x-a^2*A*cot(d*x+c)/d+2/d*A*a*b*ln(sin(d*x+c))-1/d*
A*a^2*c+1/d*A*b^2*c+1/d*a^2*B*ln(sin(d*x+c))-b^2*B*ln(cos(d*x+c))/d+2/d*B*a
```

```
*b*c
```

Maxima [A] time = 1.48542, size = 126, normalized size = 1.75

$$-\frac{2\left(Aa^2-2\,Bab-Ab^2\right)(dx+c)+\left(Ba^2+2\,Aab-Bb^2\right)\log\left(\tan\left(dx+c\right)^2+1\right)-2\left(Ba^2+2\,Aab\right)\log\left(\tan\left(dx+c\right)\right)+\frac{2}{\tan}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(A*a^2 - 2*B*a*b - A*b^2)*(d*x + c) + (B*a^2 + 2*A*a*b - B*b^2)*log
(tan(d*x + c)^2 + 1) - 2*(B*a^2 + 2*A*a*b)*log(tan(d*x + c)) + 2*A*a^2/tan(
d*x + c))/d
```

Fricas [A] time = 2.01527, size = 274, normalized size = 3.81

$$-\frac{Bb^2\log\left(\frac{1}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)+2\left(Aa^2-2\,Bab-Ab^2\right)dx\tan\left(dx+c\right)+2\,Aa^2-\left(Ba^2+2\,Aab\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\mathrm{t}}{2\,d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/2*(B*b^2*log(1/(tan(d*x + c)^2 + 1))*tan(d*x + c) + 2*(A*a^2 - 2*B*a*b -
 A*b^2)*d*x*tan(d*x + c) + 2*A*a^2 - (B*a^2 + 2*A*a*b)*log(tan(d*x + c)^2/(
tan(d*x + c)^2 + 1))*tan(d*x + c))/(d*tan(d*x + c))
```

Sympy [A] time = 2.86773, size = 167, normalized size = 2.32

$$\begin{cases}\tilde{\infty}Aa^2x\\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right)^2\cot^2\left(c\right)\\ -Aa^2x-\frac{Aa^2}{d\tan(c+dx)}-\frac{Aab\log\left(\tan^2(c+dx)+1\right)}{d}+\frac{2Aab\log(\tan(c+dx))}{d}+Ab^2x-\frac{Ba^2\log\left(\tan^2(c+dx)+1\right)}{2d}+\frac{Ba^2\log(\tan(c+dx))}{d}+2Babx\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**2*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**2*cot(c)**2, Eq(d, 0)), (-A*a**2*x -
A*a**2/(d*tan(c + d*x)) - A*a*b*log(tan(c + d*x)**2 + 1)/d + 2*A*a*b*log(ta
n(c + d*x))/d + A*b**2*x - B*a**2*log(tan(c + d*x)**2 + 1)/(2*d) + B*a**2*l
og(tan(c + d*x))/d + 2*B*a*b*x + B*b**2*log(tan(c + d*x)**2 + 1)/(2*d), Tru
e))
```

Giac [A] time = 1.41451, size = 159, normalized size = 2.21

$$-\frac{2\left(Aa^2-2\,Bab-Ab^2\right)(dx+c)+\left(Ba^2+2\,Aab-Bb^2\right)\log\left(\tan\left(dx+c\right)^2+1\right)-2\left(Ba^2+2\,Aab\right)\log\left(\left|\tan\left(dx+c\right)\right|\right)+}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(A*a^2 - 2*B*a*b - A*b^2)*(d*x + c) + (B*a^2 + 2*A*a*b - B*b^2)*log
(tan(d*x + c)^2 + 1) - 2*(B*a^2 + 2*A*a*b)*log(abs(tan(d*x + c))) + 2*(B*a^
2*tan(d*x + c) + 2*A*a*b*tan(d*x + c) + A*a^2)/tan(d*x + c))/d
```

3.245 $\int \cot^3(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=88

$$-\frac{(a^2A-2abB-Ab^2)\log(\sin(c+dx))}{d}-\frac{a^2A\cot^2(c+dx)}{2d}+x\left(b^2B-a(aB+2Ab)\right)-\frac{a(aB+2Ab)\cot(c+dx)}{d}$$

```
[Out] (b^2*B - a*(2*A*b + a*B))*x - (a*(2*A*b + a*B)*Cot[c + d*x])/d - (a^2*A*Cot
[c + d*x]^2)/(2*d) - ((a^2*A - A*b^2 - 2*a*b*B)*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.191368, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {3604, 3628, 3531, 3475}

$$-\frac{(a^2A-2abB-Ab^2)\log(\sin(c+dx))}{d}-\frac{a^2A\cot^2(c+dx)}{2d}+x\left(b^2B-a(aB+2Ab)\right)-\frac{a(aB+2Ab)\cot(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (b^2*B - a*(2*A*b + a*B))*x - (a*(2*A*b + a*B)*Cot[c + d*x])/d - (a^2*A*Cot
[c + d*x]^2)/(2*d) - ((a^2*A - A*b^2 - 2*a*b*B)*Log[Sin[c + d*x]])/d
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
```

```
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^3(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{a^2A\cot^2(c+dx)}{2d} + \int \cot^2(c+dx)\left(a(2Ab+aB)-\left(a^2A\right.\right.$$

$$= -\frac{a(2Ab+aB)\cot(c+dx)}{d} - \frac{a^2A\cot^2(c+dx)}{2d} + \int \cot(c$$

$$= \left(b^2B-a(2Ab+aB)\right)x - \frac{a(2Ab+aB)\cot(c+dx)}{d} - \frac{a^2A\,c}{}$$

$$= \left(b^2B-a(2Ab+aB)\right)x - \frac{a(2Ab+aB)\cot(c+dx)}{d} - \frac{a^2A\,c}{}$$

Mathematica [C] time = 0.344597, size = 123, normalized size = 1.4

$$\frac{-2\left(a^2A-2abB-Ab^2\right)\log(\tan(c+dx)) - a^2A\cot^2(c+dx) - 2a(aB+2Ab)\cot(c+dx) + (a-ib)^2(A-iB)\log(\tan(c}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a*(2*A*b + a*B)*Cot[c + d*x] - a^2*A*Cot[c + d*x]^2 + (a + I*b)^2*(A +
I*B)*Log[I - Tan[c + d*x]] - 2*(a^2*A - A*b^2 - 2*a*b*B)*Log[Tan[c + d*x]]
+ (a - I*b)^2*(A - I*B)*Log[I + Tan[c + d*x]])/(2*d)
```

Maple [A] time = 0.081, size = 141, normalized size = 1.6

$$\frac{Ab^2\ln(\sin(dx+c))}{d}+b^2Bx+\frac{Bb^2c}{d}-2\,Axab-2\,\frac{A\cot(dx+c)\,ab}{d}-2\,\frac{Aabc}{d}+2\,\frac{Bab\ln(\sin(dx+c))}{d}-\frac{a^2A(\cot(dx+}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/d*A*b^2*ln(sin(d*x+c))+b^2*B*x+1/d*B*b^2*c-2*A*x*a*b-2/d*A*cot(d*x+c)*a*b
-2/d*A*a*b*c+2/d*B*a*b*ln(sin(d*x+c))-1/2*a^2*A*cot(d*x+c)^2/d-a^2*A*ln(sin
(d*x+c))/d-a^2*B*x-1/d*B*cot(d*x+c)*a^2-1/d*B*a^2*c
```

Maxima [A] time = 1.50988, size = 162, normalized size = 1.84

$$-\frac{2\left(Ba^2+2\,Aab-Bb^2\right)(dx+c)-\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)+2\left(Aa^2-2\,Bab-Ab^2\right)\log(\tan(dx+c)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(B*a^2 + 2*A*a*b - B*b^2)*(d*x + c) - (A*a^2 - 2*B*a*b - A*b^2)*log
(tan(d*x + c)^2 + 1) + 2*(A*a^2 - 2*B*a*b - A*b^2)*log(tan(d*x + c)) + (A*a
^2 + 2*(B*a^2 + 2*A*a*b)*tan(d*x + c))/tan(d*x + c)^2)/d
```

Fricas [A] time = 1.96709, size = 285, normalized size = 3.24

$$-\frac{\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^2+Aa^2+\left(Aa^2+2\left(Ba^2+2\,Aab-Bb^2\right)dx\right)\tan(dx+c)^2+2\left(Ba^2\right.}{2\,d\tan(dx+c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/2*((A*a^2 - 2*B*a*b - A*b^2)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*ta
n(d*x + c)^2 + A*a^2 + (A*a^2 + 2*(B*a^2 + 2*A*a*b - B*b^2)*d*x)*tan(d*x +
c)^2 + 2*(B*a^2 + 2*A*a*b)*tan(d*x + c))/(d*tan(d*x + c)^2)
```

Sympy [A] time = 4.77574, size = 214, normalized size = 2.43

$$\begin{cases} \tilde{\infty} A a^2 x \\ x (A + B\tan(c)) (a + b\tan(c))^2 \cot^3(c) \\ \frac{Aa^2 \log(\tan^2(c+dx)+1)}{2d} - \frac{Aa^2 \log(\tan(c+dx))}{d} - \frac{Aa^2}{2d\tan^2(c+dx)} - 2Aabx - \frac{2Aab}{d\tan(c+dx)} - \frac{Ab^2 \log(\tan^2(c+dx)+1)}{2d} + \frac{Ab^2 \log(\tan(c+dx))}{d} - \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**2*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**2*cot(c)**3, Eq(d, 0)), (A*a**2*log(t
an(c + d*x)**2 + 1)/(2*d) - A*a**2*log(tan(c + d*x))/d - A*a**2/(2*d*tan(c
+ d*x)**2) - 2*A*a*b*x - 2*A*a*b/(d*tan(c + d*x)) - A*b**2*log(tan(c + d*x)
**2 + 1)/(2*d) + A*b**2*log(tan(c + d*x))/d - B*a**2*x - B*a**2/(d*tan(c +
d*x)) - B*a*b*log(tan(c + d*x)**2 + 1)/d + 2*B*a*b*log(tan(c + d*x))/d + B*
b**2*x, True))
```

Giac [B] time = 1.47828, size = 320, normalized size = 3.64

$$-\frac{Aa^2 \tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^2 - 4Ba^2 \tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) - 8Aab\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) + 8\left(Ba^2 + 2Aab - Bb^2\right)(dx + c) - 8\left(Aa^2 - 2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/8*(A*a^2*tan(1/2*d*x + 1/2*c)^2 - 4*B*a^2*tan(1/2*d*x + 1/2*c) - 8*A*a*b
*tan(1/2*d*x + 1/2*c) + 8*(B*a^2 + 2*A*a*b - B*b^2)*(d*x + c) - 8*(A*a^2 -
2*B*a*b - A*b^2)*log(tan(1/2*d*x + 1/2*c)^2 + 1) + 8*(A*a^2 - 2*B*a*b - A*b
^2)*log(abs(tan(1/2*d*x + 1/2*c))) - (12*A*a^2*tan(1/2*d*x + 1/2*c)^2 - 24*
B*a*b*tan(1/2*d*x + 1/2*c)^2 - 12*A*b^2*tan(1/2*d*x + 1/2*c)^2 - 4*B*a^2*ta
```

```
n(1/2*d*x + 1/2*c) - 8*A*a*b*tan(1/2*d*x + 1/2*c) - A*a^2)/tan(1/2*d*x + 1/
2*c)^2)/d
```

3.246 $\int \cot^4(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=118

$$\frac{(a^2A-2abB-Ab^2)\cot(c+dx)}{d}+x\left(a^2A-2abB-Ab^2\right)-\frac{a^2A\cot^3(c+dx)}{3d}+\frac{\left(b^2B-a(aB+2Ab)\right)\log(\sin(c+dx))}{d}$$

```
[Out] (a^2*A - A*b^2 - 2*a*b*B)*x + ((a^2*A - A*b^2 - 2*a*b*B)*Cot[c + d*x])/d -
(a*(2*A*b + a*B)*Cot[c + d*x]^2)/(2*d) - (a^2*A*Cot[c + d*x]^3)/(3*d) + ((b
^2*B - a*(2*A*b + a*B))*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.242897, antiderivative size = 118, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3604, 3628, 3529, 3531, 3475}

$$\frac{(a^2A-2abB-Ab^2)\cot(c+dx)}{d}+x\left(a^2A-2abB-Ab^2\right)-\frac{a^2A\cot^3(c+dx)}{3d}+\frac{\left(b^2B-a(aB+2Ab)\right)\log(\sin(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^2*A - A*b^2 - 2*a*b*B)*x + ((a^2*A - A*b^2 - 2*a*b*B)*Cot[c + d*x])/d -
(a*(2*A*b + a*B)*Cot[c + d*x]^2)/(2*d) - (a^2*A*Cot[c + d*x]^3)/(3*d) + ((b
^2*B - a*(2*A*b + a*B))*Log[Sin[c + d*x]])/d
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
```

```
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{a^2A\cot^3(c+dx)}{3d}+\int \cot^3(c+dx)\left(a(2Ab+aB)-\left(a^2A\right.\right.$$
$$= -\frac{a(2Ab+aB)\cot^2(c+dx)}{2d}-\frac{a^2A\cot^3(c+dx)}{3d}+\int \cot^2(c$$
$$= \frac{\left(a^2A-Ab^2-2abB\right)\cot(c+dx)}{d}-\frac{a(2Ab+aB)\cot^2(c+dx}{2d}$$
$$= \left(a^2A-Ab^2-2abB\right)x+\frac{\left(a^2A-Ab^2-2abB\right)\cot(c+dx)}{d}-$$
$$= \left(a^2A-Ab^2-2abB\right)x+\frac{\left(a^2A-Ab^2-2abB\right)\cot(c+dx)}{d}-$$

Mathematica [C] time = 1.38635, size = 152, normalized size = 1.29

$$\frac{6\left(a^2A-2abB-Ab^2\right)\cot(c+dx)-6\left(a^2B+2aAb-b^2B\right)\log(\tan(c+dx))-2a^2A\cot^3(c+dx)-3a(aB+2Ab)\cot^2(c+dx)}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (6*(a^2*A - A*b^2 - 2*a*b*B)*Cot[c + d*x] - 3*a*(2*A*b + a*B)*Cot[c + d*x]^
2 - 2*a^2*A*Cot[c + d*x]^3 + 3*(a + I*b)^2*((-I)*A + B)*Log[I - Tan[c + d*x
]] - 6*(2*a*A*b + a^2*B - b^2*B)*Log[Tan[c + d*x]] + 3*(a - I*b)^2*(I*A + B
)*Log[I + Tan[c + d*x]])/(6*d)
```

Maple [A] time = 0.072, size = 188, normalized size = 1.6

$$-Ab^2x-\frac{A\cot(dx+c)\,b^2}{d}-\frac{Ab^2c}{d}+\frac{b^2B\ln(\sin(dx+c))}{d}-\frac{Aab(\cot(dx+c))^2}{d}-2\,\frac{Aab\ln(\sin(dx+c))}{d}-2\,Babx-2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*b^2*x-1/d*A*cot(d*x+c)*b^2-1/d*A*b^2*c+1/d*b^2*B*ln(sin(d*x+c))-1/d*A*a*
b*cot(d*x+c)^2-2/d*A*a*b*ln(sin(d*x+c))-2*B*a*b*x-2/d*B*cot(d*x+c)*a*b-2/d*
B*a*b*c-1/3*a^2*A*cot(d*x+c)^3/d+a^2*A*cot(d*x+c)/d+a^2*A*x+1/d*A*a^2*c-1/2
/d*a^2*B*cot(d*x+c)^2-1/d*a^2*B*ln(sin(d*x+c))
```

Maxima [A] time = 1.46717, size = 201, normalized size = 1.7

$$\frac{6\left(Aa^2-2\,Bab-Ab^2\right)(dx+c)+3\left(Ba^2+2\,Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)-6\left(Ba^2+2\,Aab-Bb^2\right)\log(\tan(dx+}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

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

Fricas [A] time = 2.03331, size = 367, normalized size = 3.11

$$-\frac{3\left(Ba^2+2\,Aab-Bb^2\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^3+3\left(Ba^2+2\,Aab-2\left(Aa^2-2\,Bab-Ab^2\right)dx\right)\tan\left(dx+c\right)^3+2\,A}{6\,d\tan\left(dx+c\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

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

Sympy [A] time = 7.87257, size = 260, normalized size = 2.2

$$\begin{cases} \tilde{\infty} Aa^2x \\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right)^2\cot^4\left(c\right) \\ Aa^2x+\frac{Aa^2}{d\tan\left(c+dx\right)}-\frac{Aa^2}{3d\tan^3\left(c+dx\right)}+\frac{Aab\log\left(\tan^2\left(c+dx\right)+1\right)}{d}-\frac{2Aab\log\left(\tan\left(c+dx\right)\right)}{d}-\frac{Aab}{d\tan^2\left(c+dx\right)}-Ab^2x-\frac{Ab^2}{d\tan\left(c+dx\right)}+\frac{Ba^2\log\left(\mathrm{ta}\right.}{} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**2*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**2*cot(c)**4, Eq(d, 0)), (A*a**2*x + A
*a**2/(d*tan(c + d*x)) - A*a**2/(3*d*tan(c + d*x)**3) + A*a*b*log(tan(c + d
*x)**2 + 1)/d - 2*A*a*b*log(tan(c + d*x))/d - A*a*b/(d*tan(c + d*x)**2) - A
*b**2*x - A*b**2/(d*tan(c + d*x)) + B*a**2*log(tan(c + d*x)**2 + 1)/(2*d) -
 B*a**2*log(tan(c + d*x))/d - B*a**2/(2*d*tan(c + d*x)**2) - 2*B*a*b*x - 2*
B*a*b/(d*tan(c + d*x)) - B*b**2*log(tan(c + d*x)**2 + 1)/(2*d) + B*b**2*log
```

```
(tan(c + d*x))/d, True))
```

Giac [B] time = 1.49365, size = 451, normalized size = 3.82

$$\frac{Aa^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^3-3Ba^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-6Aab\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-15Aa^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+24Bab\tan\left(\frac{1}{2}dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/24*(A*a^2*tan(1/2*d*x + 1/2*c)^3 - 3*B*a^2*tan(1/2*d*x + 1/2*c)^2 - 6*A*a
*b*tan(1/2*d*x + 1/2*c)^2 - 15*A*a^2*tan(1/2*d*x + 1/2*c) + 24*B*a*b*tan(1/
2*d*x + 1/2*c) + 12*A*b^2*tan(1/2*d*x + 1/2*c) + 24*(A*a^2 - 2*B*a*b - A*b^
2)*(d*x + c) + 24*(B*a^2 + 2*A*a*b - B*b^2)*log(tan(1/2*d*x + 1/2*c)^2 + 1)
 - 24*(B*a^2 + 2*A*a*b - B*b^2)*log(abs(tan(1/2*d*x + 1/2*c))) + (44*B*a^2*
tan(1/2*d*x + 1/2*c)^3 + 88*A*a*b*tan(1/2*d*x + 1/2*c)^3 - 44*B*b^2*tan(1/2
*d*x + 1/2*c)^3 + 15*A*a^2*tan(1/2*d*x + 1/2*c)^2 - 24*B*a*b*tan(1/2*d*x +
1/2*c)^2 - 12*A*b^2*tan(1/2*d*x + 1/2*c)^2 - 3*B*a^2*tan(1/2*d*x + 1/2*c) -
 6*A*a*b*tan(1/2*d*x + 1/2*c) - A*a^2)/tan(1/2*d*x + 1/2*c)^3)/d
```

3.247 $\int \cot^5(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=151

$$\frac{(a^2A-2abB-Ab^2)\cot^2(c+dx)}{2d}+\frac{(a^2A-2abB-Ab^2)\log(\sin(c+dx))}{d}+x\left(a^2B+2aAb-b^2B\right)-\frac{a^2A\cot^4(c+dx)}{4d}-$$

```
[Out] (2*a*A*b + a^2*B - b^2*B)*x - ((b^2*B - a*(2*A*b + a*B))*Cot[c + d*x])/d +
((a^2*A - A*b^2 - 2*a*b*B)*Cot[c + d*x]^2)/(2*d) - (a*(2*A*b + a*B)*Cot[c +
 d*x]^3)/(3*d) - (a^2*A*Cot[c + d*x]^4)/(4*d) + ((a^2*A - A*b^2 - 2*a*b*B)*
Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.300629, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3604, 3628, 3529, 3531, 3475}

$$\frac{(a^2A-2abB-Ab^2)\cot^2(c+dx)}{2d}+\frac{(a^2A-2abB-Ab^2)\log(\sin(c+dx))}{d}+x\left(a^2B+2aAb-b^2B\right)-\frac{a^2A\cot^4(c+dx)}{4d}-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*a*A*b + a^2*B - b^2*B)*x - ((b^2*B - a*(2*A*b + a*B))*Cot[c + d*x])/d +
((a^2*A - A*b^2 - 2*a*b*B)*Cot[c + d*x]^2)/(2*d) - (a*(2*A*b + a*B)*Cot[c +
 d*x]^3)/(3*d) - (a^2*A*Cot[c + d*x]^4)/(4*d) + ((a^2*A - A*b^2 - 2*a*b*B)*
Log[Sin[c + d*x]])/d
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^5(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = -\frac{a^2A\cot^4(c+dx)}{4d} + \int \cot^4(c+dx)\left(a(2Ab+aB) - \left(a^2A\right.\right.$$

$$= -\frac{a(2Ab+aB)\cot^3(c+dx)}{3d} - \frac{a^2A\cot^4(c+dx)}{4d} + \int \cot^3(c$$

$$= \frac{\left(a^2A - Ab^2 - 2abB\right)\cot^2(c+dx)}{2d} - \frac{a(2Ab+aB)\cot^3(c+d}{3d}$$

$$= -\frac{\left(b^2B - a(2Ab+aB)\right)\cot(c+dx)}{d} + \frac{\left(a^2A - Ab^2 - 2abB\right)c}{2d}$$

$$= \left(2aAb + a^2B - b^2B\right)x - \frac{\left(b^2B - a(2Ab+aB)\right)\cot(c+dx)}{d} +$$

$$= \left(2aAb + a^2B - b^2B\right)x - \frac{\left(b^2B - a(2Ab+aB)\right)\cot(c+dx)}{d} +$$

Mathematica [C] time = 3.03804, size = 180, normalized size = 1.19

$$\frac{6\left(a^2A - 2abB - Ab^2\right)\cot^2(c+dx) + 12\left(a^2B + 2aAb - b^2B\right)\cot(c+dx) - 6\left(\left(-2a^2A + 4abB + 2Ab^2\right)\log(\tan(c+dx))\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (12*(2*a*A*b + a^2*B - b^2*B)*Cot[c + d*x] + 6*(a^2*A - A*b^2 - 2*a*b*B)*Co
t[c + d*x]^2 - 4*a*(2*A*b + a*B)*Cot[c + d*x]^3 - 3*a^2*A*Cot[c + d*x]^4 -
6*((a + I*b)^2*(A + I*B)*Log[I - Tan[c + d*x]] + (-2*a^2*A + 2*A*b^2 + 4*a*
b*B)*Log[Tan[c + d*x]] + (a - I*b)^2*(A - I*B)*Log[I + Tan[c + d*x]]))/(12*
d)
```

Maple [A] time = 0.076, size = 238, normalized size = 1.6

$$-\frac{Ab^2(\cot(dx+c))^2}{2d} - \frac{Ab^2\ln(\sin(dx+c))}{d} - b^2Bx - \frac{B\cot(dx+c)b^2}{d} - \frac{Bb^2c}{d} - \frac{2Aab(\cot(dx+c))^3}{3d} + 2\frac{A\cot(dx+c}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*A*b^2*cot(d*x+c)^2-1/d*A*b^2*ln(sin(d*x+c))-b^2*B*x-1/d*B*cot(d*x+c)
*b^2-1/d*B*b^2*c-2/3/d*A*a*b*cot(d*x+c)^3+2/d*A*cot(d*x+c)*a*b+2*A*x*a*b+2/
d*A*a*b*c-1/d*B*a*b*cot(d*x+c)^2-2/d*B*a*b*ln(sin(d*x+c))-1/4*a^2*A*cot(d*x
+c)^4/d+1/2*a^2*A*cot(d*x+c)^2/d+a^2*A*ln(sin(d*x+c))/d-1/3/d*a^2*B*cot(d*x
+c)^3+1/d*B*cot(d*x+c)*a^2+a^2*B*x+1/d*B*a^2*c
```

Maxima [A] time = 1.52148, size = 236, normalized size = 1.56

$$\frac{12\left(Ba^2+2\,Aab-Bb^2\right)(dx+c)-6\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\tan\left(dx+c\right)^2+1\right)+12\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\tan\left(dx\right.\right.}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/12*(12*(B*a^2 + 2*A*a*b - B*b^2)*(d*x + c) - 6*(A*a^2 - 2*B*a*b - A*b^2)*
log(tan(d*x + c)^2 + 1) + 12*(A*a^2 - 2*B*a*b - A*b^2)*log(tan(d*x + c)) +
(12*(B*a^2 + 2*A*a*b - B*b^2)*tan(d*x + c)^3 - 3*A*a^2 + 6*(A*a^2 - 2*B*a*b
 - A*b^2)*tan(d*x + c)^2 - 4*(B*a^2 + 2*A*a*b)*tan(d*x + c))/tan(d*x + c)^4
)/d
```

Fricas [A] time = 2.00081, size = 446, normalized size = 2.95

$$\frac{6\left(Aa^2-2\,Bab-Ab^2\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^4+3\left(3\,Aa^2-4\,Bab-2\,Ab^2+4\left(Ba^2+2\,Aab-Bb^2\right)dx\right)\tan\left(dx\right.}{12\,d\,\mathrm{ta}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/12*(6*(A*a^2 - 2*B*a*b - A*b^2)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*
tan(d*x + c)^4 + 3*(3*A*a^2 - 4*B*a*b - 2*A*b^2 + 4*(B*a^2 + 2*A*a*b - B*b^
2)*d*x)*tan(d*x + c)^4 + 12*(B*a^2 + 2*A*a*b - B*b^2)*tan(d*x + c)^3 - 3*A*
a^2 + 6*(A*a^2 - 2*B*a*b - A*b^2)*tan(d*x + c)^2 - 4*(B*a^2 + 2*A*a*b)*tan(
d*x + c))/(d*tan(d*x + c)^4)
```

Sympy [A] time = 14.483, size = 313, normalized size = 2.07

$$\begin{cases} \tilde{\infty} A a^2 x \\ x (A + B \tan(c)) (a + b \tan(c))^2 \cot^5(c) \\ -\frac{A a^2 \log(\tan^2(c+dx)+1)}{2d} + \frac{A a^2 \log(\tan(c+dx))}{d} + \frac{A a^2}{2d \tan^2(c+dx)} - \frac{A a^2}{4d \tan^4(c+dx)} + 2Aabx + \frac{2Aab}{d \tan(c+dx)} - \frac{2Aab}{3d \tan^3(c+dx)} + \frac{A b^2 \log(\tan^2(}{2d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**2*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**2*cot(c)**5, Eq(d, 0)), (-A*a**2*log(
tan(c + d*x)**2 + 1)/(2*d) + A*a**2*log(tan(c + d*x))/d + A*a**2/(2*d*tan(c
 + d*x)**2) - A*a**2/(4*d*tan(c + d*x)**4) + 2*A*a*b*x + 2*A*a*b/(d*tan(c +
 d*x)) - 2*A*a*b/(3*d*tan(c + d*x)**3) + A*b**2*log(tan(c + d*x)**2 + 1)/(2
*d) - A*b**2*log(tan(c + d*x))/d - A*b**2/(2*d*tan(c + d*x)**2) + B*a**2*x
+ B*a**2/(d*tan(c + d*x)) - B*a**2/(3*d*tan(c + d*x)**3) + B*a*b*log(tan(c
+ d*x)**2 + 1)/d - 2*B*a*b*log(tan(c + d*x))/d - B*a*b/(d*tan(c + d*x)**2)
- B*b**2*x - B*b**2/(d*tan(c + d*x)), True))
```

Giac [B] time = 1.53174, size = 587, normalized size = 3.89

$$-\frac{3\,Aa^2 \tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^4 - 8\,Ba^2 \tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^3 - 16\,Aab \tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^3 - 36\,Aa^2 \tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^2 + 48\,Bab \tan\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/192*(3*A*a^2*tan(1/2*d*x + 1/2*c)^4 - 8*B*a^2*tan(1/2*d*x + 1/2*c)^3 - 1
6*A*a*b*tan(1/2*d*x + 1/2*c)^3 - 36*A*a^2*tan(1/2*d*x + 1/2*c)^2 + 48*B*a*b
*tan(1/2*d*x + 1/2*c)^2 + 24*A*b^2*tan(1/2*d*x + 1/2*c)^2 + 120*B*a^2*tan(1
/2*d*x + 1/2*c) + 240*A*a*b*tan(1/2*d*x + 1/2*c) - 96*B*b^2*tan(1/2*d*x + 1
/2*c) - 192*(B*a^2 + 2*A*a*b - B*b^2)*(d*x + c) + 192*(A*a^2 - 2*B*a*b - A*
b^2)*log(tan(1/2*d*x + 1/2*c)^2 + 1) - 192*(A*a^2 - 2*B*a*b - A*b^2)*log(ab
s(tan(1/2*d*x + 1/2*c))) + (400*A*a^2*tan(1/2*d*x + 1/2*c)^4 - 800*B*a*b*ta
```

```
n(1/2*d*x + 1/2*c)^4 - 400*A*b^2*tan(1/2*d*x + 1/2*c)^4 - 120*B*a^2*tan(1/2
*d*x + 1/2*c)^3 - 240*A*a*b*tan(1/2*d*x + 1/2*c)^3 + 96*B*b^2*tan(1/2*d*x +
 1/2*c)^3 - 36*A*a^2*tan(1/2*d*x + 1/2*c)^2 + 48*B*a*b*tan(1/2*d*x + 1/2*c)
^2 + 24*A*b^2*tan(1/2*d*x + 1/2*c)^2 + 8*B*a^2*tan(1/2*d*x + 1/2*c) + 16*A*
a*b*tan(1/2*d*x + 1/2*c) + 3*A*a^2)/tan(1/2*d*x + 1/2*c)^4)/d
```

3.248 $\int \tan^2(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=201

$$-\frac{b\left(a^2B+2aAb-b^2B\right)\tan(c+dx)}{d}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\cos(c+dx))}{d}-x\left(a^3A-3a^2bB-3aAb^2+b^3B\right)$$

```
[Out] -((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x) + ((3*a^2*A*b - A*b^3 + a^3*B
- 3*a*b^2*B)*Log[Cos[c + d*x]])/d - (b*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*
x])/d - ((A*b + a*B)*(a + b*Tan[c + d*x])^2)/(2*d) - (B*(a + b*Tan[c + d*x]
)^3)/(3*d) + ((5*A*b - a*B)*(a + b*Tan[c + d*x])^4)/(20*b^2*d) + (B*Tan[c +
 d*x]*(a + b*Tan[c + d*x])^4)/(5*b*d)
```

Rubi [A] time = 0.369349, antiderivative size = 201, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3607, 3630, 3528, 3525, 3475}

$$-\frac{b\left(a^2B+2aAb-b^2B\right)\tan(c+dx)}{d}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\cos(c+dx))}{d}-x\left(a^3A-3a^2bB-3aAb^2+b^3B\right)$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x) + ((3*a^2*A*b - A*b^3 + a^3*B
- 3*a*b^2*B)*Log[Cos[c + d*x]])/d - (b*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*
x])/d - ((A*b + a*B)*(a + b*Tan[c + d*x])^2)/(2*d) - (B*(a + b*Tan[c + d*x]
)^3)/(3*d) + ((5*A*b - a*B)*(a + b*Tan[c + d*x])^4)/(20*b^2*d) + (B*Tan[c +
 d*x]*(a + b*Tan[c + d*x])^4)/(5*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
```

```
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{B\tan(c+dx)(a+b\tan(c+dx))^4}{5bd} + \frac{\int(a+b\tan(c+dx))^3 \ldots}{\ldots}$$
$$= \frac{(5Ab-aB)(a+b\tan(c+dx))^4}{20b^2d} + \frac{B\tan(c+dx)(a+b\tan(\ldots}{5bd}$$
$$= -\frac{B(a+b\tan(c+dx))^3}{3d} + \frac{(5Ab-aB)(a+b\tan(c+dx))^4}{20b^2d} \ldots$$
$$= -\frac{(Ab+aB)(a+b\tan(c+dx))^2}{2d} - \frac{B(a+b\tan(c+dx))^3}{3d} + \ldots$$
$$= -\left(a^3A-3aAb^2-3a^2bB+b^3B\right)x - \frac{b\left(2aAb+a^2B-b^2B\right)\ldots}{d}$$
$$= -\left(a^3A-3aAb^2-3a^2bB+b^3B\right)x + \frac{\left(3a^2Ab-Ab^3+a^3B-\ldots\right.}{\ldots}$$

Mathematica [C] time = 2.06747, size = 241, normalized size = 1.2

$$\frac{10B\left(6b^2\left(b^2-6a^2\right)\tan(c+dx)-12ab^3\tan^2(c+dx)-3i(a-ib)^4\log(\tan(c+dx)+i)+3i(a+ib)^4\log(-\tan(c+dx)+\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((3*(5*A*b - a*B)*(a + b*Tan[c + d*x])^4)/b + 12*B*Tan[c + d*x]*(a + b*Tan[
c + d*x])^4 - 30*(A*b - a*B)*((I*a - b)^3*Log[I - Tan[c + d*x]] - (I*a + b)
^3*Log[I + Tan[c + d*x]] + 6*a*b^2*Tan[c + d*x] + b^3*Tan[c + d*x]^2) + 10*
B*((3*I)*(a + I*b)^4*Log[I - Tan[c + d*x]] - (3*I)*(a - I*b)^4*Log[I + Tan[
c + d*x]] + 6*b^2*(-6*a^2 + b^2)*Tan[c + d*x] - 12*a*b^3*Tan[c + d*x]^2 - 2
*b^4*Tan[c + d*x]^3))/(60*b*d)
```

Maple [A] time = 0.014, size = 383, normalized size = 1.9

$$\frac{Bb^3(\tan(dx+c))^5}{5d} + \frac{A(\tan(dx+c))^4b^3}{4d} + \frac{3B(\tan(dx+c))^4ab^2}{4d} + \frac{A(\tan(dx+c))^3ab^2}{d} + \frac{B(\tan(dx+c))^3a^2b}{d} - \frac{B\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/5/d*B*b^3*tan(d*x+c)^5+1/4/d*A*tan(d*x+c)^4*b^3+3/4/d*B*tan(d*x+c)^4*a*b^
2+1/d*A*tan(d*x+c)^3*a*b^2+1/d*B*tan(d*x+c)^3*a^2*b-1/3/d*B*tan(d*x+c)^3*b^
3+3/2/d*A*tan(d*x+c)^2*a^2*b-1/2/d*A*tan(d*x+c)^2*b^3+1/2/d*a^3*B*tan(d*x+c
)^2-3/2/d*B*tan(d*x+c)^2*a*b^2+1/d*a^3*A*tan(d*x+c)-3/d*A*a*b^2*tan(d*x+c)-
3/d*B*a^2*b*tan(d*x+c)+1/d*B*b^3*tan(d*x+c)-3/2/d*ln(1+tan(d*x+c)^2)*A*a^2*
b+1/2/d*ln(1+tan(d*x+c)^2)*A*b^3-1/2/d*a^3*B*ln(1+tan(d*x+c)^2)+3/2/d*ln(1+
tan(d*x+c)^2)*B*a*b^2-1/d*a^3*A*arctan(tan(d*x+c))+3/d*A*arctan(tan(d*x+c))
*a*b^2+3/d*B*arctan(tan(d*x+c))*a^2*b-1/d*B*arctan(tan(d*x+c))*b^3
```

Maxima [A] time = 1.5374, size = 289, normalized size = 1.44

$$\frac{12\,Bb^3\tan\left(dx+c\right)^5+15\left(3\,Bab^2+Ab^3\right)\tan\left(dx+c\right)^4+20\left(3\,Ba^2b+3\,Aab^2-Bb^3\right)\tan\left(dx+c\right)^3+30\left(Ba^3+3\,Aa^2b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/60*(12*B*b^3*tan(d*x + c)^5 + 15*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^4 + 20*
(3*B*a^2*b + 3*A*a*b^2 - B*b^3)*tan(d*x + c)^3 + 30*(B*a^3 + 3*A*a^2*b - 3*
B*a*b^2 - A*b^3)*tan(d*x + c)^2 - 60*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3
)*(d*x + c) - 30*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*log(tan(d*x + c)^2
 + 1) + 60*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*tan(d*x + c))/d
```

Fricas [A] time = 2.08538, size = 494, normalized size = 2.46

$$\frac{12\,Bb^3\tan\left(dx+c\right)^5+15\left(3\,Bab^2+Ab^3\right)\tan\left(dx+c\right)^4+20\left(3\,Ba^2b+3\,Aab^2-Bb^3\right)\tan\left(dx+c\right)^3-60\left(Aa^3-3\,Ba^2b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/60*(12*B*b^3*tan(d*x + c)^5 + 15*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^4 + 20*
(3*B*a^2*b + 3*A*a*b^2 - B*b^3)*tan(d*x + c)^3 - 60*(A*a^3 - 3*B*a^2*b - 3*
A*a*b^2 + B*b^3)*d*x + 30*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*tan(d*x +
 c)^2 + 30*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*log(1/(tan(d*x + c)^2 +
```

```
1)) + 60*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*tan(d*x + c))/d
```

Sympy [A] time = 1.09906, size = 384, normalized size = 1.91

$$\begin{cases} -Aa^3x + \frac{Aa^3\tan(c+dx)}{d} - \frac{3Aa^2b\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{3Aa^2b\tan^2(c+dx)}{2d} + 3Aab^2x + \frac{Aab^2\tan^3(c+dx)}{d} - \frac{3Aab^2\tan(c+dx)}{d} + \frac{Ab^3\log\left(\tan\right.}{2d} \\ x\left(A+B\tan(c)\right)\left(a+b\tan(c)\right)^3\tan^2(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a**3*x + A*a**3*tan(c + d*x)/d - 3*A*a**2*b*log(tan(c + d*x)*
*2 + 1)/(2*d) + 3*A*a**2*b*tan(c + d*x)**2/(2*d) + 3*A*a*b**2*x + A*a*b**2*
tan(c + d*x)**3/d - 3*A*a*b**2*tan(c + d*x)/d + A*b**3*log(tan(c + d*x)**2
+ 1)/(2*d) + A*b**3*tan(c + d*x)**4/(4*d) - A*b**3*tan(c + d*x)**2/(2*d) -
B*a**3*log(tan(c + d*x)**2 + 1)/(2*d) + B*a**3*tan(c + d*x)**2/(2*d) + 3*B*
a**2*b*x + B*a**2*b*tan(c + d*x)**3/d - 3*B*a**2*b*tan(c + d*x)/d + 3*B*a*b
**2*log(tan(c + d*x)**2 + 1)/(2*d) + 3*B*a*b**2*tan(c + d*x)**4/(4*d) - 3*B
*a*b**2*tan(c + d*x)**2/(2*d) - B*b**3*x + B*b**3*tan(c + d*x)**5/(5*d) - B
*b**3*tan(c + d*x)**3/(3*d) + B*b**3*tan(c + d*x)/d, Ne(d, 0)), (x*(A + B*t
an(c))*(a + b*tan(c))**3*tan(c)**2, True))
```

Giac [B] time = 9.77069, size = 5396, normalized size = 26.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/60*(60*A*a^3*d*x*tan(d*x)^5*tan(c)^5 - 180*B*a^2*b*d*x*tan(d*x)^5*tan(c)
^5 - 180*A*a*b^2*d*x*tan(d*x)^5*tan(c)^5 + 60*B*b^3*d*x*tan(d*x)^5*tan(c)^5
 - 30*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*ta
n(c)^5 - 90*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^
3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d
*x)^5*tan(c)^5 + 90*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
```

))*tan(d*x)^5*tan(c)^5 + 30*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1))*tan(d*x)^5*tan(c)^5 - 300*A*a^3*d*x*tan(d*x)^4*tan(c)^4 + 900*B*a^
2*b*d*x*tan(d*x)^4*tan(c)^4 + 900*A*a*b^2*d*x*tan(d*x)^4*tan(c)^4 - 300*B*b
^3*d*x*tan(d*x)^4*tan(c)^4 - 30*B*a^3*tan(d*x)^5*tan(c)^5 - 90*A*a^2*b*tan(
d*x)^5*tan(c)^5 + 135*B*a*b^2*tan(d*x)^5*tan(c)^5 + 45*A*b^3*tan(d*x)^5*tan
(c)^5 + 150*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*
tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x
)^4*tan(c)^4 + 450*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*ta
n(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)
)*tan(d*x)^4*tan(c)^4 - 450*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)
^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*ta
n(c) + 1))*tan(d*x)^4*tan(c)^4 - 150*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4
*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(
d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 + 60*A*a^3*tan(d*x)^5*tan(c)^4 - 180*
B*a^2*b*tan(d*x)^5*tan(c)^4 - 180*A*a*b^2*tan(d*x)^5*tan(c)^4 + 60*B*b^3*ta
n(d*x)^5*tan(c)^4 + 60*A*a^3*tan(d*x)^4*tan(c)^5 - 180*B*a^2*b*tan(d*x)^4*t
an(c)^5 - 180*A*a*b^2*tan(d*x)^4*tan(c)^5 + 60*B*b^3*tan(d*x)^4*tan(c)^5 +
600*A*a^3*d*x*tan(d*x)^3*tan(c)^3 - 1800*B*a^2*b*d*x*tan(d*x)^3*tan(c)^3 -
1800*A*a*b^2*d*x*tan(d*x)^3*tan(c)^3 + 600*B*b^3*d*x*tan(d*x)^3*tan(c)^3 -
30*B*a^3*tan(d*x)^5*tan(c)^3 - 90*A*a^2*b*tan(d*x)^5*tan(c)^3 + 90*B*a*b^2*
tan(d*x)^5*tan(c)^3 + 30*A*b^3*tan(d*x)^5*tan(c)^3 + 90*B*a^3*tan(d*x)^4*ta
n(c)^4 + 270*A*a^2*b*tan(d*x)^4*tan(c)^4 - 495*B*a*b^2*tan(d*x)^4*tan(c)^4
 - 165*A*b^3*tan(d*x)^4*tan(c)^4 - 30*B*a^3*tan(d*x)^3*tan(c)^5 - 90*A*a^2*b
*tan(d*x)^3*tan(c)^5 + 90*B*a*b^2*tan(d*x)^3*tan(c)^5 + 30*A*b^3*tan(d*x)^3
*tan(c)^5 + 60*B*a^2*b*tan(d*x)^5*tan(c)^2 + 60*A*a*b^2*tan(d*x)^5*tan(c)^2
 - 20*B*b^3*tan(d*x)^5*tan(c)^2 - 300*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^
4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan
(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 900*A*a^2*b*log(4*(tan(c)^2 + 1)/(
tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^
2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 900*B*a*b^2*log(4*(tan(c)
^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 +
tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 300*A*b^3*log(4*
(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(
c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 240*A*a^3
*tan(d*x)^4*tan(c)^3 + 900*B*a^2*b*tan(d*x)^4*tan(c)^3 + 900*A*a*b^2*tan(d*
x)^4*tan(c)^3 - 300*B*b^3*tan(d*x)^4*tan(c)^3 - 240*A*a^3*tan(d*x)^3*tan(c)
^4 + 900*B*a^2*b*tan(d*x)^3*tan(c)^4 + 900*A*a*b^2*tan(d*x)^3*tan(c)^4 - 30
0*B*b^3*tan(d*x)^3*tan(c)^4 + 60*B*a^2*b*tan(d*x)^2*tan(c)^5 + 60*A*a*b^2*t
an(d*x)^2*tan(c)^5 - 20*B*b^3*tan(d*x)^2*tan(c)^5 - 45*B*a*b^2*tan(d*x)^5*t
an(c) - 15*A*b^3*tan(d*x)^5*tan(c) - 600*A*a^3*d*x*tan(d*x)^2*tan(c)^2 + 18
00*B*a^2*b*d*x*tan(d*x)^2*tan(c)^2 + 1800*A*a*b^2*d*x*tan(d*x)^2*tan(c)^2 -
 600*B*b^3*d*x*tan(d*x)^2*tan(c)^2 + 90*B*a^3*tan(d*x)^4*tan(c)^2 + 270*A*a
^2*b*tan(d*x)^4*tan(c)^2 - 450*B*a*b^2*tan(d*x)^4*tan(c)^2 - 150*A*b^3*tan(
d*x)^4*tan(c)^2 - 120*B*a^3*tan(d*x)^3*tan(c)^3 - 360*A*a^2*b*tan(d*x)^3*ta

n(c)^3 + 540*B*a*b^2*tan(d*x)^3*tan(c)^3 + 180*A*b^3*tan(d*x)^3*tan(c)^3 + 90*B*a^3*tan(d*x)^2*tan(c)^4 + 270*A*a^2*b*tan(d*x)^2*tan(c)^4 - 450*B*a*b^2*tan(d*x)^2*tan(c)^4 - 150*A*b^3*tan(d*x)^2*tan(c)^4 - 45*B*a*b^2*tan(d*x)*tan(c)^5 - 15*A*b^3*tan(d*x)*tan(c)^5 + 12*B*b^3*tan(d*x)^5 - 120*B*a^2*b*tan(d*x)^4*tan(c) - 120*A*a*b^2*tan(d*x)^4*tan(c) + 100*B*b^3*tan(d*x)^4*tan(c) + 300*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 900*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 900*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 300*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 360*A*a^3*tan(d*x)^3*tan(c)^2 - 1440*B*a^2*b*tan(d*x)^3*tan(c)^2 - 1440*A*a*b^2*tan(d*x)^3*tan(c)^2 + 600*B*b^3*tan(d*x)^3*tan(c)^2 + 360*A*a^3*tan(d*x)^2*tan(c)^3 - 1440*B*a^2*b*tan(d*x)^2*tan(c)^3 - 1440*A*a*b^2*tan(d*x)^2*tan(c)^3 + 600*B*b^3*tan(d*x)^2*tan(c)^3 - 120*B*a^2*b*tan(d*x)*tan(c)^4 - 120*A*a*b^2*tan(d*x)*tan(c)^4 + 100*B*b^3*tan(d*x)*tan(c)^4 + 12*B*b^3*tan(c)^5 + 45*B*a*b^2*tan(d*x)^4 + 15*A*b^3*tan(d*x)^4 + 300*A*a^3*d*x*tan(d*x)*tan(c) - 900*B*a^2*b*d*x*tan(d*x)*tan(c) - 900*A*a*b^2*d*x*tan(d*x)*tan(c) + 300*B*b^3*d*x*tan(d*x)*tan(c) - 90*B*a^3*tan(d*x)^3*tan(c) - 270*A*a^2*b*tan(d*x)^3*tan(c) + 450*B*a*b^2*tan(d*x)^3*tan(c) + 150*A*b^3*tan(d*x)^3*tan(c) + 120*B*a^3*tan(d*x)^2*tan(c)^2 + 360*A*a^2*b*tan(d*x)^2*tan(c)^2 - 540*B*a*b^2*tan(d*x)^2*tan(c)^2 - 180*A*b^3*tan(d*x)^2*tan(c)^2 - 90*B*a^3*tan(d*x)*tan(c)^3 - 270*A*a^2*b*tan(d*x)*tan(c)^3 + 450*B*a*b^2*tan(d*x)*tan(c)^3 + 150*A*b^3*tan(d*x)*tan(c)^3 + 45*B*a*b^2*tan(c)^4 + 15*A*b^3*tan(c)^4 + 60*B*a^2*b*tan(d*x)^3 + 60*A*a*b^2*tan(d*x)^3 - 20*B*b^3*tan(d*x)^3 - 150*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 450*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 450*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 150*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 240*A*a^3*tan(d*x)^2*tan(c) + 900*B*a^2*b*tan(d*x)^2*tan(c) + 900*A*a*b^2*tan(d*x)^2*tan(c) - 300*B*b^3*tan(d*x)^2*tan(c) - 240*A*a^3*tan(d*x)*tan(c)^2 + 900*B*a^2*b*tan(d*x)*tan(c)^2 + 900*A*a*b^2*tan(d*x)*tan(c)^2 - 300*B*b^3*tan(d*x)*tan(c)^2 + 60*B*a^2*b*tan(c)^3 + 60*A*a*b^2*tan(c)^3 - 20*B*b^3*tan(c)^3 - 60*A*a^3*d*x + 180*B*a^2*b*d*x + 180*A*a*b^2*d*x - 60*B*b^3*d*x + 30*B*a^3*tan(d*x)^2 + 90*A*a^2*b*tan(d*x)^2 - 90*B*a*b^2*tan(d*x)^2 - 30*A*b^3*tan(d*x)^2 - 90*B*a^3*tan(d*x)*tan(c) - 270*A*a^2*b*tan(d*x)*tan(c) + 495*B*a*b^2*tan(d*x)*tan(c) + 165*A*b^3*tan(d*x)*tan(c) + 30*B*a^3*tan(c)^2 + 90*A*a^2*b*tan(c)^2 - 90*B*a*b^2*tan(c)^2 - 30*A*b^3*tan(c)^2 + 30*B*a^3*log(4*(tan(c)^2 +

```
 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(
d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 90*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x
)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*t
an(d*x)*tan(c) + 1)) - 90*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1)) - 30*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^
3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 60*
A*a^3*tan(d*x) - 180*B*a^2*b*tan(d*x) - 180*A*a*b^2*tan(d*x) + 60*B*b^3*tan
(d*x) + 60*A*a^3*tan(c) - 180*B*a^2*b*tan(c) - 180*A*a*b^2*tan(c) + 60*B*b^
3*tan(c) + 30*B*a^3 + 90*A*a^2*b - 135*B*a*b^2 - 45*A*b^3)/(d*tan(d*x)^5*ta
n(c)^5 - 5*d*tan(d*x)^4*tan(c)^4 + 10*d*tan(d*x)^3*tan(c)^3 - 10*d*tan(d*x)
^2*tan(c)^2 + 5*d*tan(d*x)*tan(c) - d)
```

3.249 $\int \tan(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=165

$$\frac{b\left(a^2A-2abB-Ab^2\right)\tan(c+dx)}{d}-\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\log(\cos(c+dx))}{d}-x\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)$$

```
[Out] -((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x) - ((a^3*A - 3*a*A*b^2 - 3*a^2*
b*B + b^3*B)*Log[Cos[c + d*x]])/d + (b*(a^2*A - A*b^2 - 2*a*b*B)*Tan[c + d*
x])/d + ((a*A - b*B)*(a + b*Tan[c + d*x])^2)/(2*d) + (A*(a + b*Tan[c + d*x]
)^3)/(3*d) + (B*(a + b*Tan[c + d*x])^4)/(4*b*d)
```

Rubi [A] time = 0.193966, antiderivative size = 165, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3592, 3528, 3525, 3475}

$$\frac{b\left(a^2A-2abB-Ab^2\right)\tan(c+dx)}{d}-\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\log(\cos(c+dx))}{d}-x\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x) - ((a^3*A - 3*a*A*b^2 - 3*a^2*
b*B + b^3*B)*Log[Cos[c + d*x]])/d + (b*(a^2*A - A*b^2 - 2*a*b*B)*Tan[c + d*
x])/d + ((a*A - b*B)*(a + b*Tan[c + d*x])^2)/(2*d) + (A*(a + b*Tan[c + d*x]
)^3)/(3*d) + (B*(a + b*Tan[c + d*x])^4)/(4*b*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
```

```
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{B(a+b\tan(c+dx))^4}{4bd} + \int (-B+A\tan(c+dx))(a+b\tan$$
$$= \frac{A(a+b\tan(c+dx))^3}{3d} + \frac{B(a+b\tan(c+dx))^4}{4bd} + \int (a+b$$
$$= \frac{(aA-bB)(a+b\tan(c+dx))^2}{2d} + \frac{A(a+b\tan(c+dx))^3}{3d} +$$
$$= -\left(3a^2Ab - Ab^3 + a^3B - 3ab^2B\right)x + \frac{b\left(a^2A - Ab^2 - 2abB\right)}{d}$$
$$= -\left(3a^2Ab - Ab^3 + a^3B - 3ab^2B\right)x - \frac{\left(a^3A - 3aAb^2 - 3a^2bB\right.}{}$$

Mathematica [C] time = 1.43618, size = 209, normalized size = 1.27

$$\frac{-12Ab^2\left(b^2-6a^2\right)\tan(c+dx) - 6(aA+bB)\left(6ab^2\tan(c+dx) + (-b+ia)^3\log(-\tan(c+dx)+i) - (b+ia)^3\log(\tan(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-6*I)*A*(a + I*b)^4*Log[I - Tan[c + d*x]] + (6*I)*A*(a - I*b)^4*Log[I + T
an[c + d*x]] - 12*A*b^2*(-6*a^2 + b^2)*Tan[c + d*x] + 24*a*A*b^3*Tan[c + d*
x]^2 + 4*A*b^4*Tan[c + d*x]^3 + 3*B*(a + b*Tan[c + d*x])^4 - 6*(a*A + b*B)*
```

```
((I*a - b)^3*Log[I - Tan[c + d*x]] - (I*a + b)^3*Log[I + Tan[c + d*x]] + 6*
a*b^2*Tan[c + d*x] + b^3*Tan[c + d*x]^2))/(12*b*d)
```

Maple [A] time = 0.011, size = 314, normalized size = 1.9

$$\frac{Bb^3 (\tan(dx+c))^4}{4d} + \frac{A (\tan(dx+c))^3 b^3}{3d} + \frac{B (\tan(dx+c))^3 ab^2}{d} + \frac{3A (\tan(dx+c))^2 ab^2}{2d} + \frac{3B (\tan(dx+c))^2 a^2b}{2d} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4/d*B*b^3*tan(d*x+c)^4+1/3/d*A*tan(d*x+c)^3*b^3+1/d*B*tan(d*x+c)^3*a*b^2+
3/2/d*A*tan(d*x+c)^2*a*b^2+3/2/d*B*tan(d*x+c)^2*a^2*b-1/2/d*B*b^3*tan(d*x+c
)^2+3/d*A*tan(d*x+c)*a^2*b-1/d*A*b^3*tan(d*x+c)+1/d*a^3*B*tan(d*x+c)-3/d*B*
a*b^2*tan(d*x+c)+1/2/d*a^3*A*ln(1+tan(d*x+c)^2)-3/2/d*ln(1+tan(d*x+c)^2)*A*
a*b^2-3/2/d*ln(1+tan(d*x+c)^2)*B*a^2*b+1/2/d*ln(1+tan(d*x+c)^2)*B*b^3-3/d*A
*arctan(tan(d*x+c))*a^2*b+1/d*A*arctan(tan(d*x+c))*b^3-1/d*a^3*B*arctan(tan
(d*x+c))+3/d*B*arctan(tan(d*x+c))*a*b^2
```

Maxima [A] time = 1.45606, size = 242, normalized size = 1.47

$$\frac{3 Bb^3 \tan(dx+c)^4 + 4 \left(3 Bab^2 + Ab^3\right) \tan(dx+c)^3 + 6 \left(3 Ba^2b + 3 Aab^2 - Bb^3\right) \tan(dx+c)^2 - 12 \left(Ba^3 + 3 Aa^2b - 3 B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/12*(3*B*b^3*tan(d*x + c)^4 + 4*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^3 + 6*(3*
B*a^2*b + 3*A*a*b^2 - B*b^3)*tan(d*x + c)^2 - 12*(B*a^3 + 3*A*a^2*b - 3*B*a
*b^2 - A*b^3)*(d*x + c) + 6*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*log(tan
(d*x + c)^2 + 1) + 12*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*tan(d*x + c))
/d
```

Fricas [A] time = 1.94001, size = 408, normalized size = 2.47

$$\frac{3\,Bb^3\tan\left(dx+c\right)^4+4\left(3\,Bab^2+Ab^3\right)\tan\left(dx+c\right)^3-12\left(Ba^3+3\,Aa^2b-3\,Bab^2-Ab^3\right)dx+6\left(3\,Ba^2b+3\,Aab^2-Bb^3\right.}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/12*(3*B*b^3*tan(d*x + c)^4 + 4*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^3 - 12*(B
*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*d*x + 6*(3*B*a^2*b + 3*A*a*b^2 - B*b^
3)*tan(d*x + c)^2 - 6*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*log(1/(tan(d*
x + c)^2 + 1)) + 12*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*tan(d*x + c))/d
```

Sympy [A] time = 0.819067, size = 311, normalized size = 1.88

$$\begin{cases}\frac{Aa^3\log\left(\tan^2\left(c+dx\right)+1\right)}{2d}-3Aa^2bx+\frac{3Aa^2b\tan\left(c+dx\right)}{d}-\frac{3Aab^2\log\left(\tan^2\left(c+dx\right)+1\right)}{2d}+\frac{3Aab^2\tan^2\left(c+dx\right)}{2d}+Ab^3x+\frac{Ab^3\tan^3\left(c+dx\right)}{3d}-\frac{Ab^3 t}{} \\ x\left(A+B\tan\left(c\right)\right)\left(a+b\tan\left(c\right)\right)^3\tan\left(c\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a**3*log(tan(c + d*x)**2 + 1)/(2*d) - 3*A*a**2*b*x + 3*A*a**2*
b*tan(c + d*x)/d - 3*A*a*b**2*log(tan(c + d*x)**2 + 1)/(2*d) + 3*A*a*b**2*t
an(c + d*x)**2/(2*d) + A*b**3*x + A*b**3*tan(c + d*x)**3/(3*d) - A*b**3*tan
(c + d*x)/d - B*a**3*x + B*a**3*tan(c + d*x)/d - 3*B*a**2*b*log(tan(c + d*x
)**2 + 1)/(2*d) + 3*B*a**2*b*tan(c + d*x)**2/(2*d) + 3*B*a*b**2*x + B*a*b**
2*tan(c + d*x)**3/d - 3*B*a*b**2*tan(c + d*x)/d + B*b**3*log(tan(c + d*x)**
2 + 1)/(2*d) + B*b**3*tan(c + d*x)**4/(4*d) - B*b**3*tan(c + d*x)**2/(2*d),
 Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))**3*tan(c), True))
```

Giac [B] time = 5.83873, size = 3875, normalized size = 23.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/12*(12*B*a^3*d*x*tan(d*x)^4*tan(c)^4 + 36*A*a^2*b*d*x*tan(d*x)^4*tan(c)^
4 - 36*B*a*b^2*d*x*tan(d*x)^4*tan(c)^4 - 12*A*b^3*d*x*tan(d*x)^4*tan(c)^4 +
 6*A*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c
)^4 - 18*B*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*t
an(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)
^4*tan(c)^4 - 18*A*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(
d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*
tan(d*x)^4*tan(c)^4 + 6*B*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2
*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) +
 1))*tan(d*x)^4*tan(c)^4 - 48*B*a^3*d*x*tan(d*x)^3*tan(c)^3 - 144*A*a^2*b*d
*x*tan(d*x)^3*tan(c)^3 + 144*B*a*b^2*d*x*tan(d*x)^3*tan(c)^3 + 48*A*b^3*d*x
*tan(d*x)^3*tan(c)^3 - 18*B*a^2*b*tan(d*x)^4*tan(c)^4 - 18*A*a*b^2*tan(d*x)
^4*tan(c)^4 + 9*B*b^3*tan(d*x)^4*tan(c)^4 - 24*A*a^3*log(4*(tan(c)^2 + 1)/(
tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^
2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 72*B*a^2*b*log(4*(tan(c)^
2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + t
an(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 72*A*a*b^2*log(4*
(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(
c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 24*B*b^3*
log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^
2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 12*
B*a^3*tan(d*x)^4*tan(c)^3 + 36*A*a^2*b*tan(d*x)^4*tan(c)^3 - 36*B*a*b^2*tan
(d*x)^4*tan(c)^3 - 12*A*b^3*tan(d*x)^4*tan(c)^3 + 12*B*a^3*tan(d*x)^3*tan(c
)^4 + 36*A*a^2*b*tan(d*x)^3*tan(c)^4 - 36*B*a*b^2*tan(d*x)^3*tan(c)^4 - 12*
A*b^3*tan(d*x)^3*tan(c)^4 + 72*B*a^3*d*x*tan(d*x)^2*tan(c)^2 + 216*A*a^2*b*
d*x*tan(d*x)^2*tan(c)^2 - 216*B*a*b^2*d*x*tan(d*x)^2*tan(c)^2 - 72*A*b^3*d*
x*tan(d*x)^2*tan(c)^2 - 18*B*a^2*b*tan(d*x)^4*tan(c)^2 - 18*A*a*b^2*tan(d*x
)^4*tan(c)^2 + 6*B*b^3*tan(d*x)^4*tan(c)^2 + 36*B*a^2*b*tan(d*x)^3*tan(c)^3
 + 36*A*a*b^2*tan(d*x)^3*tan(c)^3 - 24*B*b^3*tan(d*x)^3*tan(c)^3 - 18*B*a^2
*b*tan(d*x)^2*tan(c)^4 - 18*A*a*b^2*tan(d*x)^2*tan(c)^4 + 6*B*b^3*tan(d*x)^
2*tan(c)^4 + 12*B*a*b^2*tan(d*x)^4*tan(c) + 4*A*b^3*tan(d*x)^4*tan(c) + 36*
A*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan
(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2
 - 108*B*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan
(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2
*tan(c)^2 - 108*A*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d
*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*t
an(d*x)^2*tan(c)^2 + 36*B*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2
*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) +
 1))*tan(d*x)^2*tan(c)^2 - 36*B*a^3*tan(d*x)^3*tan(c)^2 - 108*A*a^2*b*tan(d
```

```
*x)^3*tan(c)^2 + 144*B*a*b^2*tan(d*x)^3*tan(c)^2 + 48*A*b^3*tan(d*x)^3*tan(
c)^2 - 36*B*a^3*tan(d*x)^2*tan(c)^3 - 108*A*a^2*b*tan(d*x)^2*tan(c)^3 + 144
*B*a*b^2*tan(d*x)^2*tan(c)^3 + 48*A*b^3*tan(d*x)^2*tan(c)^3 + 12*B*a*b^2*ta
n(d*x)*tan(c)^4 + 4*A*b^3*tan(d*x)*tan(c)^4 - 3*B*b^3*tan(d*x)^4 - 48*B*a^3
*d*x*tan(d*x)*tan(c) - 144*A*a^2*b*d*x*tan(d*x)*tan(c) + 144*B*a*b^2*d*x*ta
n(d*x)*tan(c) + 48*A*b^3*d*x*tan(d*x)*tan(c) + 36*B*a^2*b*tan(d*x)^3*tan(c)
 + 36*A*a*b^2*tan(d*x)^3*tan(c) - 24*B*b^3*tan(d*x)^3*tan(c) - 36*B*a^2*b*t
an(d*x)^2*tan(c)^2 - 36*A*a*b^2*tan(d*x)^2*tan(c)^2 + 12*B*b^3*tan(d*x)^2*t
an(c)^2 + 36*B*a^2*b*tan(d*x)*tan(c)^3 + 36*A*a*b^2*tan(d*x)*tan(c)^3 - 24*
B*b^3*tan(d*x)*tan(c)^3 - 3*B*b^3*tan(c)^4 - 12*B*a*b^2*tan(d*x)^3 - 4*A*b^
3*tan(d*x)^3 - 24*A*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d
*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*t
an(d*x)*tan(c) + 72*B*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
))*tan(d*x)*tan(c) + 72*A*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 -
 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c)
 + 1))*tan(d*x)*tan(c) - 24*B*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1))*tan(d*x)*tan(c) + 36*B*a^3*tan(d*x)^2*tan(c) + 108*A*a^2*b*tan(d*x
)^2*tan(c) - 144*B*a*b^2*tan(d*x)^2*tan(c) - 48*A*b^3*tan(d*x)^2*tan(c) + 3
6*B*a^3*tan(d*x)*tan(c)^2 + 108*A*a^2*b*tan(d*x)*tan(c)^2 - 144*B*a*b^2*tan
(d*x)*tan(c)^2 - 48*A*b^3*tan(d*x)*tan(c)^2 - 12*B*a*b^2*tan(c)^3 - 4*A*b^3
*tan(c)^3 + 12*B*a^3*d*x + 36*A*a^2*b*d*x - 36*B*a*b^2*d*x - 12*A*b^3*d*x -
 18*B*a^2*b*tan(d*x)^2 - 18*A*a*b^2*tan(d*x)^2 + 6*B*b^3*tan(d*x)^2 + 36*B*
a^2*b*tan(d*x)*tan(c) + 36*A*a*b^2*tan(d*x)*tan(c) - 24*B*b^3*tan(d*x)*tan(
c) - 18*B*a^2*b*tan(c)^2 - 18*A*a*b^2*tan(c)^2 + 6*B*b^3*tan(c)^2 + 6*A*a^3
*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)
^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 18*B*a^2*b*log(4*(tan(
c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
+ tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 18*A*a*b^2*log(4*(tan(c)^2 + 1)/(t
an(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2
 - 2*tan(d*x)*tan(c) + 1)) + 6*B*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c
)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*t
an(c) + 1)) - 12*B*a^3*tan(d*x) - 36*A*a^2*b*tan(d*x) + 36*B*a*b^2*tan(d*x)
 + 12*A*b^3*tan(d*x) - 12*B*a^3*tan(c) - 36*A*a^2*b*tan(c) + 36*B*a*b^2*tan
(c) + 12*A*b^3*tan(c) - 18*B*a^2*b - 18*A*a*b^2 + 9*B*b^3)/(d*tan(d*x)^4*ta
n(c)^4 - 4*d*tan(d*x)^3*tan(c)^3 + 6*d*tan(d*x)^2*tan(c)^2 - 4*d*tan(d*x)*t
an(c) + d)
```

3.250 $\int (a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=140

$$\frac{b\left(a^2B+2aAb-b^2B\right)\tan(c+dx)}{d}-\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\cos(c+dx))}{d}+x\left(a^3A-3a^2bB-3aAb^2+b^3B\right)$$

```
[Out] (a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x - ((3*a^2*A*b - A*b^3 + a^3*B - 3
*a*b^2*B)*Log[Cos[c + d*x]])/d + (b*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x])
/d + ((A*b + a*B)*(a + b*Tan[c + d*x])^2)/(2*d) + (B*(a + b*Tan[c + d*x])^3
)/(3*d)
```

Rubi [A] time = 0.153958, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3528, 3525, 3475}

$$\frac{b\left(a^2B+2aAb-b^2B\right)\tan(c+dx)}{d}-\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\cos(c+dx))}{d}+x\left(a^3A-3a^2bB-3aAb^2+b^3B\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x - ((3*a^2*A*b - A*b^3 + a^3*B - 3
*a*b^2*B)*Log[Cos[c + d*x]])/d + (b*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x])
/d + ((A*b + a*B)*(a + b*Tan[c + d*x])^2)/(2*d) + (B*(a + b*Tan[c + d*x])^3
)/(3*d)
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
```

```
x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{B(a+b\tan(c+dx))^3}{3d}+\int (a+b\tan(c+dx))^2(aA-bB+(Ab+aB)\,\mathrm{t}$$

$$= \frac{(Ab+aB)(a+b\tan(c+dx))^2}{2d}+\frac{B(a+b\tan(c+dx))^3}{3d}+\int (a+b\tan$$

$$= \left(a^3A-3aAb^2-3a^2bB+b^3B\right)x+\frac{b\left(2aAb+a^2B-b^2B\right)\tan(c+dx)}{d}+$$

$$= \left(a^3A-3aAb^2-3a^2bB+b^3B\right)x-\frac{\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\log(\mathrm{c}}{d}$$

Mathematica [C] time = 0.966437, size = 130, normalized size = 0.93

$$\frac{6b\left(3a^2B+3aAb-b^2B\right)\tan(c+dx)+3b^2(3aB+Ab)\tan^2(c+dx)+3(a-ib)^3(B+iA)\log(\tan(c+dx)+i)+3(a+ib}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*(a + I*b)^3*((-I)*A + B)*Log[I - Tan[c + d*x]] + 3*(a - I*b)^3*(I*A + B)
*Log[I + Tan[c + d*x]] + 6*b*(3*a*A*b + 3*a^2*B - b^2*B)*Tan[c + d*x] + 3*b
^2*(A*b + 3*a*B)*Tan[c + d*x]^2 + 2*b^3*B*Tan[c + d*x]^3)/(6*d)
```

Maple [A] time = 0.013, size = 247, normalized size = 1.8

$$\frac{B(\tan(dx+c))^3b^3}{3d}+\frac{A(\tan(dx+c))^2b^3}{2d}+\frac{3B(\tan(dx+c))^2ab^2}{2d}+3\frac{Aab^2\tan(dx+c)}{d}+3\frac{Ba^2b\tan(dx+c)}{d}-\frac{Bb}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/3/d*B*tan(d*x+c)^3*b^3+1/2/d*A*tan(d*x+c)^2*b^3+3/2/d*B*tan(d*x+c)^2*a*b^
2+3/d*A*a*b^2*tan(d*x+c)+3/d*B*a^2*b*tan(d*x+c)-1/d*B*b^3*tan(d*x+c)+3/2/d*
ln(1+tan(d*x+c)^2)*A*a^2*b-1/2/d*ln(1+tan(d*x+c)^2)*A*b^3+1/2/d*a^3*B*ln(1+
tan(d*x+c)^2)-3/2/d*ln(1+tan(d*x+c)^2)*B*a*b^2+1/d*a^3*A*arctan(tan(d*x+c))
-3/d*A*arctan(tan(d*x+c))*a*b^2-3/d*B*arctan(tan(d*x+c))*a^2*b+1/d*B*arctan
(tan(d*x+c))*b^3
```

Maxima [A] time = 1.48257, size = 193, normalized size = 1.38

$$\frac{2\,Bb^3\tan\left(dx+c\right)^3+3\left(3\,Bab^2+Ab^3\right)\tan\left(dx+c\right)^2+6\left(Aa^3-3\,Ba^2b-3\,Aab^2+Bb^3\right)\left(dx+c\right)+3\left(Ba^3+3\,Aa^2b-3\,B\right.}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

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

Fricas [A] time = 2.00174, size = 324, normalized size = 2.31

$$\frac{2\,Bb^3\tan\left(dx+c\right)^3+6\left(Aa^3-3\,Ba^2b-3\,Aab^2+Bb^3\right)dx+3\left(3\,Bab^2+Ab^3\right)\tan\left(dx+c\right)^2-3\left(Ba^3+3\,Aa^2b-3\,Bab^2-\right.}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^3*tan(d*x + c)^3 + 6*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*d*x
 + 3*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^2 - 3*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2
- A*b^3)*log(1/(tan(d*x + c)^2 + 1)) + 6*(3*B*a^2*b + 3*A*a*b^2 - B*b^3)*ta
n(d*x + c))/d
```

Sympy [A] time = 0.571095, size = 240, normalized size = 1.71

$$\begin{cases} Aa^3x + \frac{3Aa^2b\log\left(\tan^2(c+dx)+1\right)}{2d} - 3Aab^2x + \frac{3Aab^2\tan(c+dx)}{d} - \frac{Ab^3\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Ab^3\tan^2(c+dx)}{2d} + \frac{Ba^3\log\left(\tan^2(c+dx)+1\right)}{2d} - \\ x\left(A+B\tan(c)\right)\left(a+b\tan(c)\right)^3 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a**3*x + 3*A*a**2*b*log(tan(c + d*x)**2 + 1)/(2*d) - 3*A*a*b**
2*x + 3*A*a*b**2*tan(c + d*x)/d - A*b**3*log(tan(c + d*x)**2 + 1)/(2*d) + A
*b**3*tan(c + d*x)**2/(2*d) + B*a**3*log(tan(c + d*x)**2 + 1)/(2*d) - 3*B*a
**2*b*x + 3*B*a**2*b*tan(c + d*x)/d - 3*B*a*b**2*log(tan(c + d*x)**2 + 1)/(
2*d) + 3*B*a*b**2*tan(c + d*x)**2/(2*d) + B*b**3*x + B*b**3*tan(c + d*x)**3
/(3*d) - B*b**3*tan(c + d*x)/d, Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))
**3, True))
```

Giac [B] time = 3.8642, size = 2580, normalized size = 18.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/6*(6*A*a^3*d*x*tan(d*x)^3*tan(c)^3 - 18*B*a^2*b*d*x*tan(d*x)^3*tan(c)^3 -
 18*A*a*b^2*d*x*tan(d*x)^3*tan(c)^3 + 6*B*b^3*d*x*tan(d*x)^3*tan(c)^3 - 3*B
*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(
d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3
- 9*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*ta
n(c)^3 + 9*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3
*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*
x)^3*tan(c)^3 + 3*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d
*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*t
an(d*x)^3*tan(c)^3 - 18*A*a^3*d*x*tan(d*x)^2*tan(c)^2 + 54*B*a^2*b*d*x*tan(
d*x)^2*tan(c)^2 + 54*A*a*b^2*d*x*tan(d*x)^2*tan(c)^2 - 18*B*b^3*d*x*tan(d*x
)^2*tan(c)^2 + 9*B*a*b^2*tan(d*x)^3*tan(c)^3 + 3*A*b^3*tan(d*x)^3*tan(c)^3
+ 9*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
 tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(
c)^2 + 27*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*
```

```
tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x
)^2*tan(c)^2 - 27*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan
(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))
*tan(d*x)^2*tan(c)^2 - 9*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 -
2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c)
+ 1))*tan(d*x)^2*tan(c)^2 - 18*B*a^2*b*tan(d*x)^3*tan(c)^2 - 18*A*a*b^2*tan
(d*x)^3*tan(c)^2 + 6*B*b^3*tan(d*x)^3*tan(c)^2 - 18*B*a^2*b*tan(d*x)^2*tan(
c)^3 - 18*A*a*b^2*tan(d*x)^2*tan(c)^3 + 6*B*b^3*tan(d*x)^2*tan(c)^3 + 18*A*
a^3*d*x*tan(d*x)*tan(c) - 54*B*a^2*b*d*x*tan(d*x)*tan(c) - 54*A*a*b^2*d*x*t
an(d*x)*tan(c) + 18*B*b^3*d*x*tan(d*x)*tan(c) + 9*B*a*b^2*tan(d*x)^3*tan(c)
 + 3*A*b^3*tan(d*x)^3*tan(c) - 9*B*a*b^2*tan(d*x)^2*tan(c)^2 - 3*A*b^3*tan(
d*x)^2*tan(c)^2 + 9*B*a*b^2*tan(d*x)*tan(c)^3 + 3*A*b^3*tan(d*x)*tan(c)^3 -
 2*B*b^3*tan(d*x)^3 - 9*B*a^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2
*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) +
 1))*tan(d*x)*tan(c) - 27*A*a^2*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1))*tan(d*x)*tan(c) + 27*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(
c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*
tan(c) + 1))*tan(d*x)*tan(c) + 9*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan
(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)
*tan(c) + 1))*tan(d*x)*tan(c) + 36*B*a^2*b*tan(d*x)^2*tan(c) + 36*A*a*b^2*t
an(d*x)^2*tan(c) - 18*B*b^3*tan(d*x)^2*tan(c) + 36*B*a^2*b*tan(d*x)*tan(c)^
2 + 36*A*a*b^2*tan(d*x)*tan(c)^2 - 18*B*b^3*tan(d*x)*tan(c)^2 - 2*B*b^3*tan
(c)^3 - 6*A*a^3*d*x + 18*B*a^2*b*d*x + 18*A*a*b^2*d*x - 6*B*b^3*d*x - 9*B*a
*b^2*tan(d*x)^2 - 3*A*b^3*tan(d*x)^2 + 9*B*a*b^2*tan(d*x)*tan(c) + 3*A*b^3*
tan(d*x)*tan(c) - 9*B*a*b^2*tan(c)^2 - 3*A*b^3*tan(c)^2 + 3*B*a^3*log(4*(ta
n(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^
2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 9*A*a^2*b*log(4*(tan(c)^2 + 1)/(
tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^
2 - 2*tan(d*x)*tan(c) + 1)) - 9*B*a*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*ta
n(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x
)*tan(c) + 1)) - 3*A*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(
d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))
- 18*B*a^2*b*tan(d*x) - 18*A*a*b^2*tan(d*x) + 6*B*b^3*tan(d*x) - 18*B*a^2*b
*tan(c) - 18*A*a*b^2*tan(c) + 6*B*b^3*tan(c) - 9*B*a*b^2 - 3*A*b^3)/(d*tan(
d*x)^3*tan(c)^3 - 3*d*tan(d*x)^2*tan(c)^2 + 3*d*tan(d*x)*tan(c) - d)
```

3.251 $\int \cot(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=117

$$-\frac{b\left(3a^2B+3aAb-b^2B\right)\log(\cos(c+dx))}{d}+x\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)+\frac{a^3A\log(\sin(c+dx))}{d}+\frac{b^2(2aB+Ab)\,\mathrm{t}}{d}$$

```
[Out] (3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x - (b*(3*a*A*b + 3*a^2*B - b^2*B)*
Log[Cos[c + d*x]])/d + (a^3*A*Log[Sin[c + d*x]])/d + (b^2*(A*b + 2*a*B)*Tan
[c + d*x])/d + (b*B*(a + b*Tan[c + d*x])^2)/(2*d)
```

Rubi [A] time = 0.27013, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3607, 3637, 3624, 3475}

$$-\frac{b\left(3a^2B+3aAb-b^2B\right)\log(\cos(c+dx))}{d}+x\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)+\frac{a^3A\log(\sin(c+dx))}{d}+\frac{b^2(2aB+Ab)\,\mathrm{t}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x - (b*(3*a*A*b + 3*a^2*B - b^2*B)*
Log[Cos[c + d*x]])/d + (a^3*A*Log[Sin[c + d*x]])/d + (b^2*(A*b + 2*a*B)*Tan
[c + d*x])/d + (b*B*(a + b*Tan[c + d*x])^2)/(2*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{bB(a+b\tan(c+dx))^2}{2d}+\frac{1}{2}\int \cot(c+dx)(a+b\tan(c+dx)$$

$$= \frac{b^2(Ab+2aB)\tan(c+dx)}{d}+\frac{bB(a+b\tan(c+dx))^2}{2d}-\frac{1}{2}\int c$$

$$= \left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)x+\frac{b^2(Ab+2aB)\tan(c+dx)}{d}$$

$$= \left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)x-\frac{b\left(3aAb+3a^2B-b^2B\right)\mathrm{lo}}{d}$$

Mathematica [C] time = 0.573259, size = 115, normalized size = 0.98

$$\frac{2a^3A\log(\tan(c+dx))+2b^2(2aB+Ab)\tan(c+dx)-(a+ib)^3(A+iB)\log(-\tan(c+dx)+i)-(a-ib)^3(A-iB)\log(\mathrm{ta}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-((a + I*b)^3*(A + I*B)*Log[I - Tan[c + d*x]]) + 2*a^3*A*Log[Tan[c + d*x]]
 - (a - I*b)^3*(A - I*B)*Log[I + Tan[c + d*x]] + 2*b^2*(A*b + 2*a*B)*Tan[c
+ d*x] + b*B*(a + b*Tan[c + d*x])^2)/(2*d)
```

Maple [A] time = 0.08, size = 183, normalized size = 1.6

$$-Ab^3x+\frac{Ab^3\tan(dx+c)}{d}-\frac{Ab^3c}{d}+\frac{Bb^3(\tan(dx+c))^2}{2d}+\frac{Bb^3\ln(\cos(dx+c))}{d}-3\frac{Aab^2\ln(\cos(dx+c))}{d}-3Bab^2x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*b^3*x+1/d*A*b^3*tan(d*x+c)-1/d*A*b^3*c+1/2/d*B*b^3*tan(d*x+c)^2+b^3*B*ln
(cos(d*x+c))/d-3/d*A*a*b^2*ln(cos(d*x+c))-3*B*a*b^2*x+3/d*B*a*b^2*tan(d*x+c
)-3/d*B*a*b^2*c+3*A*x*a^2*b+3/d*A*a^2*b*c-3/d*B*a^2*b*ln(cos(d*x+c))+a^3*A*
ln(sin(d*x+c))/d+B*a^3*x+1/d*B*a^3*c
```

Maxima [A] time = 1.51568, size = 167, normalized size = 1.43

$$\frac{Bb^3\tan(dx+c)^2+2Aa^3\log(\tan(dx+c))+2\left(Ba^3+3Aa^2b-3Bab^2-Ab^3\right)(dx+c)-\left(Aa^3-3Ba^2b-3Aab^2+Bb\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 2.14395, size = 305, normalized size = 2.61

$$\frac{Bb^3\tan(dx+c)^2+Aa^3\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)+2\left(Ba^3+3Aa^2b-3Bab^2-Ab^3\right)dx-\left(3Ba^2b+3Aab^2-Bb^3\right)\log\left(\frac{1}{\tan(dx+\cdots}\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 2.698, size = 204, normalized size = 1.74

$$\begin{cases} -\frac{Aa^3\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Aa^3\log(\tan(c+dx))}{d} + 3Aa^2bx + \frac{3Aab^2\log\left(\tan^2(c+dx)+1\right)}{2d} - Ab^3x + \frac{Ab^3\tan(c+dx)}{d} + Ba^3x + \frac{3Ba^2b\log\left(\tan^2\right.}{2d} \\ x\,(A+B\tan(c))\,(a+b\tan(c))^3\cot(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a**3*log(tan(c + d*x)**2 + 1)/(2*d) + A*a**3*log(tan(c + d*x)
)/d + 3*A*a**2*b*x + 3*A*a*b**2*log(tan(c + d*x)**2 + 1)/(2*d) - A*b**3*x +
 A*b**3*tan(c + d*x)/d + B*a**3*x + 3*B*a**2*b*log(tan(c + d*x)**2 + 1)/(2*
d) - 3*B*a*b**2*x + 3*B*a*b**2*tan(c + d*x)/d - B*b**3*log(tan(c + d*x)**2
+ 1)/(2*d) + B*b**3*tan(c + d*x)**2/(2*d), Ne(d, 0)), (x*(A + B*tan(c))*(a
+ b*tan(c))**3*cot(c), True))
```

Giac [A] time = 1.8813, size = 174, normalized size = 1.49

$$\frac{Bb^3\tan(dx+c)^2 + 2\,Aa^3\log(|\tan(dx+c)|) + 6\,Bab^2\tan(dx+c) + 2\,Ab^3\tan(dx+c) + 2\left(Ba^3 + 3\,Aa^2b - 3\,Bab^2 - Al\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

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

3.252 $\int \cot^2(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=119

$$-x\left(a^3A-3a^2bB-3aAb^2+b^3B\right)+\frac{a^2(aB+3Ab)\log(\sin(c+dx))}{d}+\frac{b^2(aA+bB)\tan(c+dx)}{d}-\frac{b^2(3aB+Ab)\log(\cos$$

```
[Out] -((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x) - (b^2*(A*b + 3*a*B)*Log[Cos[c
 + d*x]])/d + (a^2*(3*A*b + a*B)*Log[Sin[c + d*x]])/d + (b^2*(a*A + b*B)*Ta
n[c + d*x])/d - (a*A*Cot[c + d*x]*(a + b*Tan[c + d*x])^2)/d
```

Rubi [A] time = 0.262912, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {3605, 3637, 3624, 3475}

$$-x\left(a^3A-3a^2bB-3aAb^2+b^3B\right)+\frac{a^2(aB+3Ab)\log(\sin(c+dx))}{d}+\frac{b^2(aA+bB)\tan(c+dx)}{d}-\frac{b^2(3aB+Ab)\log(\cos$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x) - (b^2*(A*b + 3*a*B)*Log[Cos[c
 + d*x]])/d + (a^2*(3*A*b + a*B)*Log[Sin[c + d*x]])/d + (b^2*(a*A + b*B)*Ta
n[c + d*x])/d - (a*A*Cot[c + d*x]*(a + b*Tan[c + d*x])^2)/d
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)(a+b\tan(c+dx))^2}{d}+\int \cot(c+dx)(a+b$$

$$= \frac{b^2(aA+bB)\tan(c+dx)}{d}-\frac{aA\cot(c+dx)(a+b\tan(c+dx$$

$$= -\left(a^3A-3aAb^2-3a^2bB+b^3B\right)x+\frac{b^2(aA+bB)\tan(c+d}{d}$$

$$= -\left(a^3A-3aAb^2-3a^2bB+b^3B\right)x-\frac{b^2(Ab+3aB)\log(\cos(}{d}$$

Mathematica [C] time = 0.506833, size = 113, normalized size = 0.95

$$\frac{2a^2(aB+3Ab)\log(\tan(c+dx))-2a^3A\cot(c+dx)+i(a+ib)^3(A+iB)\log(-\tan(c+dx)+i)+(b+ia)^3(A-iB)\log(\text{ta}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^3*A*Cot[c + d*x] + I*(a + I*b)^3*(A + I*B)*Log[I - Tan[c + d*x]] + 2*
a^2*(3*A*b + a*B)*Log[Tan[c + d*x]] + (I*a + b)^3*(A - I*B)*Log[I + Tan[c +
 d*x]] + 2*b^3*B*Tan[c + d*x])/(2*d)
```

Maple [A] time = 0.067, size = 168, normalized size = 1.4

$$-Aa^3x + 3\,Aab^2x + 3\,Ba^2bx - Bb^3x - \frac{A\cot(dx+c)\,a^3}{d} + 3\,\frac{Aa^2b\ln(\sin(dx+c))}{d} - \frac{Ab^3\ln(\cos(dx+c))}{d} - \frac{Aa^3c}{d} + 3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*a^3*x+3*A*a*b^2*x+3*B*a^2*b*x-B*b^3*x-1/d*A*cot(d*x+c)*a^3+3/d*A*a^2*b*l
n(sin(d*x+c))-1/d*A*b^3*ln(cos(d*x+c))-1/d*A*a^3*c+3/d*A*a*b^2*c+1/d*B*b^3*
tan(d*x+c)+1/d*B*a^3*ln(sin(d*x+c))-3/d*B*a*b^2*ln(cos(d*x+c))+3/d*B*a^2*b*
c-1/d*B*b^3*c
```

Maxima [A] time = 1.47403, size = 169, normalized size = 1.42

$$\frac{2\,Bb^3\tan(dx+c) - \frac{2\,Aa^3}{\tan(dx+c)} - 2\left(Aa^3 - 3\,Ba^2b - 3\,Aab^2 + Bb^3\right)(dx+c) - \left(Ba^3 + 3\,Aa^2b - 3\,Bab^2 - Ab^3\right)\log\left(\tan(dx\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/2*(2*B*b^3*tan(d*x + c) - 2*A*a^3/tan(d*x + c) - 2*(A*a^3 - 3*B*a^2*b - 3
*A*a*b^2 + B*b^3)*(d*x + c) - (B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*log(t
an(d*x + c)^2 + 1) + 2*(B*a^3 + 3*A*a^2*b)*log(tan(d*x + c)))/d
```

Fricas [A] time = 2.16643, size = 347, normalized size = 2.92

$$\frac{2\,Bb^3\tan(dx+c)^2 - 2\,Aa^3 - 2\left(Aa^3 - 3\,Ba^2b - 3\,Aab^2 + Bb^3\right)dx\tan(dx+c) + \left(Ba^3 + 3\,Aa^2b\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(}{2\,d\tan(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

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

Sympy [A] time = 4.89423, size = 223, normalized size = 1.87

$$\begin{cases} \tilde{\infty} A a^3 x \\ x\left(A + B\tan\left(c\right)\right)\left(a + b\tan\left(c\right)\right)^3\cot^2\left(c\right) \\ -Aa^3x - \frac{Aa^3}{d\tan\left(c+dx\right)} - \frac{3Aa^2b\log\left(\tan^2\left(c+dx\right)+1\right)}{2d} + \frac{3Aa^2b\log\left(\tan\left(c+dx\right)\right)}{d} + 3Aab^2x + \frac{Ab^3\log\left(\tan^2\left(c+dx\right)+1\right)}{2d} - \frac{Ba^3\log\left(\tan^2\left(c+dx\right)+1\right)}{2d} - \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**3*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**3*cot(c)**2, Eq(d, 0)), (-A*a**3*x -
A*a**3/(d*tan(c + d*x)) - 3*A*a**2*b*log(tan(c + d*x)**2 + 1)/(2*d) + 3*A*a
**2*b*log(tan(c + d*x))/d + 3*A*a*b**2*x + A*b**3*log(tan(c + d*x)**2 + 1)/
(2*d) - B*a**3*log(tan(c + d*x)**2 + 1)/(2*d) + B*a**3*log(tan(c + d*x))/d
+ 3*B*a**2*b*x + 3*B*a*b**2*log(tan(c + d*x)**2 + 1)/(2*d) - B*b**3*x + B*b
**3*tan(c + d*x)/d, True))
```

Giac [A] time = 1.90259, size = 205, normalized size = 1.72

$$\frac{2\,Bb^3\tan\left(dx+c\right) - 2\left(Aa^3 - 3\,Ba^2b - 3\,Aab^2 + Bb^3\right)\left(dx+c\right) - \left(Ba^3 + 3\,Aa^2b - 3\,Bab^2 - Ab^3\right)\log\left(\tan\left(dx+c\right)^2+1\right) +}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*B*b^3*tan(d*x + c) - 2*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*(d*x
+ c) - (B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*log(tan(d*x + c)^2 + 1) + 2*
(B*a^3 + 3*A*a^2*b)*log(abs(tan(d*x + c))) - 2*(B*a^3*tan(d*x + c) + 3*A*a^
2*b*tan(d*x + c) + A*a^3)/tan(d*x + c))/d
```

3.253 $\int \cot^3(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=127

$$-\frac{a\left(a^2A-3abB-3Ab^2\right)\log(\sin(c+dx))}{d}-x\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)-\frac{a^2(aB+2Ab)\cot(c+dx)}{d}-\frac{aA\cot^2(c+$$

```
[Out] -((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x) - (a^2*(2*A*b + a*B)*Cot[c + d
*x])/d - (b^3*B*Log[Cos[c + d*x]])/d - (a*(a^2*A - 3*A*b^2 - 3*a*b*B)*Log[S
in[c + d*x]])/d - (a*A*Cot[c + d*x]^2*(a + b*Tan[c + d*x])^2)/(2*d)
```

Rubi [A] time = 0.289626, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {3605, 3635, 3624, 3475}

$$-\frac{a\left(a^2A-3abB-3Ab^2\right)\log(\sin(c+dx))}{d}-x\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)-\frac{a^2(aB+2Ab)\cot(c+dx)}{d}-\frac{aA\cot^2(c+$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x) - (a^2*(2*A*b + a*B)*Cot[c + d
*x])/d - (b^3*B*Log[Cos[c + d*x]])/d - (a*(a^2*A - 3*A*b^2 - 3*a*b*B)*Log[S
in[c + d*x]])/d - (a*A*Cot[c + d*x]^2*(a + b*Tan[c + d*x])^2)/(2*d)
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^3(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)(a+b\tan(c+dx))^2}{2d}+\frac{1}{2}\int \cot^2(c+dx)$$
$$= -\frac{a^2(2Ab+aB)\cot(c+dx)}{d}-\frac{aA\cot^2(c+dx)(a+b\tan(c}{2d}$$
$$= -\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)x-\frac{a^2(2Ab+aB)\cot(c+}{d}$$
$$= -\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)x-\frac{a^2(2Ab+aB)\cot(c+}{d}$$

Mathematica [C] time = 0.425828, size = 126, normalized size = 0.99

$$\frac{-2a\left(a^2A-3abB-3Ab^2\right)\log(\tan(c+dx))-2a^2(aB+3Ab)\cot(c+dx)+a^3(-A)\cot^2(c+dx)+(a+ib)^3(A+iB)\log}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^2*(3*A*b + a*B)*Cot[c + d*x] - a^3*A*Cot[c + d*x]^2 + (a + I*b)^3*(A
+ I*B)*Log[I - Tan[c + d*x]] - 2*a*(a^2*A - 3*A*b^2 - 3*a*b*B)*Log[Tan[c +
d*x]] + (a - I*b)^3*(A - I*B)*Log[I + Tan[c + d*x]])/(2*d)
```

Maple [A] time = 0.092, size = 186, normalized size = 1.5

$$Ab^3x + \frac{Ab^3c}{d} - \frac{Bb^3\ln(\cos(dx+c))}{d} + 3\,\frac{Aab^2\ln(\sin(dx+c))}{d} + 3\,Bab^2x + 3\,\frac{Bab^2c}{d} - 3\,Axa^2b - 3\,\frac{A\cot(dx+c)\,a^2b}{d} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] A*b^3*x+1/d*A*b^3*c-b^3*B*ln(cos(d*x+c))/d+3/d*A*a*b^2*ln(sin(d*x+c))+3*B*a
*b^2*x+3/d*B*a*b^2*c-3*A*x*a^2*b-3/d*A*cot(d*x+c)*a^2*b-3/d*A*a^2*b*c+3/d*B
*a^2*b*ln(sin(d*x+c))-1/2/d*A*a^3*cot(d*x+c)^2-a^3*A*ln(sin(d*x+c))/d-B*a^3
*x-1/d*B*cot(d*x+c)*a^3-1/d*B*a^3*c
```

Maxima [A] time = 1.47555, size = 192, normalized size = 1.51

$$-\frac{2\left(Ba^3 + 3\,Aa^2b - 3\,Bab^2 - Ab^3\right)(dx+c) - \left(Aa^3 - 3\,Ba^2b - 3\,Aab^2 + Bb^3\right)\log\left(\tan(dx+c)^2 + 1\right) + 2\left(Aa^3 - 3\,Ba^2b - \right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

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

Fricas [A] time = 2.12356, size = 383, normalized size = 3.02

$$-\frac{Bb^3\log\left(\frac{1}{\tan(dx+c)^2+1}\right)\tan(dx+c)^2+Aa^3+\left(Aa^3-3Ba^2b-3Aab^2\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^2+\left(Aa^3+2\left(Ba^3\right.\right.}{2d\tan(dx+c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

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

Sympy [A] time = 7.83668, size = 262, normalized size = 2.06

$$\begin{cases} \tilde{\infty}Aa^3x \\ x\left(A+B\tan(c)\right)\left(a+b\tan(c)\right)^3\cot^3(c) \\ \frac{Aa^3\log\left(\tan^2(c+dx)+1\right)}{2d}-\frac{Aa^3\log\left(\tan(c+dx)\right)}{d}-\frac{Aa^3}{2d\tan^2(c+dx)}-3Aa^2bx-\frac{3Aa^2b}{d\tan(c+dx)}-\frac{3Aab^2\log\left(\tan^2(c+dx)+1\right)}{2d}+\frac{3Aab^2\log\left(\tan(c+dx)\right)}{d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**3*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**3*cot(c)**3, Eq(d, 0)), (A*a**3*log(t
an(c + d*x)**2 + 1)/(2*d) - A*a**3*log(tan(c + d*x))/d - A*a**3/(2*d*tan(c
+ d*x)**2) - 3*A*a**2*b*x - 3*A*a**2*b/(d*tan(c + d*x)) - 3*A*a*b**2*log(ta
n(c + d*x)**2 + 1)/(2*d) + 3*A*a*b**2*log(tan(c + d*x))/d + A*b**3*x - B*a*
*3*x - B*a**3/(d*tan(c + d*x)) - 3*B*a**2*b*log(tan(c + d*x)**2 + 1)/(2*d)
+ 3*B*a**2*b*log(tan(c + d*x))/d + 3*B*a*b**2*x + B*b**3*log(tan(c + d*x)**
2 + 1)/(2*d), True))
```

Giac [A] time = 1.97813, size = 261, normalized size = 2.06

$$-\frac{2\left(Ba^3+3Aa^2b-3Bab^2-Ab^3\right)(dx+c)-\left(Aa^3-3Ba^2b-3Aab^2+Bb^3\right)\log\left(\tan(dx+c)^2+1\right)+2\left(Aa^3-3Ba^2b\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*(d*x + c) - (A*a^3 - 3*B*a^
2*b - 3*A*a*b^2 + B*b^3)*log(tan(d*x + c)^2 + 1) + 2*(A*a^3 - 3*B*a^2*b - 3
*A*a*b^2)*log(abs(tan(d*x + c))) - (3*A*a^3*tan(d*x + c)^2 - 9*B*a^2*b*tan(
d*x + c)^2 - 9*A*a*b^2*tan(d*x + c)^2 - 2*B*a^3*tan(d*x + c) - 6*A*a^2*b*ta
n(d*x + c) - A*a^3)/tan(d*x + c)^2)/d
```

3.254 $\int \cot^4(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=154

$$\frac{a\left(3a^2A-9abB-8Ab^2\right)\cot(c+dx)}{3d}-\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\sin(c+dx))}{d}+x\left(a^3A-3a^2bB-3aAb^2+b^3\right.$$

```
[Out] (a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x + (a*(3*a^2*A - 8*A*b^2 - 9*a*b*B
)*Cot[c + d*x])/(3*d) - (a^2*(5*A*b + 3*a*B)*Cot[c + d*x]^2)/(6*d) - ((3*a^
2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]
^3*(a + b*Tan[c + d*x])^2)/(3*d)
```

Rubi [A] time = 0.364792, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3605, 3635, 3628, 3531, 3475}

$$\frac{a\left(3a^2A-9abB-8Ab^2\right)\cot(c+dx)}{3d}-\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\sin(c+dx))}{d}+x\left(a^3A-3a^2bB-3aAb^2+b^3\right.$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x + (a*(3*a^2*A - 8*A*b^2 - 9*a*b*B
)*Cot[c + d*x])/(3*d) - (a^2*(5*A*b + 3*a*B)*Cot[c + d*x]^2)/(6*d) - ((3*a^
2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]
^3*(a + b*Tan[c + d*x])^2)/(3*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
```

```
LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)(a+b\tan(c+dx))^2}{3d} + \frac{1}{3}\int \cot^3(c+dx)$$
$$= -\frac{a^2(5Ab+3aB)\cot^2(c+dx)}{6d} - \frac{aA\cot^3(c+dx)(a+b\tan}{3d}$$
$$= \frac{a\left(3a^2A-8Ab^2-9abB\right)\cot(c+dx)}{3d} - \frac{a^2(5Ab+3aB)\cot}{6d}$$
$$= \left(a^3A-3aAb^2-3a^2bB+b^3B\right)x + \frac{a\left(3a^2A-8Ab^2-9abB\right.}{3d}$$
$$= \left(a^3A-3aAb^2-3a^2bB+b^3B\right)x + \frac{a\left(3a^2A-8Ab^2-9abB\right.}{3d}$$

Mathematica [C] time = 1.2189, size = 164, normalized size = 1.06

$$\frac{6a\left(a^2A-3abB-3Ab^2\right)\cot(c+dx)-6\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\log(\tan(c+dx))-3a^2(aB+3Ab)\cot^2(c+dx)}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (6*a*(a^2*A - 3*A*b^2 - 3*a*b*B)*Cot[c + d*x] - 3*a^2*(3*A*b + a*B)*Cot[c +
 d*x]^2 - 2*a^3*A*Cot[c + d*x]^3 + 3*(a + I*b)^3*((-I)*A + B)*Log[I - Tan[c
 + d*x]] - 6*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Log[Tan[c + d*x]] + 3*
(a - I*b)^3*(I*A + B)*Log[I + Tan[c + d*x]])/(6*d)
```

Maple [A] time = 0.081, size = 233, normalized size = 1.5

$$\frac{Ab^3\ln(\sin(dx+c))}{d} + Bb^3x + \frac{Bb^3c}{d} - 3\,Aab^2x - 3\,\frac{A\cot(dx+c)\,ab^2}{d} - 3\,\frac{Aab^2c}{d} + 3\,\frac{Bab^2\ln(\sin(dx+c))}{d} - \frac{3\,Aa^2b\,(c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/d*A*b^3*ln(sin(d*x+c))+B*b^3*x+1/d*B*b^3*c-3*A*a*b^2*x-3/d*A*cot(d*x+c)*a
*b^2-3/d*A*a*b^2*c+3/d*B*a*b^2*ln(sin(d*x+c))-3/2/d*A*a^2*b*cot(d*x+c)^2-3/
d*A*a^2*b*ln(sin(d*x+c))-3*B*a^2*b*x-3/d*B*cot(d*x+c)*a^2*b-3/d*B*a^2*b*c-1
/3/d*A*a^3*cot(d*x+c)^3+1/d*A*cot(d*x+c)*a^3+A*a^3*x+1/d*A*a^3*c-1/2/d*B*a^
```

```
3*cot(d*x+c)^2-1/d*B*a^3*ln(sin(d*x+c))
```

Maxima [A] time = 1.67277, size = 243, normalized size = 1.58

$$\frac{6\left(Aa^3-3Ba^2b-3Aab^2+Bb^3\right)(dx+c)+3\left(Ba^3+3Aa^2b-3Bab^2-Ab^3\right)\log\left(\tan(dx+c)^2+1\right)-6\left(Ba^3+3Aa^2b-\right.}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

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

Fricas [A] time = 1.9678, size = 419, normalized size = 2.72

$$-\frac{3\left(Ba^3+3Aa^2b-3Bab^2-Ab^3\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^3+2Aa^3+3\left(Ba^3+3Aa^2b-2\left(Aa^3-3Ba^2b-3Aab^2\right.\right.}{6d\tan(dx+c)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

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

Sympy [A] time = 14.8186, size = 332, normalized size = 2.16

$$\begin{cases} \tilde{\infty} A a^3 x \\ x(A + B\tan(c))(a + b\tan(c))^3 \cot^4(c) \\ Aa^3x + \frac{Aa^3}{d\tan(c+dx)} - \frac{Aa^3}{3d\tan^3(c+dx)} + \frac{3Aa^2b\log(\tan^2(c+dx)+1)}{2d} - \frac{3Aa^2b\log(\tan(c+dx))}{d} - \frac{3Aa^2b}{2d\tan^2(c+dx)} - 3Aab^2x - \frac{3Aab^2}{d\tan(c+dx)} - \cdots \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**3*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**3*cot(c)**4, Eq(d, 0)), (A*a**3*x + A
*a**3/(d*tan(c + d*x)) - A*a**3/(3*d*tan(c + d*x)**3) + 3*A*a**2*b*log(tan(
c + d*x)**2 + 1)/(2*d) - 3*A*a**2*b*log(tan(c + d*x))/d - 3*A*a**2*b/(2*d*t
an(c + d*x)**2) - 3*A*a*b**2*x - 3*A*a*b**2/(d*tan(c + d*x)) - A*b**3*log(t
an(c + d*x)**2 + 1)/(2*d) + A*b**3*log(tan(c + d*x))/d + B*a**3*log(tan(c +
 d*x)**2 + 1)/(2*d) - B*a**3*log(tan(c + d*x))/d - B*a**3/(2*d*tan(c + d*x)
**2) - 3*B*a**2*b*x - 3*B*a**2*b/(d*tan(c + d*x)) - 3*B*a*b**2*log(tan(c +
d*x)**2 + 1)/(2*d) + 3*B*a*b**2*log(tan(c + d*x))/d + B*b**3*x, True))
```

Giac [B] time = 2.04711, size = 527, normalized size = 3.42

$$\frac{Aa^3\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^3 - 3Ba^3\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^2 - 9Aa^2b\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right)^2 - 15Aa^3\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) + 36Ba^2b\tan\left(\frac{1}{2}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/24*(A*a^3*tan(1/2*d*x + 1/2*c)^3 - 3*B*a^3*tan(1/2*d*x + 1/2*c)^2 - 9*A*a
^2*b*tan(1/2*d*x + 1/2*c)^2 - 15*A*a^3*tan(1/2*d*x + 1/2*c) + 36*B*a^2*b*ta
n(1/2*d*x + 1/2*c) + 36*A*a*b^2*tan(1/2*d*x + 1/2*c) + 24*(A*a^3 - 3*B*a^2*
b - 3*A*a*b^2 + B*b^3)*(d*x + c) + 24*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^
3)*log(tan(1/2*d*x + 1/2*c)^2 + 1) - 24*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*
b^3)*log(abs(tan(1/2*d*x + 1/2*c))) + (44*B*a^3*tan(1/2*d*x + 1/2*c)^3 + 13
2*A*a^2*b*tan(1/2*d*x + 1/2*c)^3 - 132*B*a*b^2*tan(1/2*d*x + 1/2*c)^3 - 44*
A*b^3*tan(1/2*d*x + 1/2*c)^3 + 15*A*a^3*tan(1/2*d*x + 1/2*c)^2 - 36*B*a^2*b
*tan(1/2*d*x + 1/2*c)^2 - 36*A*a*b^2*tan(1/2*d*x + 1/2*c)^2 - 3*B*a^3*tan(1
```

```
/2*d*x + 1/2*c) - 9*A*a^2*b*tan(1/2*d*x + 1/2*c) - A*a^3)/tan(1/2*d*x + 1/2
*c)^3)/d
```

3.255 $\int \cot^5(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=191

$$\frac{a\left(2a^2A-6abB-5Ab^2\right)\cot^2(c+dx)}{4d}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\cot(c+dx)}{d}+\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\mathrm{lo}}{d}$$

```
[Out] (3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x + ((3*a^2*A*b - A*b^3 + a^3*B - 3
*a*b^2*B)*Cot[c + d*x])/d + (a*(2*a^2*A - 5*A*b^2 - 6*a*b*B)*Cot[c + d*x]^2
)/(4*d) - (a^2*(3*A*b + 2*a*B)*Cot[c + d*x]^3)/(6*d) + ((a^3*A - 3*a*A*b^2
- 3*a^2*b*B + b^3*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^4*(a + b*Tan[
c + d*x])^2)/(4*d)
```

Rubi [A] time = 0.452533, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3605, 3635, 3628, 3529, 3531, 3475}

$$\frac{a\left(2a^2A-6abB-5Ab^2\right)\cot^2(c+dx)}{4d}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\cot(c+dx)}{d}+\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\mathrm{lo}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] (3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*x + ((3*a^2*A*b - A*b^3 + a^3*B - 3
*a*b^2*B)*Cot[c + d*x])/d + (a*(2*a^2*A - 5*A*b^2 - 6*a*b*B)*Cot[c + d*x]^2
)/(4*d) - (a^2*(3*A*b + 2*a*B)*Cot[c + d*x]^3)/(6*d) + ((a^3*A - 3*a*A*b^2
- 3*a^2*b*B + b^3*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^4*(a + b*Tan[
c + d*x])^2)/(4*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
```

```
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^5(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^4(c+dx)(a+b\tan(c+dx))^2}{4d} + \frac{1}{4}\int \cot^4(c+dx)$$
$$= -\frac{a^2(3Ab+2aB)\cot^3(c+dx)}{6d} - \frac{aA\cot^4(c+dx)(a+b\tan}{4d}$$
$$= \frac{a\left(2a^2A-5Ab^2-6abB\right)\cot^2(c+dx)}{4d} - \frac{a^2(3Ab+2aB)\,\mathrm{co}}{6d}$$
$$= \frac{\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\cot(c+dx)}{d} + \frac{a\left(2a^2A-5\right.}{}$$
$$= \left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)x + \frac{\left(3a^2Ab-Ab^3+a^3B-\right.}{d}$$
$$= \left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)x + \frac{\left(3a^2Ab-Ab^3+a^3B-\right.}{d}$$

Mathematica [C] time = 0.703405, size = 199, normalized size = 1.04

$$\frac{6a\left(a^2A-3abB-3Ab^2\right)\cot^2(c+dx)+12\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\cot(c+dx)+12\left(a^3A-3a^2bB-3aAb^2+b^3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (12*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Cot[c + d*x] + 6*a*(a^2*A - 3*A
*b^2 - 3*a*b*B)*Cot[c + d*x]^2 - 4*a^2*(3*A*b + a*B)*Cot[c + d*x]^3 - 3*a^3
*A*Cot[c + d*x]^4 - 6*(a + I*b)^3*(A + I*B)*Log[I - Tan[c + d*x]] + 12*(a^3
*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Log[Tan[c + d*x]] - 6*(a - I*b)^3*(A -
I*B)*Log[I + Tan[c + d*x]])/(12*d)
```

Maple [A] time = 0.093, size = 302, normalized size = 1.6

$$-Ab^3x - \frac{A\cot(dx+c)\,b^3}{d} - \frac{Ab^3c}{d} + \frac{Bb^3\ln(\sin(dx+c))}{d} - \frac{3\,Aab^2(\cot(dx+c))^2}{2\,d} - 3\,\frac{Aab^2\ln(\sin(dx+c))}{d} - 3\,Bab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*b^3*x-1/d*A*cot(d*x+c)*b^3-1/d*A*b^3*c+1/d*B*b^3*ln(sin(d*x+c))-3/2/d*A*
a*b^2*cot(d*x+c)^2-3/d*A*a*b^2*ln(sin(d*x+c))-3*B*a*b^2*x-3/d*B*cot(d*x+c)*
a*b^2-3/d*B*a*b^2*c-1/d*A*a^2*b*cot(d*x+c)^3+3*A*x*a^2*b+3/d*A*cot(d*x+c)*a
^2*b+3/d*A*a^2*b*c-3/2/d*B*a^2*b*cot(d*x+c)^2-3/d*B*a^2*b*ln(sin(d*x+c))-1/
4/d*A*a^3*cot(d*x+c)^4+1/2/d*A*a^3*cot(d*x+c)^2+a^3*A*ln(sin(d*x+c))/d-1/3/
d*B*a^3*cot(d*x+c)^3+1/d*B*cot(d*x+c)*a^3+B*a^3*x+1/d*B*a^3*c
```

Maxima [A] time = 1.4885, size = 290, normalized size = 1.52

$$\frac{12\left(Ba^3+3\,Aa^2b-3\,Bab^2-Ab^3\right)(dx+c)-6\left(Aa^3-3\,Ba^2b-3\,Aab^2+Bb^3\right)\log\left(\tan(dx+c)^2+1\right)+12\left(Aa^3-3\,Ba^2b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/12*(12*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*(d*x + c) - 6*(A*a^3 - 3*B
*a^2*b - 3*A*a*b^2 + B*b^3)*log(tan(d*x + c)^2 + 1) + 12*(A*a^3 - 3*B*a^2*b
 - 3*A*a*b^2 + B*b^3)*log(tan(d*x + c)) - (3*A*a^3 - 12*(B*a^3 + 3*A*a^2*b
- 3*B*a*b^2 - A*b^3)*tan(d*x + c)^3 - 6*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2)*tan
(d*x + c)^2 + 4*(B*a^3 + 3*A*a^2*b)*tan(d*x + c))/tan(d*x + c)^4)/d
```

Fricas [A] time = 2.00943, size = 518, normalized size = 2.71

$$\frac{6\left(Aa^3-3\,Ba^2b-3\,Aab^2+Bb^3\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^4+3\left(3\,Aa^3-6\,Ba^2b-6\,Aab^2+4\left(Ba^3+3\,Aa^2b-3\,Bab\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/12*(6*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*log(tan(d*x + c)^2/(tan(d*x
 + c)^2 + 1))*tan(d*x + c)^4 + 3*(3*A*a^3 - 6*B*a^2*b - 6*A*a*b^2 + 4*(B*a^
3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*d*x)*tan(d*x + c)^4 - 3*A*a^3 + 12*(B*a^
```

```
3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*tan(d*x + c)^3 + 6*(A*a^3 - 3*B*a^2*b -
3*A*a*b^2)*tan(d*x + c)^2 - 4*(B*a^3 + 3*A*a^2*b)*tan(d*x + c))/(d*tan(d*x
+ c)^4)
```

Sympy [A] time = 41.5826, size = 400, normalized size = 2.09

$$\begin{cases} \tilde{\infty} Aa^3x \\ x(A+B\tan(c))(a+b\tan(c))^3\cot^5(c) \\ -\frac{Aa^3\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{Aa^3\log(\tan(c+dx))}{d} + \frac{Aa^3}{2d\tan^2(c+dx)} - \frac{Aa^3}{4d\tan^4(c+dx)} + 3Aa^2bx + \frac{3Aa^2b}{d\tan(c+dx)} - \frac{Aa^2b}{d\tan^3(c+dx)} + \frac{3Aab^2\log(\mathrm{t}}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**3*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**3*cot(c)**5, Eq(d, 0)), (-A*a**3*log(
tan(c + d*x)**2 + 1)/(2*d) + A*a**3*log(tan(c + d*x))/d + A*a**3/(2*d*tan(c
 + d*x)**2) - A*a**3/(4*d*tan(c + d*x)**4) + 3*A*a**2*b*x + 3*A*a**2*b/(d*t
an(c + d*x)) - A*a**2*b/(d*tan(c + d*x)**3) + 3*A*a*b**2*log(tan(c + d*x)**
2 + 1)/(2*d) - 3*A*a*b**2*log(tan(c + d*x))/d - 3*A*a*b**2/(2*d*tan(c + d*x
)**2) - A*b**3*x - A*b**3/(d*tan(c + d*x)) + B*a**3*x + B*a**3/(d*tan(c + d
*x)) - B*a**3/(3*d*tan(c + d*x)**3) + 3*B*a**2*b*log(tan(c + d*x)**2 + 1)/(
2*d) - 3*B*a**2*b*log(tan(c + d*x))/d - 3*B*a**2*b/(2*d*tan(c + d*x)**2) -
3*B*a*b**2*x - 3*B*a*b**2/(d*tan(c + d*x)) - B*b**3*log(tan(c + d*x)**2 + 1
)/(2*d) + B*b**3*log(tan(c + d*x))/d, True))
```

Giac [B] time = 2.10846, size = 713, normalized size = 3.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/192*(3*A*a^3*tan(1/2*d*x + 1/2*c)^4 - 8*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 2
4*A*a^2*b*tan(1/2*d*x + 1/2*c)^3 - 36*A*a^3*tan(1/2*d*x + 1/2*c)^2 + 72*B*a
^2*b*tan(1/2*d*x + 1/2*c)^2 + 72*A*a*b^2*tan(1/2*d*x + 1/2*c)^2 + 120*B*a^3
```

```
*tan(1/2*d*x + 1/2*c) + 360*A*a^2*b*tan(1/2*d*x + 1/2*c) - 288*B*a*b^2*tan(
1/2*d*x + 1/2*c) - 96*A*b^3*tan(1/2*d*x + 1/2*c) - 192*(B*a^3 + 3*A*a^2*b -
 3*B*a*b^2 - A*b^3)*(d*x + c) + 192*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)
*log(tan(1/2*d*x + 1/2*c)^2 + 1) - 192*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b
^3)*log(abs(tan(1/2*d*x + 1/2*c))) + (400*A*a^3*tan(1/2*d*x + 1/2*c)^4 - 12
00*B*a^2*b*tan(1/2*d*x + 1/2*c)^4 - 1200*A*a*b^2*tan(1/2*d*x + 1/2*c)^4 + 4
00*B*b^3*tan(1/2*d*x + 1/2*c)^4 - 120*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 360*A*
a^2*b*tan(1/2*d*x + 1/2*c)^3 + 288*B*a*b^2*tan(1/2*d*x + 1/2*c)^3 + 96*A*b^
3*tan(1/2*d*x + 1/2*c)^3 - 36*A*a^3*tan(1/2*d*x + 1/2*c)^2 + 72*B*a^2*b*tan
(1/2*d*x + 1/2*c)^2 + 72*A*a*b^2*tan(1/2*d*x + 1/2*c)^2 + 8*B*a^3*tan(1/2*d
*x + 1/2*c) + 24*A*a^2*b*tan(1/2*d*x + 1/2*c) + 3*A*a^3)/tan(1/2*d*x + 1/2*
c)^4)/d
```

3.256 $\int \cot^6(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=233

$$\frac{a\left(5a^2A-15abB-12Ab^2\right)\cot^3(c+dx)}{15d}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\cot^2(c+dx)}{2d}-\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)}{d}$$

```
[Out] -((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x) - ((a^3*A - 3*a*A*b^2 - 3*a^2*
b*B + b^3*B)*Cot[c + d*x])/d + ((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Cot
[c + d*x]^2)/(2*d) + (a*(5*a^2*A - 12*A*b^2 - 15*a*b*B)*Cot[c + d*x]^3)/(15
*d) - (a^2*(7*A*b + 5*a*B)*Cot[c + d*x]^4)/(20*d) + ((3*a^2*A*b - A*b^3 + a
^3*B - 3*a*b^2*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^5*(a + b*Tan[c +
 d*x])^2)/(5*d)
```

Rubi [A] time = 0.495875, antiderivative size = 233, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3605, 3635, 3628, 3529, 3531, 3475}

$$\frac{a\left(5a^2A-15abB-12Ab^2\right)\cot^3(c+dx)}{15d}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\cot^2(c+dx)}{2d}-\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^6*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*x) - ((a^3*A - 3*a*A*b^2 - 3*a^2*
b*B + b^3*B)*Cot[c + d*x])/d + ((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Cot
[c + d*x]^2)/(2*d) + (a*(5*a^2*A - 12*A*b^2 - 15*a*b*B)*Cot[c + d*x]^3)/(15
*d) - (a^2*(7*A*b + 5*a*B)*Cot[c + d*x]^4)/(20*d) + ((3*a^2*A*b - A*b^3 + a
^3*B - 3*a*b^2*B)*Log[Sin[c + d*x]])/d - (a*A*Cot[c + d*x]^5*(a + b*Tan[c +
 d*x])^2)/(5*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
```

```
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^6(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = -\frac{aA\cot^5(c+dx)(a+b\tan(c+dx))^2}{5d} + \frac{1}{5}\int \cot^5(c+dx)$$
$$= -\frac{a^2(7Ab+5aB)\cot^4(c+dx)}{20d} - \frac{aA\cot^5(c+dx)(a+b\tan}{5d}$$
$$= \frac{a\left(5a^2A-12Ab^2-15abB\right)\cot^3(c+dx)}{15d} - \frac{a^2(7Ab+5aB)}{20d}$$
$$= \frac{\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\cot^2(c+dx)}{2d} + \frac{a\left(5a^2A-1\right.}{}$$
$$= -\frac{\left(a^3A-3aAb^2-3a^2bB+b^3B\right)\cot(c+dx)}{d} + \frac{\left(3a^2Ab-\right.}{}$$
$$= -\left(a^3A-3aAb^2-3a^2bB+b^3B\right)x - \frac{\left(a^3A-3aAb^2-3a^2b\right.}{d}$$
$$= -\left(a^3A-3aAb^2-3a^2bB+b^3B\right)x - \frac{\left(a^3A-3aAb^2-3a^2b\right.}{d}$$

Mathematica [C] time = 1.15635, size = 237, normalized size = 1.02

$$\frac{20a\left(a^2A-3abB-3Ab^2\right)\cot^3(c+dx)+30\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\cot^2(c+dx)-60\left(a^3A-3a^2bB-3aAb^2+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^6*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-60*(a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Cot[c + d*x] + 30*(3*a^2*A*b -
 A*b^3 + a^3*B - 3*a*b^2*B)*Cot[c + d*x]^2 + 20*a*(a^2*A - 3*A*b^2 - 3*a*b*
B)*Cot[c + d*x]^3 - 15*a^2*(3*A*b + a*B)*Cot[c + d*x]^4 - 12*a^3*A*Cot[c +
d*x]^5 + (30*I)*(a + I*b)^3*(A + I*B)*Log[I - Tan[c + d*x]] + 60*(3*a^2*A*b
 - A*b^3 + a^3*B - 3*a*b^2*B)*Log[Tan[c + d*x]] + 30*(I*a + b)^3*(A - I*B)*
Log[I + Tan[c + d*x]])/(60*d)
```

Maple [A] time = 0.087, size = 376, normalized size = 1.6

$$-\frac{A\cot(dx+c)a^3}{d} - Aa^3x - \frac{Bb^3c}{d} - Bb^3x - \frac{Aa^3c}{d} + \frac{Ba^3\ln(\sin(dx+c))}{d} - \frac{Ab^3\ln(\sin(dx+c))}{d} + 3\frac{Aab^2c}{d} + 3\frac{Ba^2bc}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^6*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/d*A*cot(d*x+c)*a^3-A*a^3*x-1/d*B*b^3*c-B*b^3*x-1/d*A*a^3*c+1/d*B*a^3*ln(
sin(d*x+c))-1/d*A*b^3*ln(sin(d*x+c))+3/d*A*a*b^2*c+3/d*B*a^2*b*c+3/d*A*a^2*
b*ln(sin(d*x+c))-3/d*B*a*b^2*ln(sin(d*x+c))+3/2/d*A*a^2*b*cot(d*x+c)^2+3/d*
B*cot(d*x+c)*a^2*b+3/d*A*cot(d*x+c)*a*b^2-1/d*A*a*b^2*cot(d*x+c)^3-3/2/d*B*
a*b^2*cot(d*x+c)^2-3/4/d*A*a^2*b*cot(d*x+c)^4-1/d*B*a^2*b*cot(d*x+c)^3-1/5/
d*A*a^3*cot(d*x+c)^5-1/4/d*B*a^3*cot(d*x+c)^4+1/3/d*A*a^3*cot(d*x+c)^3+1/2/
d*B*a^3*cot(d*x+c)^2-1/2/d*A*b^3*cot(d*x+c)^2-1/d*B*cot(d*x+c)*b^3+3*A*a*b^
2*x+3*B*a^2*b*x
```

Maxima [A] time = 1.48341, size = 338, normalized size = 1.45

$$-\frac{60\left(Aa^3-3\,Ba^2b-3\,Aab^2+Bb^3\right)(dx+c)+30\left(Ba^3+3\,Aa^2b-3\,Bab^2-Ab^3\right)\log\left(\tan\left(dx+c\right)^2+1\right)-60\left(Ba^3+3\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/60*(60*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*(d*x + c) + 30*(B*a^3 + 3
*A*a^2*b - 3*B*a*b^2 - A*b^3)*log(tan(d*x + c)^2 + 1) - 60*(B*a^3 + 3*A*a^2
*b - 3*B*a*b^2 - A*b^3)*log(tan(d*x + c)) + (60*(A*a^3 - 3*B*a^2*b - 3*A*a*
b^2 + B*b^3)*tan(d*x + c)^4 + 12*A*a^3 - 30*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2
- A*b^3)*tan(d*x + c)^3 - 20*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2)*tan(d*x + c)^2
 + 15*(B*a^3 + 3*A*a^2*b)*tan(d*x + c))/tan(d*x + c)^5)/d
```

Fricas [A] time = 2.00985, size = 620, normalized size = 2.66

$$\frac{30\left(Ba^3+3\,Aa^2b-3\,Bab^2-Ab^3\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^5+15\left(3\,Ba^3+9\,Aa^2b-6\,Bab^2-2\,Ab^3-4\left(Aa^3-3\,Ba\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/60*(30*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*log(tan(d*x + c)^2/(tan(d*
x + c)^2 + 1))*tan(d*x + c)^5 + 15*(3*B*a^3 + 9*A*a^2*b - 6*B*a*b^2 - 2*A*b
^3 - 4*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*d*x)*tan(d*x + c)^5 - 60*(A*
a^3 - 3*B*a^2*b - 3*A*a*b^2 + B*b^3)*tan(d*x + c)^4 - 12*A*a^3 + 30*(B*a^3
+ 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*tan(d*x + c)^3 + 20*(A*a^3 - 3*B*a^2*b - 3
*A*a*b^2)*tan(d*x + c)^2 - 15*(B*a^3 + 3*A*a^2*b)*tan(d*x + c))/(d*tan(d*x
+ c)^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**6*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.10664, size = 905, normalized size = 3.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/960*(6*A*a^3*tan(1/2*d*x + 1/2*c)^5 - 15*B*a^3*tan(1/2*d*x + 1/2*c)^4 - 4
5*A*a^2*b*tan(1/2*d*x + 1/2*c)^4 - 70*A*a^3*tan(1/2*d*x + 1/2*c)^3 + 120*B*
a^2*b*tan(1/2*d*x + 1/2*c)^3 + 120*A*a*b^2*tan(1/2*d*x + 1/2*c)^3 + 180*B*a
^3*tan(1/2*d*x + 1/2*c)^2 + 540*A*a^2*b*tan(1/2*d*x + 1/2*c)^2 - 360*B*a*b^
2*tan(1/2*d*x + 1/2*c)^2 - 120*A*b^3*tan(1/2*d*x + 1/2*c)^2 + 660*A*a^3*tan
(1/2*d*x + 1/2*c) - 1800*B*a^2*b*tan(1/2*d*x + 1/2*c) - 1800*A*a*b^2*tan(1/
2*d*x + 1/2*c) + 480*B*b^3*tan(1/2*d*x + 1/2*c) - 960*(A*a^3 - 3*B*a^2*b -
3*A*a*b^2 + B*b^3)*(d*x + c) - 960*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*
log(tan(1/2*d*x + 1/2*c)^2 + 1) + 960*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*b^
3)*log(abs(tan(1/2*d*x + 1/2*c))) - (2192*B*a^3*tan(1/2*d*x + 1/2*c)^5 + 65
76*A*a^2*b*tan(1/2*d*x + 1/2*c)^5 - 6576*B*a*b^2*tan(1/2*d*x + 1/2*c)^5 - 2
192*A*b^3*tan(1/2*d*x + 1/2*c)^5 + 660*A*a^3*tan(1/2*d*x + 1/2*c)^4 - 1800*
```

```
B*a^2*b*tan(1/2*d*x + 1/2*c)^4 - 1800*A*a*b^2*tan(1/2*d*x + 1/2*c)^4 + 480*
B*b^3*tan(1/2*d*x + 1/2*c)^4 - 180*B*a^3*tan(1/2*d*x + 1/2*c)^3 - 540*A*a^2
*b*tan(1/2*d*x + 1/2*c)^3 + 360*B*a*b^2*tan(1/2*d*x + 1/2*c)^3 + 120*A*b^3*
tan(1/2*d*x + 1/2*c)^3 - 70*A*a^3*tan(1/2*d*x + 1/2*c)^2 + 120*B*a^2*b*tan(
1/2*d*x + 1/2*c)^2 + 120*A*a*b^2*tan(1/2*d*x + 1/2*c)^2 + 15*B*a^3*tan(1/2*
d*x + 1/2*c) + 45*A*a^2*b*tan(1/2*d*x + 1/2*c) + 6*A*a^3)/tan(1/2*d*x + 1/2
*c)^5)/d
```

3.257 $\int \tan^2(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=263

$$-\frac{(a^2B+2aAb-b^2B)(a+b\tan(c+dx))^2}{2d}-\frac{b(3a^2Ab+a^3B-3ab^2B-Ab^3)\tan(c+dx)}{d}+\frac{(4a^3Ab-6a^2b^2B+a^4B-$$

```
[Out] -((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x) + ((4*a^3*A*b -
4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Log[Cos[c + d*x]])/d - (b*(3*a^2*A
*b - A*b^3 + a^3*B - 3*a*b^2*B)*Tan[c + d*x])/d - ((2*a*A*b + a^2*B - b^2*B
)*(a + b*Tan[c + d*x])^2)/(2*d) - ((A*b + a*B)*(a + b*Tan[c + d*x])^3)/(3*d
) - (B*(a + b*Tan[c + d*x])^4)/(4*d) + ((6*A*b - a*B)*(a + b*Tan[c + d*x])^
5)/(30*b^2*d) + (B*Tan[c + d*x]*(a + b*Tan[c + d*x])^5)/(6*b*d)
```

Rubi [A] time = 0.431918, antiderivative size = 263, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3607, 3630, 3528, 3525, 3475}

$$-\frac{(a^2B+2aAb-b^2B)(a+b\tan(c+dx))^2}{2d}-\frac{b(3a^2Ab+a^3B-3ab^2B-Ab^3)\tan(c+dx)}{d}+\frac{(4a^3Ab-6a^2b^2B+a^4B-$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x) + ((4*a^3*A*b -
4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Log[Cos[c + d*x]])/d - (b*(3*a^2*A
*b - A*b^3 + a^3*B - 3*a*b^2*B)*Tan[c + d*x])/d - ((2*a*A*b + a^2*B - b^2*B
)*(a + b*Tan[c + d*x])^2)/(2*d) - ((A*b + a*B)*(a + b*Tan[c + d*x])^3)/(3*d
) - (B*(a + b*Tan[c + d*x])^4)/(4*d) + ((6*A*b - a*B)*(a + b*Tan[c + d*x])^
5)/(30*b^2*d) + (B*Tan[c + d*x]*(a + b*Tan[c + d*x])^5)/(6*b*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
```

```
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{B\tan(c+dx)(a+b\tan(c+dx))^5}{6bd} + \frac{\int(a+b\tan(c+dx))}{}$$
$$= \frac{(6Ab-aB)(a+b\tan(c+dx))^5}{30b^2d} + \frac{B\tan(c+dx)(a+b\tan}{6bd}$$
$$= -\frac{B(a+b\tan(c+dx))^4}{4d} + \frac{(6Ab-aB)(a+b\tan(c+dx))^5}{30b^2d}$$
$$= -\frac{(Ab+aB)(a+b\tan(c+dx))^3}{3d} - \frac{B(a+b\tan(c+dx))^4}{4d}$$
$$= -\frac{\left(2aAb+a^2B-b^2B\right)(a+b\tan(c+dx))^2}{2d} - \frac{(Ab+aB)(a}{}$$
$$= -\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x - \frac{b\left(3a^2Ab-\right.}{}$$
$$= -\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x + \frac{\left(4a^3Ab-\right.}{}$$

Mathematica [C] time = 5.60784, size = 290, normalized size = 1.1

$$\frac{10(Ab-aB)\left(6b^2\left(b^2-6a^2\right)\tan(c+dx)-12ab^3\tan^2(c+dx)-3i(a-ib)^4\log(\tan(c+dx)+i)+3i(a+ib)^4\log(-\tan(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

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

Maple [B] time = 0.014, size = 539, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*a^4*B*tan(d*x+c)^2+1/d*a^4*A*tan(d*x+c)-1/2/d*a^4*B*ln(1+tan(d*x+c)^2
)-1/d*a^4*A*arctan(tan(d*x+c))+2/d*A*tan(d*x+c)^2*a^3*b+2/d*A*tan(d*x+c)^3*
a^2*b^2-4/d*B*arctan(tan(d*x+c))*a*b^3-6/d*A*a^2*b^2*tan(d*x+c)-4/d*B*a^3*b
*tan(d*x+c)-3/d*B*tan(d*x+c)^2*a^2*b^2-2/d*A*tan(d*x+c)^2*a*b^3+2/d*ln(1+ta
n(d*x+c)^2)*A*a*b^3+3/2/d*B*tan(d*x+c)^4*a^2*b^2+4/d*B*a*b^3*tan(d*x+c)-2/d
*ln(1+tan(d*x+c)^2)*A*a^3*b+4/3/d*B*tan(d*x+c)^3*a^3*b-4/3/d*B*tan(d*x+c)^3
*a*b^3+3/d*ln(1+tan(d*x+c)^2)*B*a^2*b^2+6/d*A*arctan(tan(d*x+c))*a^2*b^2+4/
d*B*arctan(tan(d*x+c))*a^3*b+1/d*A*tan(d*x+c)^4*a*b^3+1/d*A*b^4*tan(d*x+c)+
1/2/d*B*tan(d*x+c)^2*b^4-1/3/d*A*tan(d*x+c)^3*b^4-1/4/d*B*b^4*tan(d*x+c)^4+
1/6/d*B*b^4*tan(d*x+c)^6+1/5/d*A*tan(d*x+c)^5*b^4-1/d*A*arctan(tan(d*x+c))*
b^4-1/2/d*ln(1+tan(d*x+c)^2)*B*b^4+4/5/d*B*tan(d*x+c)^5*a*b^3
```

Maxima [A] time = 1.49655, size = 392, normalized size = 1.49

$$\frac{10\,Bb^4\tan\left(dx+c\right)^6+12\left(4\,Bab^3+Ab^4\right)\tan\left(dx+c\right)^5+15\left(6\,Ba^2b^2+4\,Aab^3-Bb^4\right)\tan\left(dx+c\right)^4+20\left(4\,Ba^3b+6\,Aa^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/60*(10*B*b^4*tan(d*x + c)^6 + 12*(4*B*a*b^3 + A*b^4)*tan(d*x + c)^5 + 15*
(6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(d*x + c)^4 + 20*(4*B*a^3*b + 6*A*a^2*
b^2 - 4*B*a*b^3 - A*b^4)*tan(d*x + c)^3 + 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b
^2 - 4*A*a*b^3 + B*b^4)*tan(d*x + c)^2 - 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^
2 + 4*B*a*b^3 + A*b^4)*(d*x + c) - 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*
A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1) + 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*
b^2 + 4*B*a*b^3 + A*b^4)*tan(d*x + c))/d
```

Fricas [A] time = 2.16914, size = 662, normalized size = 2.52

$$\frac{10\,Bb^4\tan\left(dx+c\right)^6+12\left(4\,Bab^3+Ab^4\right)\tan\left(dx+c\right)^5+15\left(6\,Ba^2b^2+4\,Aab^3-Bb^4\right)\tan\left(dx+c\right)^4+20\left(4\,Ba^3b+6\,Aa^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/60*(10*B*b^4*tan(d*x + c)^6 + 12*(4*B*a*b^3 + A*b^4)*tan(d*x + c)^5 + 15*
(6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(d*x + c)^4 + 20*(4*B*a^3*b + 6*A*a^2*
b^2 - 4*B*a*b^3 - A*b^4)*tan(d*x + c)^3 - 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b
^2 + 4*B*a*b^3 + A*b^4)*d*x + 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b
^3 + B*b^4)*tan(d*x + c)^2 + 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^
3 + B*b^4)*log(1/(tan(d*x + c)^2 + 1)) + 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^
2 + 4*B*a*b^3 + A*b^4)*tan(d*x + c))/d
```

Sympy [A] time = 1.62484, size = 536, normalized size = 2.04

$$\begin{cases} -Aa^4x + \frac{Aa^4\tan(c+dx)}{d} - \frac{2Aa^3b\log\left(\tan^2(c+dx)+1\right)}{d} + \frac{2Aa^3b\tan^2(c+dx)}{d} + 6Aa^2b^2x + \frac{2Aa^2b^2\tan^3(c+dx)}{d} - \frac{6Aa^2b^2\tan(c+dx)}{d} + \frac{2Aab^3}{} \\ x\left(A+B\tan(c)\right)\left(a+b\tan(c)\right)^4\tan^2(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a**4*x + A*a**4*tan(c + d*x)/d - 2*A*a**3*b*log(tan(c + d*x)*
*2 + 1)/d + 2*A*a**3*b*tan(c + d*x)**2/d + 6*A*a**2*b**2*x + 2*A*a**2*b**2*
tan(c + d*x)**3/d - 6*A*a**2*b**2*tan(c + d*x)/d + 2*A*a*b**3*log(tan(c + d
*x)**2 + 1)/d + A*a*b**3*tan(c + d*x)**4/d - 2*A*a*b**3*tan(c + d*x)**2/d -
 A*b**4*x + A*b**4*tan(c + d*x)**5/(5*d) - A*b**4*tan(c + d*x)**3/(3*d) + A
*b**4*tan(c + d*x)/d - B*a**4*log(tan(c + d*x)**2 + 1)/(2*d) + B*a**4*tan(c
 + d*x)**2/(2*d) + 4*B*a**3*b*x + 4*B*a**3*b*tan(c + d*x)**3/(3*d) - 4*B*a*
*3*b*tan(c + d*x)/d + 3*B*a**2*b**2*log(tan(c + d*x)**2 + 1)/d + 3*B*a**2*b
**2*tan(c + d*x)**4/(2*d) - 3*B*a**2*b**2*tan(c + d*x)**2/d - 4*B*a*b**3*x
+ 4*B*a*b**3*tan(c + d*x)**5/(5*d) - 4*B*a*b**3*tan(c + d*x)**3/(3*d) + 4*B
*a*b**3*tan(c + d*x)/d - B*b**4*log(tan(c + d*x)**2 + 1)/(2*d) + B*b**4*tan
(c + d*x)**6/(6*d) - B*b**4*tan(c + d*x)**4/(4*d) + B*b**4*tan(c + d*x)**2/
(2*d), Ne(d, 0)), (x*(A + B*tan(c))*(a + b*tan(c))**4*tan(c)**2, True))
```

Giac [B] time = 18.4574, size = 8629, normalized size = 32.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")

[Out] -1/60*(60*A*a^4*d*x*tan(d*x)^6*tan(c)^6 - 240*B*a^3*b*d*x*tan(d*x)^6*tan(c)
^6 - 360*A*a^2*b^2*d*x*tan(d*x)^6*tan(c)^6 + 240*B*a*b^3*d*x*tan(d*x)^6*tan
(c)^6 + 60*A*b^4*d*x*tan(d*x)^6*tan(c)^6 - 30*B*a^4*log(4*(tan(c)^2 + 1)/(t
an(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2
 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^6*tan(c)^6 - 120*A*a^3*b*log(4*(tan(c)^
2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + t
an(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^6*tan(c)^6 + 180*B*a^2*b^2*log
(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^6*tan(c)^6 + 120*A*
a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan
(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^6*tan(c)^6
 - 30*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^6*ta
n(c)^6 - 360*A*a^4*d*x*tan(d*x)^5*tan(c)^5 + 1440*B*a^3*b*d*x*tan(d*x)^5*ta
n(c)^5 + 2160*A*a^2*b^2*d*x*tan(d*x)^5*tan(c)^5 - 1440*B*a*b^3*d*x*tan(d*x)
^5*tan(c)^5 - 360*A*b^4*d*x*tan(d*x)^5*tan(c)^5 - 30*B*a^4*tan(d*x)^6*tan(c
)^6 - 120*A*a^3*b*tan(d*x)^6*tan(c)^6 + 270*B*a^2*b^2*tan(d*x)^6*tan(c)^6 +
 180*A*a*b^3*tan(d*x)^6*tan(c)^6 - 55*B*b^4*tan(d*x)^6*tan(c)^6 + 180*B*a^4
log(4(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)
^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*tan(c)^5 + 72
0*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
 tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*tan(
c)^5 - 1080*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x
)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan
(d*x)^5*tan(c)^5 - 720*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 -
2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c)
+ 1))*tan(d*x)^5*tan(c)^5 + 180*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(
c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*
tan(c) + 1))*tan(d*x)^5*tan(c)^5 + 60*A*a^4*tan(d*x)^6*tan(c)^5 - 240*B*a^3
*b*tan(d*x)^6*tan(c)^5 - 360*A*a^2*b^2*tan(d*x)^6*tan(c)^5 + 240*B*a*b^3*ta
n(d*x)^6*tan(c)^5 + 60*A*b^4*tan(d*x)^6*tan(c)^5 + 60*A*a^4*tan(d*x)^5*tan(
c)^6 - 240*B*a^3*b*tan(d*x)^5*tan(c)^6 - 360*A*a^2*b^2*tan(d*x)^5*tan(c)^6
+ 240*B*a*b^3*tan(d*x)^5*tan(c)^6 + 60*A*b^4*tan(d*x)^5*tan(c)^6 + 900*A*a^
4*d*x*tan(d*x)^4*tan(c)^4 - 3600*B*a^3*b*d*x*tan(d*x)^4*tan(c)^4 - 5400*A*a
^2*b^2*d*x*tan(d*x)^4*tan(c)^4 + 3600*B*a*b^3*d*x*tan(d*x)^4*tan(c)^4 + 900
*A*b^4*d*x*tan(d*x)^4*tan(c)^4 - 30*B*a^4*tan(d*x)^6*tan(c)^4 - 120*A*a^3*b
*tan(d*x)^6*tan(c)^4 + 180*B*a^2*b^2*tan(d*x)^6*tan(c)^4 + 120*A*a*b^3*tan(
d*x)^6*tan(c)^4 - 30*B*b^4*tan(d*x)^6*tan(c)^4 + 120*B*a^4*tan(d*x)^5*tan(c
)^5 + 480*A*a^3*b*tan(d*x)^5*tan(c)^5 - 1260*B*a^2*b^2*tan(d*x)^5*tan(c)^5
- 840*A*a*b^3*tan(d*x)^5*tan(c)^5 + 270*B*b^4*tan(d*x)^5*tan(c)^5 - 30*B*a^
4*tan(d*x)^4*tan(c)^6 - 120*A*a^3*b*tan(d*x)^4*tan(c)^6 + 180*B*a^2*b^2*tan

(d*x)^4*tan(c)^6 + 120*A*a*b^3*tan(d*x)^4*tan(c)^6 - 30*B*b^4*tan(d*x)^4*ta
n(c)^6 + 80*B*a^3*b*tan(d*x)^6*tan(c)^3 + 120*A*a^2*b^2*tan(d*x)^6*tan(c)^3
 - 80*B*a*b^3*tan(d*x)^6*tan(c)^3 - 20*A*b^4*tan(d*x)^6*tan(c)^3 - 450*B*a^
4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x
)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 1
800*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*ta
n(c)^4 + 2700*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d
*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*t
an(d*x)^4*tan(c)^4 + 1800*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2
 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(
c) + 1))*tan(d*x)^4*tan(c)^4 - 450*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*t
an(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*
x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 300*A*a^4*tan(d*x)^5*tan(c)^4 + 1440*
B*a^3*b*tan(d*x)^5*tan(c)^4 + 2160*A*a^2*b^2*tan(d*x)^5*tan(c)^4 - 1440*B*a
*b^3*tan(d*x)^5*tan(c)^4 - 360*A*b^4*tan(d*x)^5*tan(c)^4 - 300*A*a^4*tan(d*
x)^4*tan(c)^5 + 1440*B*a^3*b*tan(d*x)^4*tan(c)^5 + 2160*A*a^2*b^2*tan(d*x)^
4*tan(c)^5 - 1440*B*a*b^3*tan(d*x)^4*tan(c)^5 - 360*A*b^4*tan(d*x)^4*tan(c)
^5 + 80*B*a^3*b*tan(d*x)^3*tan(c)^6 + 120*A*a^2*b^2*tan(d*x)^3*tan(c)^6 - 8
0*B*a*b^3*tan(d*x)^3*tan(c)^6 - 20*A*b^4*tan(d*x)^3*tan(c)^6 - 90*B*a^2*b^2
*tan(d*x)^6*tan(c)^2 - 60*A*a*b^3*tan(d*x)^6*tan(c)^2 + 15*B*b^4*tan(d*x)^6
*tan(c)^2 - 1200*A*a^4*d*x*tan(d*x)^3*tan(c)^3 + 4800*B*a^3*b*d*x*tan(d*x)^
3*tan(c)^3 + 7200*A*a^2*b^2*d*x*tan(d*x)^3*tan(c)^3 - 4800*B*a*b^3*d*x*tan(
d*x)^3*tan(c)^3 - 1200*A*b^4*d*x*tan(d*x)^3*tan(c)^3 + 120*B*a^4*tan(d*x)^5
*tan(c)^3 + 480*A*a^3*b*tan(d*x)^5*tan(c)^3 - 1080*B*a^2*b^2*tan(d*x)^5*tan
(c)^3 - 720*A*a*b^3*tan(d*x)^5*tan(c)^3 + 180*B*b^4*tan(d*x)^5*tan(c)^3 - 2
10*B*a^4*tan(d*x)^4*tan(c)^4 - 840*A*a^3*b*tan(d*x)^4*tan(c)^4 + 2070*B*a^2
*b^2*tan(d*x)^4*tan(c)^4 + 1380*A*a*b^3*tan(d*x)^4*tan(c)^4 - 495*B*b^4*tan
(d*x)^4*tan(c)^4 + 120*B*a^4*tan(d*x)^3*tan(c)^5 + 480*A*a^3*b*tan(d*x)^3*t
an(c)^5 - 1080*B*a^2*b^2*tan(d*x)^3*tan(c)^5 - 720*A*a*b^3*tan(d*x)^3*tan(c
)^5 + 180*B*b^4*tan(d*x)^3*tan(c)^5 - 90*B*a^2*b^2*tan(d*x)^2*tan(c)^6 - 60
*A*a*b^3*tan(d*x)^2*tan(c)^6 + 15*B*b^4*tan(d*x)^2*tan(c)^6 + 48*B*a*b^3*ta
n(d*x)^6*tan(c) + 12*A*b^4*tan(d*x)^6*tan(c) - 240*B*a^3*b*tan(d*x)^5*tan(c
)^2 - 360*A*a^2*b^2*tan(d*x)^5*tan(c)^2 + 480*B*a*b^3*tan(d*x)^5*tan(c)^2 +
 120*A*b^4*tan(d*x)^5*tan(c)^2 + 600*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4
*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(
d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 2400*A*a^3*b*log(4*(tan(c)^2 + 1)/(
tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^
2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 3600*B*a^2*b^2*log(4*(tan
(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 2400*A*a*b^3*
log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^
2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 600
*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + ta
n(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^

3 + 600*A*a^4*tan(d*x)^4*tan(c)^3 - 3120*B*a^3*b*tan(d*x)^4*tan(c)^3 - 4680
*A*a^2*b^2*tan(d*x)^4*tan(c)^3 + 3600*B*a*b^3*tan(d*x)^4*tan(c)^3 + 900*A*b
^4*tan(d*x)^4*tan(c)^3 + 600*A*a^4*tan(d*x)^3*tan(c)^4 - 3120*B*a^3*b*tan(d
*x)^3*tan(c)^4 - 4680*A*a^2*b^2*tan(d*x)^3*tan(c)^4 + 3600*B*a*b^3*tan(d*x)
^3*tan(c)^4 + 900*A*b^4*tan(d*x)^3*tan(c)^4 - 240*B*a^3*b*tan(d*x)^2*tan(c)
^5 - 360*A*a^2*b^2*tan(d*x)^2*tan(c)^5 + 480*B*a*b^3*tan(d*x)^2*tan(c)^5 +
120*A*b^4*tan(d*x)^2*tan(c)^5 + 48*B*a*b^3*tan(d*x)*tan(c)^6 + 12*A*b^4*tan
(d*x)*tan(c)^6 - 10*B*b^4*tan(d*x)^6 + 180*B*a^2*b^2*tan(d*x)^5*tan(c) + 12
0*A*a*b^3*tan(d*x)^5*tan(c) - 90*B*b^4*tan(d*x)^5*tan(c) + 900*A*a^4*d*x*ta
n(d*x)^2*tan(c)^2 - 3600*B*a^3*b*d*x*tan(d*x)^2*tan(c)^2 - 5400*A*a^2*b^2*d
*x*tan(d*x)^2*tan(c)^2 + 3600*B*a*b^3*d*x*tan(d*x)^2*tan(c)^2 + 900*A*b^4*d
*x*tan(d*x)^2*tan(c)^2 - 180*B*a^4*tan(d*x)^4*tan(c)^2 - 720*A*a^3*b*tan(d*
x)^4*tan(c)^2 + 1800*B*a^2*b^2*tan(d*x)^4*tan(c)^2 + 1200*A*a*b^3*tan(d*x)^
4*tan(c)^2 - 450*B*b^4*tan(d*x)^4*tan(c)^2 + 240*B*a^4*tan(d*x)^3*tan(c)^3
+ 960*A*a^3*b*tan(d*x)^3*tan(c)^3 - 2160*B*a^2*b^2*tan(d*x)^3*tan(c)^3 - 14
40*A*a*b^3*tan(d*x)^3*tan(c)^3 + 360*B*b^4*tan(d*x)^3*tan(c)^3 - 180*B*a^4*
tan(d*x)^2*tan(c)^4 - 720*A*a^3*b*tan(d*x)^2*tan(c)^4 + 1800*B*a^2*b^2*tan(
d*x)^2*tan(c)^4 + 1200*A*a*b^3*tan(d*x)^2*tan(c)^4 - 450*B*b^4*tan(d*x)^2*t
an(c)^4 + 180*B*a^2*b^2*tan(d*x)*tan(c)^5 + 120*A*a*b^3*tan(d*x)*tan(c)^5 -
 90*B*b^4*tan(d*x)*tan(c)^5 - 10*B*b^4*tan(c)^6 - 48*B*a*b^3*tan(d*x)^5 - 1
2*A*b^4*tan(d*x)^5 + 240*B*a^3*b*tan(d*x)^4*tan(c) + 360*A*a^2*b^2*tan(d*x)
^4*tan(c) - 480*B*a*b^3*tan(d*x)^4*tan(c) - 120*A*b^4*tan(d*x)^4*tan(c) - 4
50*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c
)^2 - 1800*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3
*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*
x)^2*tan(c)^2 + 2700*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 -
2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c)
+ 1))*tan(d*x)^2*tan(c)^2 + 1800*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*t
an(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*
x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 450*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d
*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2
*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 600*A*a^4*tan(d*x)^3*tan(c)^2
+ 3120*B*a^3*b*tan(d*x)^3*tan(c)^2 + 4680*A*a^2*b^2*tan(d*x)^3*tan(c)^2 - 3
600*B*a*b^3*tan(d*x)^3*tan(c)^2 - 900*A*b^4*tan(d*x)^3*tan(c)^2 - 600*A*a^4
*tan(d*x)^2*tan(c)^3 + 3120*B*a^3*b*tan(d*x)^2*tan(c)^3 + 4680*A*a^2*b^2*ta
n(d*x)^2*tan(c)^3 - 3600*B*a*b^3*tan(d*x)^2*tan(c)^3 - 900*A*b^4*tan(d*x)^2
*tan(c)^3 + 240*B*a^3*b*tan(d*x)*tan(c)^4 + 360*A*a^2*b^2*tan(d*x)*tan(c)^4
 - 480*B*a*b^3*tan(d*x)*tan(c)^4 - 120*A*b^4*tan(d*x)*tan(c)^4 - 48*B*a*b^3
*tan(c)^5 - 12*A*b^4*tan(c)^5 - 90*B*a^2*b^2*tan(d*x)^4 - 60*A*a*b^3*tan(d*
x)^4 + 15*B*b^4*tan(d*x)^4 - 360*A*a^4*d*x*tan(d*x)*tan(c) + 1440*B*a^3*b*d
*x*tan(d*x)*tan(c) + 2160*A*a^2*b^2*d*x*tan(d*x)*tan(c) - 1440*B*a*b^3*d*x*
tan(d*x)*tan(c) - 360*A*b^4*d*x*tan(d*x)*tan(c) + 120*B*a^4*tan(d*x)^3*tan(
c) + 480*A*a^3*b*tan(d*x)^3*tan(c) - 1080*B*a^2*b^2*tan(d*x)^3*tan(c) - 720
*A*a*b^3*tan(d*x)^3*tan(c) + 180*B*b^4*tan(d*x)^3*tan(c) - 210*B*a^4*tan(d*

x)^2*tan(c)^2 - 840*A*a^3*b*tan(d*x)^2*tan(c)^2 + 2070*B*a^2*b^2*tan(d*x)^2
*tan(c)^2 + 1380*A*a*b^3*tan(d*x)^2*tan(c)^2 - 495*B*b^4*tan(d*x)^2*tan(c)^
2 + 120*B*a^4*tan(d*x)*tan(c)^3 + 480*A*a^3*b*tan(d*x)*tan(c)^3 - 1080*B*a^
2*b^2*tan(d*x)*tan(c)^3 - 720*A*a*b^3*tan(d*x)*tan(c)^3 + 180*B*b^4*tan(d*x
)*tan(c)^3 - 90*B*a^2*b^2*tan(c)^4 - 60*A*a*b^3*tan(c)^4 + 15*B*b^4*tan(c)^
4 - 80*B*a^3*b*tan(d*x)^3 - 120*A*a^2*b^2*tan(d*x)^3 + 80*B*a*b^3*tan(d*x)^
3 + 20*A*b^4*tan(d*x)^3 + 180*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)
^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*ta
n(c) + 1))*tan(d*x)*tan(c) + 720*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*t
an(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*
x)*tan(c) + 1))*tan(d*x)*tan(c) - 1080*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(
d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 -
2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 720*A*a*b^3*log(4*(tan(c)^2 + 1)/
(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)
^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 180*B*b^4*log(4*(tan(c)^2 +
1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d
*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 300*A*a^4*tan(d*x)^2*tan(
c) - 1440*B*a^3*b*tan(d*x)^2*tan(c) - 2160*A*a^2*b^2*tan(d*x)^2*tan(c) + 14
40*B*a*b^3*tan(d*x)^2*tan(c) + 360*A*b^4*tan(d*x)^2*tan(c) + 300*A*a^4*tan(
d*x)*tan(c)^2 - 1440*B*a^3*b*tan(d*x)*tan(c)^2 - 2160*A*a^2*b^2*tan(d*x)*ta
n(c)^2 + 1440*B*a*b^3*tan(d*x)*tan(c)^2 + 360*A*b^4*tan(d*x)*tan(c)^2 - 80*
B*a^3*b*tan(c)^3 - 120*A*a^2*b^2*tan(c)^3 + 80*B*a*b^3*tan(c)^3 + 20*A*b^4*
tan(c)^3 + 60*A*a^4*d*x - 240*B*a^3*b*d*x - 360*A*a^2*b^2*d*x + 240*B*a*b^3
*d*x + 60*A*b^4*d*x - 30*B*a^4*tan(d*x)^2 - 120*A*a^3*b*tan(d*x)^2 + 180*B*
a^2*b^2*tan(d*x)^2 + 120*A*a*b^3*tan(d*x)^2 - 30*B*b^4*tan(d*x)^2 + 120*B*a
^4*tan(d*x)*tan(c) + 480*A*a^3*b*tan(d*x)*tan(c) - 1260*B*a^2*b^2*tan(d*x)*
tan(c) - 840*A*a*b^3*tan(d*x)*tan(c) + 270*B*b^4*tan(d*x)*tan(c) - 30*B*a^4
*tan(c)^2 - 120*A*a^3*b*tan(c)^2 + 180*B*a^2*b^2*tan(c)^2 + 120*A*a*b^3*tan
(c)^2 - 30*B*b^4*tan(c)^2 - 30*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c
)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*t
an(c) + 1)) - 120*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan
(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))
 + 180*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*t
an(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 120*A*
a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan
(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 30*B*b^4*log(4*(t
an(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)
^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 60*A*a^4*tan(d*x) + 240*B*a^3*b
*tan(d*x) + 360*A*a^2*b^2*tan(d*x) - 240*B*a*b^3*tan(d*x) - 60*A*b^4*tan(d*
x) - 60*A*a^4*tan(c) + 240*B*a^3*b*tan(c) + 360*A*a^2*b^2*tan(c) - 240*B*a*
b^3*tan(c) - 60*A*b^4*tan(c) - 30*B*a^4 - 120*A*a^3*b + 270*B*a^2*b^2 + 180
*A*a*b^3 - 55*B*b^4)/(d*tan(d*x)^6*tan(c)^6 - 6*d*tan(d*x)^5*tan(c)^5 + 15*
d*tan(d*x)^4*tan(c)^4 - 20*d*tan(d*x)^3*tan(c)^3 + 15*d*tan(d*x)^2*tan(c)^2
 - 6*d*tan(d*x)*tan(c) + d)

3.258 $\int \tan(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=226

$$\frac{\left(a^2A-2abB-Ab^2\right)(a+b\tan(c+dx))^2}{2d}+\frac{b\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\tan(c+dx)}{d}-\frac{\left(-6a^2Ab^2+a^4A-4a^3bB+4\right.}{}$$

```
[Out] -((4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x) - ((a^4*A - 6*a^
2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Log[Cos[c + d*x]])/d + (b*(a^3*A -
 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Tan[c + d*x])/d + ((a^2*A - A*b^2 - 2*a*b*B
)*(a + b*Tan[c + d*x])^2)/(2*d) + ((a*A - b*B)*(a + b*Tan[c + d*x])^3)/(3*d
) + (A*(a + b*Tan[c + d*x])^4)/(4*d) + (B*(a + b*Tan[c + d*x])^5)/(5*b*d)
```

Rubi [A] time = 0.273254, antiderivative size = 226, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3592, 3528, 3525, 3475}

$$\frac{\left(a^2A-2abB-Ab^2\right)(a+b\tan(c+dx))^2}{2d}+\frac{b\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\tan(c+dx)}{d}-\frac{\left(-6a^2Ab^2+a^4A-4a^3bB+4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x) - ((a^4*A - 6*a^
2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Log[Cos[c + d*x]])/d + (b*(a^3*A -
 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Tan[c + d*x])/d + ((a^2*A - A*b^2 - 2*a*b*B
)*(a + b*Tan[c + d*x])^2)/(2*d) + ((a*A - b*B)*(a + b*Tan[c + d*x])^3)/(3*d
) + (A*(a + b*Tan[c + d*x])^4)/(4*d) + (B*(a + b*Tan[c + d*x])^5)/(5*b*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \tan(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx &= \frac{B(a+b\tan(c+dx))^5}{5bd}+\int(-B+A\tan(c+dx))(a+b\tan\\ &= \frac{A(a+b\tan(c+dx))^4}{4d}+\frac{B(a+b\tan(c+dx))^5}{5bd}+\int(a+b\\ &= \frac{(aA-bB)(a+b\tan(c+dx))^3}{3d}+\frac{A(a+b\tan(c+dx))^4}{4d}+\\ &= \frac{\left(a^2A-Ab^2-2abB\right)(a+b\tan(c+dx))^2}{2d}+\frac{(aA-bB)(a+}{3}\\ &= -\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x+\frac{b\left(a^3A-3a\right.}{}\\ &= -\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x-\frac{\left(a^4A-6a^2\right.}{}\end{aligned}$$

Mathematica [C] time = 3.52856, size = 257, normalized size = 1.14

$$\frac{10(aA+bB)\left(6b^2\left(b^2-6a^2\right)\tan(c+dx)-12ab^3\tan^2(c+dx)-3i(a-ib)^4\log(\tan(c+dx)+i)+3i(a+ib)^4\log(-\tan(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (12*B*(a + b*Tan[c + d*x])^5 + 10*(a*A + b*B)*((3*I)*(a + I*b)^4*Log[I - Ta
n[c + d*x]] - (3*I)*(a - I*b)^4*Log[I + Tan[c + d*x]] + 6*b^2*(-6*a^2 + b^2
)*Tan[c + d*x] - 12*a*b^3*Tan[c + d*x]^2 - 2*b^4*Tan[c + d*x]^3) - 5*A*((6*
I)*(a + I*b)^5*Log[I - Tan[c + d*x]] - 6*(I*a + b)^5*Log[I + Tan[c + d*x]]
- 60*a*b^2*(2*a^2 - b^2)*Tan[c + d*x] + 6*b^3*(-10*a^2 + b^2)*Tan[c + d*x]^
2 - 20*a*b^4*Tan[c + d*x]^3 - 3*b^5*Tan[c + d*x]^4))/(60*b*d)
```

Maple [B] time = 0.014, size = 449, normalized size = 2.

$$\frac{Ba^4\tan(dx+c)}{d}+\frac{Aa^4\ln\left(1+(\tan(dx+c))^2\right)}{2d}-\frac{Ba^4\arctan(\tan(dx+c))}{d}+\frac{4A(\tan(dx+c))^3ab^3}{3d}+6\frac{B\arctan(\tan$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/d*a^4*B*tan(d*x+c)+1/2/d*a^4*A*ln(1+tan(d*x+c)^2)-1/d*a^4*B*arctan(tan(d*
x+c))+4/3/d*A*tan(d*x+c)^3*a*b^3+6/d*B*arctan(tan(d*x+c))*a^2*b^2+4/d*A*tan
(d*x+c)*a^3*b-4/d*A*a*b^3*tan(d*x+c)+2/d*B*tan(d*x+c)^2*a^3*b-2/d*B*a*b^3*t
an(d*x+c)^2-2/d*ln(1+tan(d*x+c)^2)*B*a^3*b+2/d*ln(1+tan(d*x+c)^2)*B*a*b^3-4
/d*A*arctan(tan(d*x+c))*a^3*b+4/d*A*arctan(tan(d*x+c))*a*b^3+1/d*B*tan(d*x+
c)^4*a*b^3-3/d*ln(1+tan(d*x+c)^2)*A*a^2*b^2+2/d*B*tan(d*x+c)^3*a^2*b^2+3/d*
A*tan(d*x+c)^2*a^2*b^2-1/2/d*A*b^4*tan(d*x+c)^2-1/3/d*B*tan(d*x+c)^3*b^4+1/
4/d*A*tan(d*x+c)^4*b^4+1/5/d*B*b^4*tan(d*x+c)^5+1/d*B*b^4*tan(d*x+c)+1/2/d*
ln(1+tan(d*x+c)^2)*A*b^4-1/d*B*arctan(tan(d*x+c))*b^4-6/d*B*a^2*b^2*tan(d*x
+c)
```

Maxima [A] time = 1.49841, size = 332, normalized size = 1.47

$$\frac{12\,Bb^4\tan(dx+c)^5+15\left(4\,Bab^3+Ab^4\right)\tan(dx+c)^4+20\left(6\,Ba^2b^2+4\,Aab^3-Bb^4\right)\tan(dx+c)^3+30\left(4\,Ba^3b+6\,Aa^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/60*(12*B*b^4*tan(d*x + c)^5 + 15*(4*B*a*b^3 + A*b^4)*tan(d*x + c)^4 + 20*
(6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(d*x + c)^3 + 30*(4*B*a^3*b + 6*A*a^2*
```

```
b^2 - 4*B*a*b^3 - A*b^4)*tan(d*x + c)^2 - 60*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b
^2 - 4*A*a*b^3 + B*b^4)*(d*x + c) + 30*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4
*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1) + 60*(B*a^4 + 4*A*a^3*b - 6*B*a^2
*b^2 - 4*A*a*b^3 + B*b^4)*tan(d*x + c))/d
```

Fricas [A] time = 1.96229, size = 562, normalized size = 2.49

$$\frac{12\,Bb^4\tan(dx+c)^5 + 15\left(4\,Bab^3 + Ab^4\right)\tan(dx+c)^4 + 20\left(6\,Ba^2b^2 + 4\,Aab^3 - Bb^4\right)\tan(dx+c)^3 - 60\left(Ba^4 + 4\,Aa^3b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/60*(12*B*b^4*tan(d*x + c)^5 + 15*(4*B*a*b^3 + A*b^4)*tan(d*x + c)^4 + 20*
(6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(d*x + c)^3 - 60*(B*a^4 + 4*A*a^3*b -
6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*d*x + 30*(4*B*a^3*b + 6*A*a^2*b^2 - 4*B*a*
b^3 - A*b^4)*tan(d*x + c)^2 - 30*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b
^3 + A*b^4)*log(1/(tan(d*x + c)^2 + 1)) + 60*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b
^2 - 4*A*a*b^3 + B*b^4)*tan(d*x + c))/d
```

Sympy [A] time = 1.1846, size = 437, normalized size = 1.93

$$\begin{cases} \frac{Aa^4\log\left(\tan^2(c+dx)+1\right)}{2d} - 4Aa^3bx + \frac{4Aa^3b\tan(c+dx)}{d} - \frac{3Aa^2b^2\log\left(\tan^2(c+dx)+1\right)}{d} + \frac{3Aa^2b^2\tan^2(c+dx)}{d} + 4Aab^3x + \frac{4Aab^3\tan^3(c+dx)}{3d} \\ x\left(A + B\tan(c)\right)\left(a + b\tan(c)\right)^4\tan(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a**4*log(tan(c + d*x)**2 + 1)/(2*d) - 4*A*a**3*b*x + 4*A*a**3*
b*tan(c + d*x)/d - 3*A*a**2*b**2*log(tan(c + d*x)**2 + 1)/d + 3*A*a**2*b**2
*tan(c + d*x)**2/d + 4*A*a*b**3*x + 4*A*a*b**3*tan(c + d*x)**3/(3*d) - 4*A*
a*b**3*tan(c + d*x)/d + A*b**4*log(tan(c + d*x)**2 + 1)/(2*d) + A*b**4*tan(
c + d*x)**4/(4*d) - A*b**4*tan(c + d*x)**2/(2*d) - B*a**4*x + B*a**4*tan(c
+ d*x)/d - 2*B*a**3*b*log(tan(c + d*x)**2 + 1)/d + 2*B*a**3*b*tan(c + d*x)*
*2/d + 6*B*a**2*b**2*x + 2*B*a**2*b**2*tan(c + d*x)**3/d - 6*B*a**2*b**2*ta
```

```
n(c + d*x)/d + 2*B*a*b**3*log(tan(c + d*x)**2 + 1)/d + B*a*b**3*tan(c + d*x
)**4/d - 2*B*a*b**3*tan(c + d*x)**2/d - B*b**4*x + B*b**4*tan(c + d*x)**5/(
5*d) - B*b**4*tan(c + d*x)**3/(3*d) + B*b**4*tan(c + d*x)/d, Ne(d, 0)), (x*
(A + B*tan(c))*(a + b*tan(c))**4*tan(c), True))
```

Giac [B] time = 11.4444, size = 6465, normalized size = 28.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] -1/60*(60*B*a^4*d*x*tan(d*x)^5*tan(c)^5 + 240*A*a^3*b*d*x*tan(d*x)^5*tan(c)
^5 - 360*B*a^2*b^2*d*x*tan(d*x)^5*tan(c)^5 - 240*A*a*b^3*d*x*tan(d*x)^5*tan
(c)^5 + 60*B*b^4*d*x*tan(d*x)^5*tan(c)^5 + 30*A*a^4*log(4*(tan(c)^2 + 1)/(t
an(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2
 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*tan(c)^5 - 120*B*a^3*b*log(4*(tan(c)^
2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + t
an(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*tan(c)^5 - 180*A*a^2*b^2*log
(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*tan(c)^5 + 120*B*
a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan
(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*tan(c)^5
 + 30*A*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^5*ta
n(c)^5 - 300*B*a^4*d*x*tan(d*x)^4*tan(c)^4 - 1200*A*a^3*b*d*x*tan(d*x)^4*ta
n(c)^4 + 1800*B*a^2*b^2*d*x*tan(d*x)^4*tan(c)^4 + 1200*A*a*b^3*d*x*tan(d*x)
^4*tan(c)^4 - 300*B*b^4*d*x*tan(d*x)^4*tan(c)^4 - 120*B*a^3*b*tan(d*x)^5*ta
n(c)^5 - 180*A*a^2*b^2*tan(d*x)^5*tan(c)^5 + 180*B*a*b^3*tan(d*x)^5*tan(c)^
5 + 45*A*b^4*tan(d*x)^5*tan(c)^5 - 150*A*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)
^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*ta
n(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 + 600*B*a^3*b*log(4*(tan(c)^2 + 1)/
(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)
^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 + 900*A*a^2*b^2*log(4*(tan
(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 600*B*a*b^3*l
og(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2
*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 150*
A*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan
(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4
```

+ 60*B*a^4*tan(d*x)^5*tan(c)^4 + 240*A*a^3*b*tan(d*x)^5*tan(c)^4 - 360*B*a^2*b^2*tan(d*x)^5*tan(c)^4 - 240*A*a*b^3*tan(d*x)^5*tan(c)^4 + 60*B*b^4*tan(d*x)^5*tan(c)^4 + 60*B*a^4*tan(d*x)^4*tan(c)^5 + 240*A*a^3*b*tan(d*x)^4*tan(c)^5 - 360*B*a^2*b^2*tan(d*x)^4*tan(c)^5 - 240*A*a*b^3*tan(d*x)^4*tan(c)^5 + 60*B*b^4*tan(d*x)^4*tan(c)^5 + 600*B*a^4*d*x*tan(d*x)^3*tan(c)^3 + 2400*A*a^3*b*d*x*tan(d*x)^3*tan(c)^3 - 3600*B*a^2*b^2*d*x*tan(d*x)^3*tan(c)^3 - 2400*A*a*b^3*d*x*tan(d*x)^3*tan(c)^3 + 600*B*b^4*d*x*tan(d*x)^3*tan(c)^3 - 120*B*a^3*b*tan(d*x)^5*tan(c)^3 - 180*A*a^2*b^2*tan(d*x)^5*tan(c)^3 + 120*B*a*b^3*tan(d*x)^5*tan(c)^3 + 30*A*b^4*tan(d*x)^5*tan(c)^3 + 360*B*a^3*b*tan(d*x)^4*tan(c)^4 + 540*A*a^2*b^2*tan(d*x)^4*tan(c)^4 - 660*B*a*b^3*tan(d*x)^4*tan(c)^4 - 165*A*b^4*tan(d*x)^4*tan(c)^4 - 120*B*a^3*b*tan(d*x)^3*tan(c)^5 - 180*A*a^2*b^2*tan(d*x)^3*tan(c)^5 + 120*B*a*b^3*tan(d*x)^3*tan(c)^5 + 30*A*b^4*tan(d*x)^3*tan(c)^5 + 120*B*a^2*b^2*tan(d*x)^5*tan(c)^2 + 80*A*a*b^3*tan(d*x)^5*tan(c)^2 - 20*B*b^4*tan(d*x)^5*tan(c)^2 + 300*A*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 1200*B*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 1800*A*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 1200*B*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 300*A*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 240*B*a^4*tan(d*x)^4*tan(c)^3 - 960*A*a^3*b*tan(d*x)^4*tan(c)^3 + 1800*B*a^2*b^2*tan(d*x)^4*tan(c)^3 + 1200*A*a*b^3*tan(d*x)^4*tan(c)^3 - 300*B*b^4*tan(d*x)^4*tan(c)^3 - 240*B*a^4*tan(d*x)^3*tan(c)^4 - 960*A*a^3*b*tan(d*x)^3*tan(c)^4 + 1800*B*a^2*b^2*tan(d*x)^3*tan(c)^4 + 1200*A*a*b^3*tan(d*x)^3*tan(c)^4 - 300*B*b^4*tan(d*x)^3*tan(c)^4 + 120*B*a^2*b^2*tan(d*x)^2*tan(c)^5 + 80*A*a*b^3*tan(d*x)^2*tan(c)^5 - 20*B*b^4*tan(d*x)^2*tan(c)^5 - 60*B*a*b^3*tan(d*x)^5*tan(c) - 15*A*b^4*tan(d*x)^5*tan(c) - 600*B*a^4*d*x*tan(d*x)^2*tan(c)^2 - 2400*A*a^3*b*d*x*tan(d*x)^2*tan(c)^2 + 3600*B*a^2*b^2*d*x*tan(d*x)^2*tan(c)^2 + 2400*A*a*b^3*d*x*tan(d*x)^2*tan(c)^2 - 600*B*b^4*d*x*tan(d*x)^2*tan(c)^2 + 360*B*a^3*b*tan(d*x)^4*tan(c)^2 + 540*A*a^2*b^2*tan(d*x)^4*tan(c)^2 - 600*B*a*b^3*tan(d*x)^4*tan(c)^2 - 150*A*b^4*tan(d*x)^4*tan(c)^2 - 480*B*a^3*b*tan(d*x)^3*tan(c)^3 - 720*A*a^2*b^2*tan(d*x)^3*tan(c)^3 + 720*B*a*b^3*tan(d*x)^3*tan(c)^3 + 180*A*b^4*tan(d*x)^3*tan(c)^3 + 360*B*a^3*b*tan(d*x)^2*tan(c)^4 + 540*A*a^2*b^2*tan(d*x)^2*tan(c)^4 - 600*B*a*b^3*tan(d*x)^2*tan(c)^4 - 150*A*b^4*tan(d*x)^2*tan(c)^4 - 60*B*a*b^3*tan(d*x)*tan(c)^5 - 15*A*b^4*tan(d*x)*tan(c)^5 + 12*B*b^4*tan(d*x)^5 - 240*B*a^2*b^2*tan(d*x)^4*tan(c) - 160*A*a*b^3*tan(d*x)^4*tan(c) + 100*B*b^4*tan(d*x)^4*tan(c) - 300*A*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 1200*B*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 -

2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 1800*A*a^2*b^2*log(4*(tan(c)
^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 +
tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 1200*B*a*b^3*log
(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 300*A*
b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d
*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 +
360*B*a^4*tan(d*x)^3*tan(c)^2 + 1440*A*a^3*b*tan(d*x)^3*tan(c)^2 - 2880*B*
a^2*b^2*tan(d*x)^3*tan(c)^2 - 1920*A*a*b^3*tan(d*x)^3*tan(c)^2 + 600*B*b^4*
tan(d*x)^3*tan(c)^2 + 360*B*a^4*tan(d*x)^2*tan(c)^3 + 1440*A*a^3*b*tan(d*x)
^2*tan(c)^3 - 2880*B*a^2*b^2*tan(d*x)^2*tan(c)^3 - 1920*A*a*b^3*tan(d*x)^2*
tan(c)^3 + 600*B*b^4*tan(d*x)^2*tan(c)^3 - 240*B*a^2*b^2*tan(d*x)*tan(c)^4
- 160*A*a*b^3*tan(d*x)*tan(c)^4 + 100*B*b^4*tan(d*x)*tan(c)^4 + 12*B*b^4*ta
n(c)^5 + 60*B*a*b^3*tan(d*x)^4 + 15*A*b^4*tan(d*x)^4 + 300*B*a^4*d*x*tan(d*
x)*tan(c) + 1200*A*a^3*b*d*x*tan(d*x)*tan(c) - 1800*B*a^2*b^2*d*x*tan(d*x)*
tan(c) - 1200*A*a*b^3*d*x*tan(d*x)*tan(c) + 300*B*b^4*d*x*tan(d*x)*tan(c) -
360*B*a^3*b*tan(d*x)^3*tan(c) - 540*A*a^2*b^2*tan(d*x)^3*tan(c) + 600*B*a*
b^3*tan(d*x)^3*tan(c) + 150*A*b^4*tan(d*x)^3*tan(c) + 480*B*a^3*b*tan(d*x)^
2*tan(c)^2 + 720*A*a^2*b^2*tan(d*x)^2*tan(c)^2 - 720*B*a*b^3*tan(d*x)^2*tan
(c)^2 - 180*A*b^4*tan(d*x)^2*tan(c)^2 - 360*B*a^3*b*tan(d*x)*tan(c)^3 - 540
*A*a^2*b^2*tan(d*x)*tan(c)^3 + 600*B*a*b^3*tan(d*x)*tan(c)^3 + 150*A*b^4*ta
n(d*x)*tan(c)^3 + 60*B*a*b^3*tan(c)^4 + 15*A*b^4*tan(c)^4 + 120*B*a^2*b^2*t
an(d*x)^3 + 80*A*a*b^3*tan(d*x)^3 - 20*B*b^4*tan(d*x)^3 + 150*A*a^4*log(4*(
tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c
)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 600*B*a^3*b*lo
g(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*
tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 900*A*a^2
*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(
d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 60
0*B*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) +
tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c)
+ 150*A*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c
) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan
(c) - 240*B*a^4*tan(d*x)^2*tan(c) - 960*A*a^3*b*tan(d*x)^2*tan(c) + 1800*B*
a^2*b^2*tan(d*x)^2*tan(c) + 1200*A*a*b^3*tan(d*x)^2*tan(c) - 300*B*b^4*tan(
d*x)^2*tan(c) - 240*B*a^4*tan(d*x)*tan(c)^2 - 960*A*a^3*b*tan(d*x)*tan(c)^2
+ 1800*B*a^2*b^2*tan(d*x)*tan(c)^2 + 1200*A*a*b^3*tan(d*x)*tan(c)^2 - 300*
B*b^4*tan(d*x)*tan(c)^2 + 120*B*a^2*b^2*tan(c)^3 + 80*A*a*b^3*tan(c)^3 - 20
*B*b^4*tan(c)^3 - 60*B*a^4*d*x - 240*A*a^3*b*d*x + 360*B*a^2*b^2*d*x + 240*
A*a*b^3*d*x - 60*B*b^4*d*x + 120*B*a^3*b*tan(d*x)^2 + 180*A*a^2*b^2*tan(d*x
)^2 - 120*B*a*b^3*tan(d*x)^2 - 30*A*b^4*tan(d*x)^2 - 360*B*a^3*b*tan(d*x)*t
an(c) - 540*A*a^2*b^2*tan(d*x)*tan(c) + 660*B*a*b^3*tan(d*x)*tan(c) + 165*A
*b^4*tan(d*x)*tan(c) + 120*B*a^3*b*tan(c)^2 + 180*A*a^2*b^2*tan(c)^2 - 120*
B*a*b^3*tan(c)^2 - 30*A*b^4*tan(c)^2 - 30*A*a^4*log(4*(tan(c)^2 + 1)/(tan(d
*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2

```
*tan(d*x)*tan(c) + 1)) + 120*B*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c
)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*t
an(c) + 1)) + 180*A*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
)) - 120*B*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*t
an(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 30*A*b
^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*
x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 60*B*a^4*tan(d*x) +
240*A*a^3*b*tan(d*x) - 360*B*a^2*b^2*tan(d*x) - 240*A*a*b^3*tan(d*x) + 60*B
*b^4*tan(d*x) + 60*B*a^4*tan(c) + 240*A*a^3*b*tan(c) - 360*B*a^2*b^2*tan(c)
 - 240*A*a*b^3*tan(c) + 60*B*b^4*tan(c) + 120*B*a^3*b + 180*A*a^2*b^2 - 180
*B*a*b^3 - 45*A*b^4)/(d*tan(d*x)^5*tan(c)^5 - 5*d*tan(d*x)^4*tan(c)^4 + 10*
d*tan(d*x)^3*tan(c)^3 - 10*d*tan(d*x)^2*tan(c)^2 + 5*d*tan(d*x)*tan(c) - d)
```

3.259 $\int (a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=202

$$\frac{\left(a^2B+2aAb-b^2B\right)(a+b\tan(c+dx))^2}{2d}+\frac{b\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\tan(c+dx)}{d}-\frac{\left(4a^3Ab-6a^2b^2B+a^4B-4aA\right.}{d}$$

```
[Out] (a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x - ((4*a^3*A*b - 4*a
*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Log[Cos[c + d*x]])/d + (b*(3*a^2*A*b
- A*b^3 + a^3*B - 3*a*b^2*B)*Tan[c + d*x])/d + ((2*a*A*b + a^2*B - b^2*B)*(
a + b*Tan[c + d*x])^2)/(2*d) + ((A*b + a*B)*(a + b*Tan[c + d*x])^3)/(3*d) +
 (B*(a + b*Tan[c + d*x])^4)/(4*d)
```

Rubi [A] time = 0.230063, antiderivative size = 202, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3528, 3525, 3475}

$$\frac{\left(a^2B+2aAb-b^2B\right)(a+b\tan(c+dx))^2}{2d}+\frac{b\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\tan(c+dx)}{d}-\frac{\left(4a^3Ab-6a^2b^2B+a^4B-4aA\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x - ((4*a^3*A*b - 4*a
*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Log[Cos[c + d*x]])/d + (b*(3*a^2*A*b
- A*b^3 + a^3*B - 3*a*b^2*B)*Tan[c + d*x])/d + ((2*a*A*b + a^2*B - b^2*B)*(
a + b*Tan[c + d*x])^2)/(2*d) + ((A*b + a*B)*(a + b*Tan[c + d*x])^3)/(3*d) +
 (B*(a + b*Tan[c + d*x])^4)/(4*d)
```


Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
```

```
f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{B(a+b\tan(c+dx))^4}{4d} + \int (a+b\tan(c+dx))^3(aA-bB+(Ab+aB)\,\mathrm{t}$$

$$= \frac{(Ab+aB)(a+b\tan(c+dx))^3}{3d} + \frac{B(a+b\tan(c+dx))^4}{4d} + \int (a+b\tan$$

$$= \frac{\left(2aAb+a^2B-b^2B\right)(a+b\tan(c+dx))^2}{2d} + \frac{(Ab+aB)(a+b\tan(c+d}{3d}$$

$$= \left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x + \frac{b\left(3a^2Ab-Ab^3+a^3B-3\right.}{d}$$

$$= \left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x - \frac{\left(4a^3Ab-4aAb^3+a^4B-\right.}{}$$

Mathematica [C] time = 3.45446, size = 240, normalized size = 1.19

$$\frac{B\left(-6b^3\left(b^2-10a^2\right)\tan^2(c+dx)+60ab^2\left(2a^2-b^2\right)\tan(c+dx)+20ab^4\tan^3(c+dx)+6(b-ia)^5\log(-\tan(c+dx)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*(A*b - a*B)*((3*I)*(a + I*b)^4*Log[I - Tan[c + d*x]] - (3*I)*(a - I*b)^
4*Log[I + Tan[c + d*x]] + 6*b^2*(-6*a^2 + b^2)*Tan[c + d*x] - 12*a*b^3*Tan[
c + d*x]^2 - 2*b^4*Tan[c + d*x]^3) + B*(6*((-I)*a + b)^5*Log[I - Tan[c + d*
x]] + 6*(I*a + b)^5*Log[I + Tan[c + d*x]] + 60*a*b^2*(2*a^2 - b^2)*Tan[c +
d*x] - 6*b^3*(-10*a^2 + b^2)*Tan[c + d*x]^2 + 20*a*b^4*Tan[c + d*x]^3 + 3*b
^5*Tan[c + d*x]^4))/(12*b*d)
```

Maple [A] time = 0.011, size = 362, normalized size = 1.8

$$\frac{Bb^4 (\tan (dx+c))^4}{4d} + \frac{A (\tan (dx+c))^3 b^4}{3d} + \frac{4B (\tan (dx+c))^3 ab^3}{3d} + 2\frac{A (\tan (dx+c))^2 ab^3}{d} + 3\frac{B (\tan (dx+c))^2 a^2b^2}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4/d*B*b^4*tan(d*x+c)^4+1/3/d*A*tan(d*x+c)^3*b^4+4/3/d*B*tan(d*x+c)^3*a*b^
3+2/d*A*tan(d*x+c)^2*a*b^3+3/d*B*tan(d*x+c)^2*a^2*b^2-1/2/d*B*tan(d*x+c)^2*
b^4+6/d*A*a^2*b^2*tan(d*x+c)-1/d*A*b^4*tan(d*x+c)+4/d*B*a^3*b*tan(d*x+c)-4/
d*B*a*b^3*tan(d*x+c)+2/d*ln(1+tan(d*x+c)^2)*A*a^3*b-2/d*ln(1+tan(d*x+c)^2)*
A*a*b^3+1/2/d*a^4*B*ln(1+tan(d*x+c)^2)-3/d*ln(1+tan(d*x+c)^2)*B*a^2*b^2+1/2
/d*ln(1+tan(d*x+c)^2)*B*b^4+1/d*a^4*A*arctan(tan(d*x+c))-6/d*A*arctan(tan(d
*x+c))*a^2*b^2+1/d*A*arctan(tan(d*x+c))*b^4-4/d*B*arctan(tan(d*x+c))*a^3*b+
4/d*B*arctan(tan(d*x+c))*a*b^3
```

Maxima [A] time = 1.47115, size = 273, normalized size = 1.35

$$\frac{3Bb^4 \tan (dx+c)^4 + 4\left(4Bab^3 + Ab^4\right)\tan (dx+c)^3 + 6\left(6Ba^2b^2 + 4Aab^3 - Bb^4\right)\tan (dx+c)^2 + 12\left(Aa^4 - 4Ba^3b - 6A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/12*(3*B*b^4*tan(d*x + c)^4 + 4*(4*B*a*b^3 + A*b^4)*tan(d*x + c)^3 + 6*(6*
B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(d*x + c)^2 + 12*(A*a^4 - 4*B*a^3*b - 6*A
*a^2*b^2 + 4*B*a*b^3 + A*b^4)*(d*x + c) + 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^
2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1) + 12*(4*B*a^3*b + 6*A*a^2*b^
2 - 4*B*a*b^3 - A*b^4)*tan(d*x + c))/d
```

Fricas [A] time = 2.08274, size = 456, normalized size = 2.26

$$\frac{3Bb^4 \tan (dx+c)^4 + 4\left(4Bab^3 + Ab^4\right)\tan (dx+c)^3 + 12\left(Aa^4 - 4Ba^3b - 6Aa^2b^2 + 4Bab^3 + Ab^4\right)dx + 6\left(6Ba^2b^2 + 4A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*tan(d*x + c)^4 + 4*(4*B*a*b^3 + A*b^4)*tan(d*x + c)^3 + 12*(A
*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*d*x + 6*(6*B*a^2*b^2 +
4*A*a*b^3 - B*b^4)*tan(d*x + c)^2 - 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*
A*a*b^3 + B*b^4)*log(1/(tan(d*x + c)^2 + 1)) + 12*(4*B*a^3*b + 6*A*a^2*b^2
- 4*B*a*b^3 - A*b^4)*tan(d*x + c))/d
```

Sympy [A] time = 0.885045, size = 347, normalized size = 1.72

$$\begin{cases} Aa^4x + \frac{2Aa^3b\log\left(\tan^2(c+dx)+1\right)}{d} - 6Aa^2b^2x + \frac{6Aa^2b^2\tan(c+dx)}{d} - \frac{2Aab^3\log\left(\tan^2(c+dx)+1\right)}{d} + \frac{2Aab^3\tan^2(c+dx)}{d} + Ab^4x + \frac{Ab^4\tan^3}{3d} \\ x\left(A + B\tan(c)\right)\left(a + b\tan(c)\right)^4 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((A*a**4*x + 2*A*a**3*b*log(tan(c + d*x)**2 + 1)/d - 6*A*a**2*b**2
*x + 6*A*a**2*b**2*tan(c + d*x)/d - 2*A*a*b**3*log(tan(c + d*x)**2 + 1)/d +
 2*A*a*b**3*tan(c + d*x)**2/d + A*b**4*x + A*b**4*tan(c + d*x)**3/(3*d) - A
*b**4*tan(c + d*x)/d + B*a**4*log(tan(c + d*x)**2 + 1)/(2*d) - 4*B*a**3*b*x
 + 4*B*a**3*b*tan(c + d*x)/d - 3*B*a**2*b**2*log(tan(c + d*x)**2 + 1)/d + 3
*B*a**2*b**2*tan(c + d*x)**2/d + 4*B*a*b**3*x + 4*B*a*b**3*tan(c + d*x)**3/
(3*d) - 4*B*a*b**3*tan(c + d*x)/d + B*b**4*log(tan(c + d*x)**2 + 1)/(2*d) +
 B*b**4*tan(c + d*x)**4/(4*d) - B*b**4*tan(c + d*x)**2/(2*d), Ne(d, 0)), (x
*(A + B*tan(c))*(a + b*tan(c))**4, True))
```

Giac [B] time = 7.05837, size = 4567, normalized size = 22.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/12*(12*A*a^4*d*x*tan(d*x)^4*tan(c)^4 - 48*B*a^3*b*d*x*tan(d*x)^4*tan(c)^4
 - 72*A*a^2*b^2*d*x*tan(d*x)^4*tan(c)^4 + 48*B*a*b^3*d*x*tan(d*x)^4*tan(c)^
4 + 12*A*b^4*d*x*tan(d*x)^4*tan(c)^4 - 6*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*
```

x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*
tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 24*A*a^3*b*log(4*(tan(c)^2 + 1)
/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x
)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 + 36*B*a^2*b^2*log(4*(tan
(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 + 24*A*a*b^3*lo
g(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*
tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 - 6*B*b
^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*
x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^4*tan(c)^4 -
48*A*a^4*d*x*tan(d*x)^3*tan(c)^3 + 192*B*a^3*b*d*x*tan(d*x)^3*tan(c)^3 + 28
8*A*a^2*b^2*d*x*tan(d*x)^3*tan(c)^3 - 192*B*a*b^3*d*x*tan(d*x)^3*tan(c)^3 -
 48*A*b^4*d*x*tan(d*x)^3*tan(c)^3 + 36*B*a^2*b^2*tan(d*x)^4*tan(c)^4 + 24*A
*a*b^3*tan(d*x)^4*tan(c)^4 - 9*B*b^4*tan(d*x)^4*tan(c)^4 + 24*B*a^4*log(4*(
tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c
)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 + 96*A*a^3*b
log(4(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)
^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*tan(c)^3 - 14
4*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
 + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^3*ta
n(c)^3 - 96*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^
3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d
*x)^3*tan(c)^3 + 24*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan
(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))
*tan(d*x)^3*tan(c)^3 - 48*B*a^3*b*tan(d*x)^4*tan(c)^3 - 72*A*a^2*b^2*tan(d*
x)^4*tan(c)^3 + 48*B*a*b^3*tan(d*x)^4*tan(c)^3 + 12*A*b^4*tan(d*x)^4*tan(c)
^3 - 48*B*a^3*b*tan(d*x)^3*tan(c)^4 - 72*A*a^2*b^2*tan(d*x)^3*tan(c)^4 + 48
*B*a*b^3*tan(d*x)^3*tan(c)^4 + 12*A*b^4*tan(d*x)^3*tan(c)^4 + 72*A*a^4*d*x*
tan(d*x)^2*tan(c)^2 - 288*B*a^3*b*d*x*tan(d*x)^2*tan(c)^2 - 432*A*a^2*b^2*d
*x*tan(d*x)^2*tan(c)^2 + 288*B*a*b^3*d*x*tan(d*x)^2*tan(c)^2 + 72*A*b^4*d*x
*tan(d*x)^2*tan(c)^2 + 36*B*a^2*b^2*tan(d*x)^4*tan(c)^2 + 24*A*a*b^3*tan(d*
x)^4*tan(c)^2 - 6*B*b^4*tan(d*x)^4*tan(c)^2 - 72*B*a^2*b^2*tan(d*x)^3*tan(c
)^3 - 48*A*a*b^3*tan(d*x)^3*tan(c)^3 + 24*B*b^4*tan(d*x)^3*tan(c)^3 + 36*B*
a^2*b^2*tan(d*x)^2*tan(c)^4 + 24*A*a*b^3*tan(d*x)^2*tan(c)^4 - 6*B*b^4*tan(
d*x)^2*tan(c)^4 - 16*B*a*b^3*tan(d*x)^4*tan(c) - 4*A*b^4*tan(d*x)^4*tan(c)
- 36*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
+ tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)^2*tan
(c)^2 - 144*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^
3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d
*x)^2*tan(c)^2 + 216*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 -
2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c)
+ 1))*tan(d*x)^2*tan(c)^2 + 144*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*ta
n(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x
)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 - 36*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x
)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*t

an(d*x)*tan(c) + 1))*tan(d*x)^2*tan(c)^2 + 144*B*a^3*b*tan(d*x)^3*tan(c)^2 + 216*A*a^2*b^2*tan(d*x)^3*tan(c)^2 - 192*B*a*b^3*tan(d*x)^3*tan(c)^2 - 48*A*b^4*tan(d*x)^3*tan(c)^2 + 144*B*a^3*b*tan(d*x)^2*tan(c)^3 + 216*A*a^2*b^2*tan(d*x)^2*tan(c)^3 - 192*B*a*b^3*tan(d*x)^2*tan(c)^3 - 48*A*b^4*tan(d*x)^2*tan(c)^3 - 16*B*a*b^3*tan(d*x)*tan(c)^4 - 4*A*b^4*tan(d*x)*tan(c)^4 + 3*B*b^4*tan(d*x)^4 - 48*A*a^4*d*x*tan(d*x)*tan(c) + 192*B*a^3*b*d*x*tan(d*x)*tan(c) + 288*A*a^2*b^2*d*x*tan(d*x)*tan(c) - 192*B*a*b^3*d*x*tan(d*x)*tan(c) - 48*A*b^4*d*x*tan(d*x)*tan(c) - 72*B*a^2*b^2*tan(d*x)^3*tan(c) - 48*A*a*b^3*tan(d*x)^3*tan(c) + 24*B*b^4*tan(d*x)^3*tan(c) + 72*B*a^2*b^2*tan(d*x)^2*tan(c)^2 + 48*A*a*b^3*tan(d*x)^2*tan(c)^2 - 12*B*b^4*tan(d*x)^2*tan(c)^2 - 72*B*a^2*b^2*tan(d*x)*tan(c)^3 - 48*A*a*b^3*tan(d*x)*tan(c)^3 + 24*B*b^4*tan(d*x)*tan(c)^3 + 3*B*b^4*tan(c)^4 + 16*B*a*b^3*tan(d*x)^3 + 4*A*b^4*tan(d*x)^3 + 24*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 96*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 144*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 96*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) + 24*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1))*tan(d*x)*tan(c) - 144*B*a^3*b*tan(d*x)^2*tan(c) - 216*A*a^2*b^2*tan(d*x)^2*tan(c) + 192*B*a*b^3*tan(d*x)^2*tan(c) + 48*A*b^4*tan(d*x)^2*tan(c) - 144*B*a^3*b*tan(d*x)*tan(c)^2 - 216*A*a^2*b^2*tan(d*x)*tan(c)^2 + 192*B*a*b^3*tan(d*x)*tan(c)^2 + 48*A*b^4*tan(d*x)*tan(c)^2 + 16*B*a*b^3*tan(c)^3 + 4*A*b^4*tan(c)^3 + 12*A*a^4*d*x - 48*B*a^3*b*d*x - 72*A*a^2*b^2*d*x + 48*B*a*b^3*d*x + 12*A*b^4*d*x + 36*B*a^2*b^2*tan(d*x)^2 + 24*A*a*b^3*tan(d*x)^2 - 6*B*b^4*tan(d*x)^2 - 72*B*a^2*b^2*tan(d*x)*tan(c) - 48*A*a*b^3*tan(d*x)*tan(c) + 24*B*b^4*tan(d*x)*tan(c) + 36*B*a^2*b^2*tan(c)^2 + 24*A*a*b^3*tan(c)^2 - 6*B*b^4*tan(c)^2 - 6*B*a^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 24*A*a^3*b*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 36*B*a^2*b^2*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 24*A*a*b^3*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) - 6*B*b^4*log(4*(tan(c)^2 + 1)/(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)) + 48*B*a^3*b*tan(d*x) + 72*A*a^2*b^2*tan(d*x) - 48*B*a*b^3*tan(d*x) - 12*A*b^4*tan(d*x) + 48*B*a^3*b*tan(c) + 72*A*a^2*b^2*tan(c) - 48*B*a*b^3*tan(c) - 12*A*b^4*tan(c) + 36*B*a^2*b^2 + 24*A*a*b^3 - 9*B*b^4)/(d*tan(d*x)^4*tan(c)^4 - 4*d*tan(d*x)^3*tan(c)^3 + 6*d*tan(d*x)^2*tan(c)^2 - 4*d*tan(d*x)*tan(c) + d)

3.260 $\int \cot(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=172

$$\frac{b^2(3a^2B+3aAb-b^2B)\tan(c+dx)}{d}-\frac{b(6a^2Ab+4a^3B-4ab^2B-Ab^3)\log(\cos(c+dx))}{d}+x(4a^3Ab-6a^2b^2B+a^4B-$$

```
[Out] (4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x - (b*(6*a^2*A*b - A
*b^3 + 4*a^3*B - 4*a*b^2*B)*Log[Cos[c + d*x]])/d + (a^4*A*Log[Sin[c + d*x]]
)/d + (b^2*(3*a*A*b + 3*a^2*B - b^2*B)*Tan[c + d*x])/d + (b*(A*b + 2*a*B)*(
a + b*Tan[c + d*x])^2)/(2*d) + (b*B*(a + b*Tan[c + d*x])^3)/(3*d)
```

Rubi [A] time = 0.47066, antiderivative size = 172, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {3607, 3647, 3637, 3624, 3475}

$$\frac{b^2(3a^2B+3aAb-b^2B)\tan(c+dx)}{d}-\frac{b(6a^2Ab+4a^3B-4ab^2B-Ab^3)\log(\cos(c+dx))}{d}+x(4a^3Ab-6a^2b^2B+a^4B-$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] (4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x - (b*(6*a^2*A*b - A
*b^3 + 4*a^3*B - 4*a*b^2*B)*Log[Cos[c + d*x]])/d + (a^4*A*Log[Sin[c + d*x]]
)/d + (b^2*(3*a*A*b + 3*a^2*B - b^2*B)*Tan[c + d*x])/d + (b*(A*b + 2*a*B)*(
a + b*Tan[c + d*x])^2)/(2*d) + (b*B*(a + b*Tan[c + d*x])^3)/(3*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
```

```
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{bB(a+b\tan(c+dx))^3}{3d} + \frac{1}{3}\int \cot(c+dx)(a+b\tan(c+dx)$$
$$= \frac{b(Ab+2aB)(a+b\tan(c+dx))^2}{2d} + \frac{bB(a+b\tan(c+dx))^3}{3d} +$$
$$= \frac{b^2\left(3aAb+3a^2B-b^2B\right)\tan(c+dx)}{d} + \frac{b(Ab+2aB)(a+b\,\mathrm{ta}}{2d}$$
$$= \left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x + \frac{b^2\left(3aAb+3a^2\right.}{}$$
$$= \left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x - \frac{b\left(6a^2Ab-Ab^3\right.}{}$$

Mathematica [C] time = 1.39383, size = 149, normalized size = 0.87

$$\frac{6b^2\left(3a^2B+3aAb-b^2B\right)\tan(c+dx)+6a^4A\log(\tan(c+dx))+3b(2aB+Ab)(a+b\tan(c+dx))^2-3(a+ib)^4(A+iB)}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-3*(a + I*b)^4*(A + I*B)*Log[I - Tan[c + d*x]] + 6*a^4*A*Log[Tan[c + d*x]]
 - 3*(a - I*b)^4*(A - I*B)*Log[I + Tan[c + d*x]] + 6*b^2*(3*a*A*b + 3*a^2*B
 - b^2*B)*Tan[c + d*x] + 3*b*(A*b + 2*a*B)*(a + b*Tan[c + d*x])^2 + 2*b*B*(
a + b*Tan[c + d*x])^3)/(6*d)
```

Maple [A] time = 0.089, size = 277, normalized size = 1.6

$$\frac{Ab^4(\tan(dx+c))^2}{2d} + \frac{Ab^4\ln(\cos(dx+c))}{d} + \frac{B(\tan(dx+c))^3b^4}{3d} - \frac{Bb^4\tan(dx+c)}{d} + Bb^4x + \frac{Bb^4c}{d} - 4Aab^3x + 4\frac{Aab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*A*b^4*tan(d*x+c)^2+1/d*A*b^4*ln(cos(d*x+c))+1/3/d*B*tan(d*x+c)^3*b^4-
1/d*B*b^4*tan(d*x+c)+B*b^4*x+1/d*B*b^4*c-4*A*a*b^3*x+4/d*A*a*b^3*tan(d*x+c)
-4/d*A*a*b^3*c+2/d*B*a*b^3*tan(d*x+c)^2+4/d*B*a*b^3*ln(cos(d*x+c))-6/d*A*a^
2*b^2*ln(cos(d*x+c))-6*B*a^2*b^2*x+6/d*B*a^2*b^2*tan(d*x+c)-6/d*B*a^2*b^2*c
```

```
+4*A*x*a^3*b+4/d*A*a^3*b*c-4/d*B*a^3*b*ln(cos(d*x+c))+a^4*A*ln(sin(d*x+c))/
d+B*a^4*x+1/d*B*a^4*c
```

Maxima [A] time = 1.48472, size = 236, normalized size = 1.37

$$\frac{2\,Bb^4\tan(dx+c)^3+6\,Aa^4\log(\tan(dx+c))+3\left(4\,Bab^3+Ab^4\right)\tan(dx+c)^2+6\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/6*(2*B*b^4*tan(d*x + c)^3 + 6*A*a^4*log(tan(d*x + c)) + 3*(4*B*a*b^3 + A*
b^4)*tan(d*x + c)^2 + 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^
4)*(d*x + c) - 3*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(
tan(d*x + c)^2 + 1) + 6*(6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(d*x + c))/d
```

Fricas [A] time = 2.36052, size = 423, normalized size = 2.46

$$\frac{2\,Bb^4\tan(dx+c)^3+3\,Aa^4\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)+6\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)dx+3\left(4\,Bab^3+Ab^4\right)\tan(}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] 1/6*(2*B*b^4*tan(d*x + c)^3 + 3*A*a^4*log(tan(d*x + c)^2/(tan(d*x + c)^2 +
1)) + 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*d*x + 3*(4*B*
a*b^3 + A*b^4)*tan(d*x + c)^2 - 3*(4*B*a^3*b + 6*A*a^2*b^2 - 4*B*a*b^3 - A*
b^4)*log(1/(tan(d*x + c)^2 + 1)) + 6*(6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*tan(
d*x + c))/d
```

Sympy [A] time = 4.89496, size = 291, normalized size = 1.69

$$\begin{cases} -\frac{Aa^4\log\left(\tan^2(c+dx)+1\right)}{2d}+\frac{Aa^4\log(\tan(c+dx))}{d}+4Aa^3bx+\frac{3Aa^2b^2\log\left(\tan^2(c+dx)+1\right)}{d}-4Aab^3x+\frac{4Aab^3\tan(c+dx)}{d}-\frac{Ab^4\log\left(\tan^2(c+\right.}{2d} \\ x\left(A+B\tan(c)\right)\left(a+b\tan(c)\right)^4\cot(c) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((-A*a**4*log(tan(c + d*x)**2 + 1)/(2*d) + A*a**4*log(tan(c + d*x)
)/d + 4*A*a**3*b*x + 3*A*a**2*b**2*log(tan(c + d*x)**2 + 1)/d - 4*A*a*b**3*
x + 4*A*a*b**3*tan(c + d*x)/d - A*b**4*log(tan(c + d*x)**2 + 1)/(2*d) + A*b
**4*tan(c + d*x)**2/(2*d) + B*a**4*x + 2*B*a**3*b*log(tan(c + d*x)**2 + 1)/
d - 6*B*a**2*b**2*x + 6*B*a**2*b**2*tan(c + d*x)/d - 2*B*a*b**3*log(tan(c +
 d*x)**2 + 1)/d + 2*B*a*b**3*tan(c + d*x)**2/d + B*b**4*x + B*b**4*tan(c +
d*x)**3/(3*d) - B*b**4*tan(c + d*x)/d, Ne(d, 0)), (x*(A + B*tan(c))*(a + b*
tan(c))**4*cot(c), True))
```

Giac [A] time = 2.6021, size = 258, normalized size = 1.5

$$2\,Bb^4\tan(dx+c)^3 + 12\,Bab^3\tan(dx+c)^2 + 3\,Ab^4\tan(dx+c)^2 + 6\,Aa^4\log(|\tan(dx+c)|) + 36\,Ba^2b^2\tan(dx+c) + 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] 1/6*(2*B*b^4*tan(d*x + c)^3 + 12*B*a*b^3*tan(d*x + c)^2 + 3*A*b^4*tan(d*x +
 c)^2 + 6*A*a^4*log(abs(tan(d*x + c))) + 36*B*a^2*b^2*tan(d*x + c) + 24*A*a
*b^3*tan(d*x + c) - 6*B*b^4*tan(d*x + c) + 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b
^2 - 4*A*a*b^3 + B*b^4)*(d*x + c) - 3*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*
B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1))/d
```

3.261 $\int \cot^2(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=175

$$\frac{b^2\left(a^2A+3abB+Ab^2\right)\tan(c+dx)}{d}-\frac{b^2\left(6a^2B+4aAb-b^2B\right)\log(\cos(c+dx))}{d}-x\left(-6a^2Ab^2+a^4A-4a^3bB+4ab^3B\right.$$

```
[Out] -((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x) - (b^2*(4*a*A*b
+ 6*a^2*B - b^2*B)*Log[Cos[c + d*x]])/d + (a^3*(4*A*b + a*B)*Log[Sin[c + d*
x]])/d + (b^2*(a^2*A + A*b^2 + 3*a*b*B)*Tan[c + d*x])/d + (b*(2*a*A + b*B)*
(a + b*Tan[c + d*x])^2)/(2*d) - (a*A*Cot[c + d*x]*(a + b*Tan[c + d*x])^3)/d
```

Rubi [A] time = 0.482152, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3605, 3647, 3637, 3624, 3475}

$$\frac{b^2\left(a^2A+3abB+Ab^2\right)\tan(c+dx)}{d}-\frac{b^2\left(6a^2B+4aAb-b^2B\right)\log(\cos(c+dx))}{d}-x\left(-6a^2Ab^2+a^4A-4a^3bB+4ab^3B\right.$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x) - (b^2*(4*a*A*b
+ 6*a^2*B - b^2*B)*Log[Cos[c + d*x]])/d + (a^3*(4*A*b + a*B)*Log[Sin[c + d*
x]])/d + (b^2*(a^2*A + A*b^2 + 3*a*b*B)*Tan[c + d*x])/d + (b*(2*a*A + b*B)*
(a + b*Tan[c + d*x])^2)/(2*d) - (a*A*Cot[c + d*x]*(a + b*Tan[c + d*x])^3)/d
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
```

```
LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)(a+b\tan(c+dx))^3}{d} + \int \cot(c+dx)(a+$$

$$= \frac{b(2aA+bB)(a+b\tan(c+dx))^2}{2d} - \frac{aA\cot(c+dx)(a+b\,t}{d}$$

$$= \frac{b^2\left(a^2A+Ab^2+3abB\right)\tan(c+dx)}{d} + \frac{b(2aA+bB)(a+b}{2d}$$

$$= -\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x + \frac{b^2\left(a^2A+\right.}{}$$

$$= -\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x - \frac{b^2\left(4aAb+\right.}{}$$

Mathematica [C] time = 1.01646, size = 134, normalized size = 0.77

$$\frac{2a^3(aB+4Ab)\log(\tan(c+dx)) - 2a^4A\cot(c+dx) + 2b^3(4aB+Ab)\tan(c+dx) + i(a+ib)^4(A+iB)\log(-\tan(c+dx}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^4*A*Cot[c + d*x] + I*(a + I*b)^4*(A + I*B)*Log[I - Tan[c + d*x]] + 2*
a^3*(4*A*b + a*B)*Log[Tan[c + d*x]] - (a - I*b)^4*(I*A + B)*Log[I + Tan[c +
 d*x]] + 2*b^3*(A*b + 4*a*B)*Tan[c + d*x] + b^4*B*Tan[c + d*x]^2)/(2*d)
```

Maple [A] time = 0.081, size = 242, normalized size = 1.4

$$-Ab^4x + \frac{Ab^4\tan(dx+c)}{d} - \frac{Ab^4c}{d} + \frac{B(\tan(dx+c))^2b^4}{2d} + \frac{Bb^4\ln(\cos(dx+c))}{d} - 4\frac{Aab^3\ln(\cos(dx+c))}{d} - 4Bab^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -A*b^4*x+1/d*A*b^4*tan(d*x+c)-1/d*A*b^4*c+1/2/d*B*tan(d*x+c)^2*b^4+b^4*B*ln
(cos(d*x+c))/d-4/d*A*a*b^3*ln(cos(d*x+c))-4*B*a*b^3*x+4/d*B*a*b^3*tan(d*x+c
)-4/d*B*a*b^3*c+6*A*a^2*b^2*x+6/d*A*a^2*b^2*c-6/d*B*a^2*b^2*ln(cos(d*x+c))+
4/d*A*a^3*b*ln(sin(d*x+c))+4*B*a^3*b*x+4/d*B*a^3*b*c-A*a^4*x-1/d*A*cot(d*x+
```

```
c)*a^4-1/d*A*a^4*c+1/d*B*a^4*ln(sin(d*x+c))
```

Maxima [A] time = 1.47129, size = 221, normalized size = 1.26

$$\frac{Bb^4\tan(dx+c)^2 - \frac{2\,Aa^4}{\tan(dx+c)} - 2\left(Aa^4 - 4\,Ba^3b - 6\,Aa^2b^2 + 4\,Bab^3 + Ab^4\right)(dx+c) - \left(Ba^4 + 4\,Aa^3b - 6\,Ba^2b^2 - 4\,Aab^3 + \right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/2*(B*b^4*tan(d*x + c)^2 - 2*A*a^4/tan(d*x + c) - 2*(A*a^4 - 4*B*a^3*b - 6
*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*(d*x + c) - (B*a^4 + 4*A*a^3*b - 6*B*a^2*b^
2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1) + 2*(B*a^4 + 4*A*a^3*b)*log(
tan(d*x + c)) + 2*(4*B*a*b^3 + A*b^4)*tan(d*x + c))/d
```

Fricas [A] time = 2.21388, size = 448, normalized size = 2.56

$$\frac{Bb^4\tan(dx+c)^3 - 2\,Aa^4 + \left(Ba^4 + 4\,Aa^3b\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c) - \left(6\,Ba^2b^2 + 4\,Aab^3 - Bb^4\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d\tan(dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/2*(B*b^4*tan(d*x + c)^3 - 2*A*a^4 + (B*a^4 + 4*A*a^3*b)*log(tan(d*x + c)^
2/(tan(d*x + c)^2 + 1))*tan(d*x + c) - (6*B*a^2*b^2 + 4*A*a*b^3 - B*b^4)*lo
g(1/(tan(d*x + c)^2 + 1))*tan(d*x + c) + 2*(4*B*a*b^3 + A*b^4)*tan(d*x + c)
^2 + (B*b^4 - 2*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*d*x)*
tan(d*x + c))/(d*tan(d*x + c))
```

Sympy [A] time = 8.1065, size = 289, normalized size = 1.65

$$\begin{cases} \tilde{\infty} A a^4 x \\ x \left(A + B\tan(c)\right)\left(a + b\tan(c)\right)^4 \cot^2(c) \\ -Aa^4 x - \frac{Aa^4}{d\tan(c+dx)} - \frac{2Aa^3 b\log\left(\tan^2(c+dx)+1\right)}{d} + \frac{4Aa^3 b\log(\tan(c+dx))}{d} + 6Aa^2b^2x + \frac{2Aab^3\log\left(\tan^2(c+dx)+1\right)}{d} - Ab^4x + \frac{Ab^4\tan(c}{d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**4*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**4*cot(c)**2, Eq(d, 0)), (-A*a**4*x -
A*a**4/(d*tan(c + d*x)) - 2*A*a**3*b*log(tan(c + d*x)**2 + 1)/d + 4*A*a**3*
b*log(tan(c + d*x))/d + 6*A*a**2*b**2*x + 2*A*a*b**3*log(tan(c + d*x)**2 +
1)/d - A*b**4*x + A*b**4*tan(c + d*x)/d - B*a**4*log(tan(c + d*x)**2 + 1)/(
2*d) + B*a**4*log(tan(c + d*x))/d + 4*B*a**3*b*x + 3*B*a**2*b**2*log(tan(c
+ d*x)**2 + 1)/d - 4*B*a*b**3*x + 4*B*a*b**3*tan(c + d*x)/d - B*b**4*log(ta
n(c + d*x)**2 + 1)/(2*d) + B*b**4*tan(c + d*x)**2/(2*d), True))
```

Giac [A] time = 2.69749, size = 263, normalized size = 1.5

$$\frac{Bb^4\tan(dx+c)^2 + 8\,Bab^3\tan(dx+c) + 2\,Ab^4\tan(dx+c) - 2\left(Aa^4 - 4\,Ba^3b - 6\,Aa^2b^2 + 4\,Bab^3 + Ab^4\right)(dx+c) - \left(B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(B*b^4*tan(d*x + c)^2 + 8*B*a*b^3*tan(d*x + c) + 2*A*b^4*tan(d*x + c) -
 2*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*(d*x + c) - (B*a^4
 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1) + 2
*(B*a^4 + 4*A*a^3*b)*log(abs(tan(d*x + c))) - 2*(B*a^4*tan(d*x + c) + 4*A*a
^3*b*tan(d*x + c) + A*a^4)/tan(d*x + c))/d
```

3.262 $\int \cot^3(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=186

$$\frac{b^2\left(a^2B+3aAb+b^2B\right)\tan(c+dx)}{d}-\frac{a^2\left(a^2A-4abB-6Ab^2\right)\log(\sin(c+dx))}{d}-x\left(4a^3Ab-6a^2b^2B+a^4B-4aAb^3+b\right.$$

```
[Out] -((4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x) - (b^3*(A*b + 4*
a*B)*Log[Cos[c + d*x]])/d - (a^2*(a^2*A - 6*A*b^2 - 4*a*b*B)*Log[Sin[c + d*
x]])/d + (b^2*(3*a*A*b + a^2*B + b^2*B)*Tan[c + d*x])/d - (a*(5*A*b + 2*a*B
)*Cot[c + d*x]*(a + b*Tan[c + d*x])^2)/(2*d) - (a*A*Cot[c + d*x]^2*(a + b*T
an[c + d*x])^3)/(2*d)
```

Rubi [A] time = 0.505494, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3605, 3645, 3637, 3624, 3475}

$$\frac{b^2\left(a^2B+3aAb+b^2B\right)\tan(c+dx)}{d}-\frac{a^2\left(a^2A-4abB-6Ab^2\right)\log(\sin(c+dx))}{d}-x\left(4a^3Ab-6a^2b^2B+a^4B-4aAb^3+b\right.$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x) - (b^3*(A*b + 4*
a*B)*Log[Cos[c + d*x]])/d - (a^2*(a^2*A - 6*A*b^2 - 4*a*b*B)*Log[Sin[c + d*
x]])/d + (b^2*(3*a*A*b + a^2*B + b^2*B)*Tan[c + d*x])/d - (a*(5*A*b + 2*a*B
)*Cot[c + d*x]*(a + b*Tan[c + d*x])^2)/(2*d) - (a*A*Cot[c + d*x]^2*(a + b*T
an[c + d*x])^3)/(2*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
```

```
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^3(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)(a+b\tan(c+dx))^3}{2d} + \frac{1}{2}\int \cot^2(c+dx)(a$$

$$= -\frac{a(5Ab+2aB)\cot(c+dx)(a+b\tan(c+dx))^2}{2d} - \frac{aA\cot^2(}{}$$

$$= \frac{b^2\left(3aAb+a^2B+b^2B\right)\tan(c+dx)}{d} - \frac{a(5Ab+2aB)\cot(c+}{}$$

$$= -\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x + \frac{b^2\left(3aAb+a\right.}{}$$

$$= -\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x - \frac{b^3(Ab+4aB}{}$$

Mathematica [C] time = 0.673258, size = 140, normalized size = 0.75

$$\frac{-2a^2\left(a^2A-4abB-6Ab^2\right)\log(\tan(c+dx)) - 2a^3(aB+4Ab)\cot(c+dx) + a^4(-A)\cot^2(c+dx) + (a+ib)^4(A+iB)\log(}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^3*(4*A*b + a*B)*Cot[c + d*x] - a^4*A*Cot[c + d*x]^2 + (a + I*b)^4*(A
+ I*B)*Log[I - Tan[c + d*x]] - 2*a^2*(a^2*A - 6*A*b^2 - 4*a*b*B)*Log[Tan[c
+ d*x]] + (a - I*b)^4*(A - I*B)*Log[I + Tan[c + d*x]] + 2*b^4*B*Tan[c + d*x
])/(2*d)
```

Maple [A] time = 0.094, size = 244, normalized size = 1.3

$$-\frac{Ab^4\ln(\cos(dx+c))}{d} - Bb^4x + \frac{Bb^4\tan(dx+c)}{d} - \frac{Bb^4c}{d} + 4\,Aab^3x + 4\,\frac{Aab^3c}{d} - 4\,\frac{Bab^3\ln(\cos(dx+c))}{d} + 6\,\frac{Aa^2b^2\ln(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/d*A*b^4*ln(cos(d*x+c))-B*b^4*x+1/d*B*b^4*tan(d*x+c)-1/d*B*b^4*c+4*A*a*b^
3*x+4/d*A*a*b^3*c-4/d*B*a*b^3*ln(cos(d*x+c))+6/d*A*a^2*b^2*ln(sin(d*x+c))+6
*B*a^2*b^2*x+6/d*B*a^2*b^2*c-4*A*x*a^3*b-4/d*A*cot(d*x+c)*a^3*b-4/d*A*a^3*b
*c+4/d*B*a^3*b*ln(sin(d*x+c))-1/2/d*A*a^4*cot(d*x+c)^2-a^4*A*ln(sin(d*x+c))
```

```
/d-B*a^4*x-1/d*B*cot(d*x+c)*a^4-1/d*B*a^4*c
```

Maxima [A] time = 1.46268, size = 234, normalized size = 1.26

$$\frac{2\,Bb^4\tan\left(dx+c\right)-2\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)(dx+c)+\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)\log}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/2*(2*B*b^4*tan(d*x + c) - 2*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3
+ B*b^4)*(d*x + c) + (A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*
log(tan(d*x + c)^2 + 1) - 2*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*log(tan(d*x +
 c)) - (A*a^4 + 2*(B*a^4 + 4*A*a^3*b)*tan(d*x + c))/tan(d*x + c)^2)/d
```

Fricas [A] time = 2.14768, size = 456, normalized size = 2.45

$$\frac{2\,Bb^4\tan\left(dx+c\right)^3-Aa^4-\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^2-\left(4\,Bab^3+Ab^4\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right.}{2\,d\tan\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/2*(2*B*b^4*tan(d*x + c)^3 - A*a^4 - (A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*log
(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^2 - (4*B*a*b^3 + A*b^4)*
log(1/(tan(d*x + c)^2 + 1))*tan(d*x + c)^2 - (A*a^4 + 2*(B*a^4 + 4*A*a^3*b
- 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*d*x)*tan(d*x + c)^2 - 2*(B*a^4 + 4*A*a^3
*b)*tan(d*x + c))/(d*tan(d*x + c)^2)
```

Sympy [A] time = 14.3322, size = 309, normalized size = 1.66

$$\begin{cases} \tilde{\infty} A a^4 x \\ x (A + B\tan(c)) (a + b\tan(c))^4 \cot^3(c) \\ \frac{A a^4 \log(\tan^2(c+dx)+1)}{2d} - \frac{A a^4 \log(\tan(c+dx))}{d} - \frac{A a^4}{2d\tan^2(c+dx)} - 4 A a^3 b x - \frac{4 A a^3 b}{d\tan(c+dx)} - \frac{3 A a^2 b^2 \log(\tan^2(c+dx)+1)}{d} + \frac{6 A a^2 b^2 \log(\tan(c+d}{d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**4*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**4*cot(c)**3, Eq(d, 0)), (A*a**4*log(t
an(c + d*x)**2 + 1)/(2*d) - A*a**4*log(tan(c + d*x))/d - A*a**4/(2*d*tan(c
+ d*x)**2) - 4*A*a**3*b*x - 4*A*a**3*b/(d*tan(c + d*x)) - 3*A*a**2*b**2*log
(tan(c + d*x)**2 + 1)/d + 6*A*a**2*b**2*log(tan(c + d*x))/d + 4*A*a*b**3*x
+ A*b**4*log(tan(c + d*x)**2 + 1)/(2*d) - B*a**4*x - B*a**4/(d*tan(c + d*x)
) - 2*B*a**3*b*log(tan(c + d*x)**2 + 1)/d + 4*B*a**3*b*log(tan(c + d*x))/d
+ 6*B*a**2*b**2*x + 2*B*a*b**3*log(tan(c + d*x)**2 + 1)/d - B*b**4*x + B*b*
*4*tan(c + d*x)/d, True))
```

Giac [A] time = 2.79531, size = 302, normalized size = 1.62

$$\frac{2 B b^4 \tan(dx+c) - 2\left(B a^4 + 4 A a^3 b - 6 B a^2 b^2 - 4 A a b^3 + B b^4\right)(dx+c) + \left(A a^4 - 4 B a^3 b - 6 A a^2 b^2 + 4 B a b^3 + A b^4\right)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*B*b^4*tan(d*x + c) - 2*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3
+ B*b^4)*(d*x + c) + (A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*
log(tan(d*x + c)^2 + 1) - 2*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*log(abs(tan(d
*x + c))) + (3*A*a^4*tan(d*x + c)^2 - 12*B*a^3*b*tan(d*x + c)^2 - 18*A*a^2*
b^2*tan(d*x + c)^2 - 2*B*a^4*tan(d*x + c) - 8*A*a^3*b*tan(d*x + c) - A*a^4)
/tan(d*x + c)^2)/d
```

3.263 $\int \cot^4(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=187

$$\frac{a^2\left(a^2A-3abB-3Ab^2\right)\cot(c+dx)}{d}-\frac{a\left(4a^2Ab+a^3B-6ab^2B-4Ab^3\right)\log(\sin(c+dx))}{d}+x\left(-6a^2Ab^2+a^4A-4a^3bB\right.$$

```
[Out] (a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x + (a^2*(a^2*A - 3*A
*b^2 - 3*a*b*B)*Cot[c + d*x])/d - (b^4*B*Log[Cos[c + d*x]])/d - (a*(4*a^2*A
*b - 4*A*b^3 + a^3*B - 6*a*b^2*B)*Log[Sin[c + d*x]])/d - (a*(2*A*b + a*B)*C
ot[c + d*x]^2*(a + b*Tan[c + d*x])^2)/(2*d) - (a*A*Cot[c + d*x]^3*(a + b*Ta
n[c + d*x])^3)/(3*d)
```

Rubi [A] time = 0.530705, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3605, 3645, 3635, 3624, 3475}

$$\frac{a^2\left(a^2A-3abB-3Ab^2\right)\cot(c+dx)}{d}-\frac{a\left(4a^2Ab+a^3B-6ab^2B-4Ab^3\right)\log(\sin(c+dx))}{d}+x\left(-6a^2Ab^2+a^4A-4a^3bB\right.$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x + (a^2*(a^2*A - 3*A
*b^2 - 3*a*b*B)*Cot[c + d*x])/d - (b^4*B*Log[Cos[c + d*x]])/d - (a*(4*a^2*A
*b - 4*A*b^3 + a^3*B - 6*a*b^2*B)*Log[Sin[c + d*x]])/d - (a*(2*A*b + a*B)*C
ot[c + d*x]^2*(a + b*Tan[c + d*x])^2)/(2*d) - (a*A*Cot[c + d*x]^3*(a + b*Ta
n[c + d*x])^3)/(3*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
```

```
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3624

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[B*x, x] + (Dist[A, Int[1/Tan[e
 + f*x], x], x] + Dist[C, Int[Tan[e + f*x], x], x]) /; FreeQ[{e, f, A, B, C
}, x] && NeQ[A, C]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^4(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)(a+b\tan(c+dx))^3}{3d} + \frac{1}{3}\int \cot^3(c+dx)$$

$$= -\frac{a(2Ab+aB)\cot^2(c+dx)(a+b\tan(c+dx))^2}{2d} - \frac{aA\cot^3}{}$$

$$= \frac{a^2\left(a^2A-3Ab^2-3abB\right)\cot(c+dx)}{d} - \frac{a(2Ab+aB)\cot^2(}{}$$

$$= \left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x + \frac{a^2\left(a^2A-3A\right.}{}$$

$$= \left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x + \frac{a^2\left(a^2A-3A\right.}{}$$

Mathematica [C] time = 1.09511, size = 167, normalized size = 0.89

$$\frac{6a^2\left(a^2A-4abB-6Ab^2\right)\cot(c+dx)-6a\left(4a^2Ab+a^3B-6ab^2B-4Ab^3\right)\log(\tan(c+dx))-3a^3(aB+4Ab)\cot^2(c+}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (6*a^2*(a^2*A - 6*A*b^2 - 4*a*b*B)*Cot[c + d*x] - 3*a^3*(4*A*b + a*B)*Cot[c
 + d*x]^2 - 2*a^4*A*Cot[c + d*x]^3 + 3*(a + I*b)^4*((-I)*A + B)*Log[I - Tan
[c + d*x]] - 6*a*(4*a^2*A*b - 4*A*b^3 + a^3*B - 6*a*b^2*B)*Log[Tan[c + d*x]
] + 3*(a - I*b)^4*(I*A + B)*Log[I + Tan[c + d*x]])/(6*d)
```

Maple [A] time = 0.089, size = 278, normalized size = 1.5

$$Ab^4x + \frac{Ab^4c}{d} - \frac{Bb^4\ln(\cos(dx+c))}{d} + 4\,\frac{Aab^3\ln(\sin(dx+c))}{d} + 4\,Bab^3x + 4\,\frac{Bab^3c}{d} - 6\,Aa^2b^2x - 6\,\frac{A\cot(dx+c)\,a^2b^{}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] A*b^4*x+1/d*A*b^4*c-b^4*B*ln(cos(d*x+c))/d+4/d*A*a*b^3*ln(sin(d*x+c))+4*B*a
*b^3*x+4/d*B*a*b^3*c-6*A*a^2*b^2*x-6/d*A*cot(d*x+c)*a^2*b^2-6/d*A*a^2*b^2*c
+6/d*B*a^2*b^2*ln(sin(d*x+c))-2/d*A*a^3*b*cot(d*x+c)^2-4/d*A*a^3*b*ln(sin(d
*x+c))-4*B*a^3*b*x-4/d*B*cot(d*x+c)*a^3*b-4/d*B*a^3*b*c-1/3/d*A*a^4*cot(d*x
```

```
+c)^3+1/d*A*cot(d*x+c)*a^4+A*a^4*x+1/d*A*a^4*c-1/2/d*B*a^4*cot(d*x+c)^2-1/d
*B*a^4*ln(sin(d*x+c))
```

Maxima [A] time = 1.49889, size = 273, normalized size = 1.46

$$\frac{6\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)(dx+c)+3\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)\log\left(\tan\left(dx+c\right)^2+1\right)}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/6*(6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*(d*x + c) + 3*
(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 +
1) - 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*log(tan(d*x + c)) - (2
*A*a^4 - 6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*tan(d*x + c)^2 + 3*(B*a^4 + 4*
A*a^3*b)*tan(d*x + c))/tan(d*x + c)^3)/d
```

Fricas [A] time = 2.28901, size = 520, normalized size = 2.78

$$-\frac{3\,Bb^4\log\left(\frac{1}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^3+2\,Aa^4+3\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^3+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/6*(3*B*b^4*log(1/(tan(d*x + c)^2 + 1))*tan(d*x + c)^3 + 2*A*a^4 + 3*(B*a
^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*log(tan(d*x + c)^2/(tan(d*x + c)^
2 + 1))*tan(d*x + c)^3 + 3*(B*a^4 + 4*A*a^3*b - 2*(A*a^4 - 4*B*a^3*b - 6*A*
a^2*b^2 + 4*B*a*b^3 + A*b^4)*d*x)*tan(d*x + c)^3 - 6*(A*a^4 - 4*B*a^3*b - 6
*A*a^2*b^2)*tan(d*x + c)^2 + 3*(B*a^4 + 4*A*a^3*b)*tan(d*x + c))/(d*tan(d*x
 + c)^3)
```

Sympy [A] time = 41.3728, size = 369, normalized size = 1.97

$$\begin{cases} \tilde{\infty} A a^4 x \\ x(A + B\tan(c))(a + b\tan(c))^4 \cot^4(c) \\ Aa^4x + \frac{Aa^4}{d\tan(c+dx)} - \frac{Aa^4}{3d\tan^3(c+dx)} + \frac{2Aa^3b\log\left(\tan^2(c+dx)+1\right)}{d} - \frac{4Aa^3b\log(\tan(c+dx))}{d} - \frac{2Aa^3b}{d\tan^2(c+dx)} - 6Aa^2b^2x - \frac{6Aa^2b^2}{d\tan(c+dx)} - \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*A*a**4*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x)
)), (x*(A + B*tan(c))*(a + b*tan(c))**4*cot(c)**4, Eq(d, 0)), (A*a**4*x + A
*a**4/(d*tan(c + d*x)) - A*a**4/(3*d*tan(c + d*x)**3) + 2*A*a**3*b*log(tan(
c + d*x)**2 + 1)/d - 4*A*a**3*b*log(tan(c + d*x))/d - 2*A*a**3*b/(d*tan(c +
 d*x)**2) - 6*A*a**2*b**2*x - 6*A*a**2*b**2/(d*tan(c + d*x)) - 2*A*a*b**3*l
og(tan(c + d*x)**2 + 1)/d + 4*A*a*b**3*log(tan(c + d*x))/d + A*b**4*x + B*a
**4*log(tan(c + d*x)**2 + 1)/(2*d) - B*a**4*log(tan(c + d*x))/d - B*a**4/(2
*d*tan(c + d*x)**2) - 4*B*a**3*b*x - 4*B*a**3*b/(d*tan(c + d*x)) - 3*B*a**2
*b**2*log(tan(c + d*x)**2 + 1)/d + 6*B*a**2*b**2*log(tan(c + d*x))/d + 4*B*
a*b**3*x + B*b**4*log(tan(c + d*x)**2 + 1)/(2*d), True))
```

Giac [A] time = 2.80737, size = 379, normalized size = 2.03

$$\frac{6\left(Aa^4 - 4Ba^3b - 6Aa^2b^2 + 4Bab^3 + Ab^4\right)(dx + c) + 3\left(Ba^4 + 4Aa^3b - 6Ba^2b^2 - 4Aab^3 + Bb^4\right)\log\left(\tan(dx + c)^2 + 1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/6*(6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*(d*x + c) + 3*
(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 +
1) - 6*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*log(abs(tan(d*x + c)))
 + (11*B*a^4*tan(d*x + c)^3 + 44*A*a^3*b*tan(d*x + c)^3 - 66*B*a^2*b^2*tan(
d*x + c)^3 - 44*A*a*b^3*tan(d*x + c)^3 + 6*A*a^4*tan(d*x + c)^2 - 24*B*a^3*
b*tan(d*x + c)^2 - 36*A*a^2*b^2*tan(d*x + c)^2 - 3*B*a^4*tan(d*x + c) - 12*
A*a^3*b*tan(d*x + c) - 2*A*a^4)/tan(d*x + c)^3)/d
```

3.264 $\int \cot^5(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=225

$$\frac{a^2\left(6a^2A-16abB-13Ab^2\right)\cot^2(c+dx)}{12d}+\frac{a\left(24a^2Ab+6a^3B-34ab^2B-19Ab^3\right)\cot(c+dx)}{6d}+\frac{\left(-6a^2Ab^2+a^4A-4a^3b\right.}{}$$

```
[Out] (4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x + (a*(24*a^2*A*b -
19*A*b^3 + 6*a^3*B - 34*a*b^2*B)*Cot[c + d*x])/(6*d) + (a^2*(6*a^2*A - 13*A
*b^2 - 16*a*b*B)*Cot[c + d*x]^2)/(12*d) + ((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4
*a^3*b*B + 4*a*b^3*B)*Log[Sin[c + d*x]])/d - (a*(7*A*b + 4*a*B)*Cot[c + d*x
]^3*(a + b*Tan[c + d*x])^2)/(12*d) - (a*A*Cot[c + d*x]^4*(a + b*Tan[c + d*x
])^3)/(4*d)
```

Rubi [A] time = 0.644813, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3605, 3645, 3635, 3628, 3531, 3475}

$$\frac{a^2\left(6a^2A-16abB-13Ab^2\right)\cot^2(c+dx)}{12d}+\frac{a\left(24a^2Ab+6a^3B-34ab^2B-19Ab^3\right)\cot(c+dx)}{6d}+\frac{\left(-6a^2Ab^2+a^4A-4a^3b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x + (a*(24*a^2*A*b -
19*A*b^3 + 6*a^3*B - 34*a*b^2*B)*Cot[c + d*x])/(6*d) + (a^2*(6*a^2*A - 13*A
*b^2 - 16*a*b*B)*Cot[c + d*x]^2)/(12*d) + ((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4
*a^3*b*B + 4*a*b^3*B)*Log[Sin[c + d*x]])/d - (a*(7*A*b + 4*a*B)*Cot[c + d*x
]^3*(a + b*Tan[c + d*x])^2)/(12*d) - (a*A*Cot[c + d*x]^4*(a + b*Tan[c + d*x
])^3)/(4*d)
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
```

```
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
```

```
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^5(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^4(c+dx)(a+b\tan(c+dx))^3}{4d}+\frac{1}{4}\int \cot^4(c+dx)(a$$

$$= -\frac{a(7Ab+4aB)\cot^3(c+dx)(a+b\tan(c+dx))^2}{12d}-\frac{aA\cot^4}{}$$

$$= \frac{a^2\left(6a^2A-13Ab^2-16abB\right)\cot^2(c+dx)}{12d}-\frac{a(7Ab+4aB)\,c}{}$$

$$= \frac{a\left(24a^2Ab-19Ab^3+6a^3B-34ab^2B\right)\cot(c+dx)}{6d}+\frac{a^2\left(6a\right.}{}$$

$$= \left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x+\frac{a\left(24a^2Ab-19\right.}{}$$

$$= \left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x+\frac{a\left(24a^2Ab-19\right.}{}$$

Mathematica [C] time = 0.919856, size = 211, normalized size = 0.94

$$\frac{6a^2\left(a^2A-4abB-6Ab^2\right)\cot^2(c+dx)+12a\left(4a^2Ab+a^3B-6ab^2B-4Ab^3\right)\cot(c+dx)+12\left(-6a^2Ab^2+a^4A-4a^3bB\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (12*a*(4*a^2*A*b - 4*A*b^3 + a^3*B - 6*a*b^2*B)*Cot[c + d*x] + 6*a^2*(a^2*A
 - 6*A*b^2 - 4*a*b*B)*Cot[c + d*x]^2 - 4*a^3*(4*A*b + a*B)*Cot[c + d*x]^3 -
 3*a^4*A*Cot[c + d*x]^4 - 6*(a + I*b)^4*(A + I*B)*Log[I - Tan[c + d*x]] + 1
2*(a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Log[Tan[c + d*x]] -
 6*(a - I*b)^4*(A - I*B)*Log[I + Tan[c + d*x]])/(12*d)
```

Maple [A] time = 0.094, size = 347, normalized size = 1.5

$$-4\,Aab^3x-6\,Ba^2b^2x+4\,Axa^3b-4\,\frac{Aab^3c}{d}+\frac{Ab^4\ln(\sin(dx+c))}{d}-\frac{Aa^4(\cot(dx+c))^4}{4d}-\frac{Ba^4(\cot(dx+c))^3}{3d}+Ba^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -4*A*a*b^3*x-6*B*a^2*b^2*x+4*A*x*a^3*b-4/d*A*a*b^3*c+1/d*A*b^4*ln(sin(d*x+c
))-1/4/d*A*a^4*cot(d*x+c)^4-1/3/d*B*a^4*cot(d*x+c)^3+B*a^4*x+B*b^4*x+a^4*A*
ln(sin(d*x+c))/d+1/2/d*A*a^4*cot(d*x+c)^2+1/d*B*cot(d*x+c)*a^4+1/d*B*a^4*c-
6/d*A*a^2*b^2*ln(sin(d*x+c))+4/d*A*cot(d*x+c)*a^3*b-4/d*B*a^3*b*ln(sin(d*x+
c))+1/d*B*b^4*c-6/d*B*a^2*b^2*c+4/d*A*a^3*b*c-2/d*B*a^3*b*cot(d*x+c)^2-4/d*
A*cot(d*x+c)*a*b^3+4/d*B*a*b^3*ln(sin(d*x+c))-3/d*A*a^2*b^2*cot(d*x+c)^2-6/
d*B*cot(d*x+c)*a^2*b^2-4/3/d*A*a^3*b*cot(d*x+c)^3
```

Maxima [A] time = 1.5022, size = 332, normalized size = 1.48

$$\frac{12\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)(dx+c)-6\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)\log\left(\tan(dx+c)^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/12*(12*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*(d*x + c) -
6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2
+ 1) + 12*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(d*x
 + c)) - (3*A*a^4 - 12*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*tan(d*
x + c)^3 - 6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*tan(d*x + c)^2 + 4*(B*a^4 +
4*A*a^3*b)*tan(d*x + c))/tan(d*x + c)^4)/d
```

Fricas [A] time = 1.92654, size = 571, normalized size = 2.54

$$\frac{6\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^4-3\,Aa^4+3\left(3\,Aa^4-8\,Ba^3b-12\,Aa^2b^2+4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/12*(6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(d*x +
 c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^4 - 3*A*a^4 + 3*(3*A*a^4 - 8*B*a^3
*b - 12*A*a^2*b^2 + 4*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)
*d*x)*tan(d*x + c)^4 + 12*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*tan
(d*x + c)^3 + 6*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*tan(d*x + c)^2 - 4*(B*a^4
 + 4*A*a^3*b)*tan(d*x + c))/(d*tan(d*x + c)^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.90367, size = 788, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/192*(3*A*a^4*tan(1/2*d*x + 1/2*c)^4 - 8*B*a^4*tan(1/2*d*x + 1/2*c)^3 - 3
2*A*a^3*b*tan(1/2*d*x + 1/2*c)^3 - 36*A*a^4*tan(1/2*d*x + 1/2*c)^2 + 96*B*a
^3*b*tan(1/2*d*x + 1/2*c)^2 + 144*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^2 + 120*B*
a^4*tan(1/2*d*x + 1/2*c) + 480*A*a^3*b*tan(1/2*d*x + 1/2*c) - 576*B*a^2*b^2
*tan(1/2*d*x + 1/2*c) - 384*A*a*b^3*tan(1/2*d*x + 1/2*c) - 192*(B*a^4 + 4*A
*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*(d*x + c) + 192*(A*a^4 - 4*B*a^3*
b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(1/2*d*x + 1/2*c)^2 + 1) - 192*
(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(abs(tan(1/2*d*x +
```

```
 1/2*c))) + (400*A*a^4*tan(1/2*d*x + 1/2*c)^4 - 1600*B*a^3*b*tan(1/2*d*x +
1/2*c)^4 - 2400*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^4 + 1600*B*a*b^3*tan(1/2*d*x
 + 1/2*c)^4 + 400*A*b^4*tan(1/2*d*x + 1/2*c)^4 - 120*B*a^4*tan(1/2*d*x + 1/
2*c)^3 - 480*A*a^3*b*tan(1/2*d*x + 1/2*c)^3 + 576*B*a^2*b^2*tan(1/2*d*x + 1
/2*c)^3 + 384*A*a*b^3*tan(1/2*d*x + 1/2*c)^3 - 36*A*a^4*tan(1/2*d*x + 1/2*c
)^2 + 96*B*a^3*b*tan(1/2*d*x + 1/2*c)^2 + 144*A*a^2*b^2*tan(1/2*d*x + 1/2*c
)^2 + 8*B*a^4*tan(1/2*d*x + 1/2*c) + 32*A*a^3*b*tan(1/2*d*x + 1/2*c) + 3*A*
a^4)/tan(1/2*d*x + 1/2*c)^4)/d
```

3.265 $\int \cot^6(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=273

$$\frac{a^2\left(10a^2A-25abB-18Ab^2\right)\cot^3(c+dx)}{30d}+\frac{a\left(40a^2Ab+10a^3B-55ab^2B-28Ab^3\right)\cot^2(c+dx)}{20d}-\frac{\left(-6a^2Ab^2+a^4A-\right.}{}$$

```
[Out] -((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x) - ((a^4*A - 6*a^
2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Cot[c + d*x])/d + (a*(40*a^2*A*b -
 28*A*b^3 + 10*a^3*B - 55*a*b^2*B)*Cot[c + d*x]^2)/(20*d) + (a^2*(10*a^2*A
- 18*A*b^2 - 25*a*b*B)*Cot[c + d*x]^3)/(30*d) + ((4*a^3*A*b - 4*a*A*b^3 + a
^4*B - 6*a^2*b^2*B + b^4*B)*Log[Sin[c + d*x]])/d - (a*(8*A*b + 5*a*B)*Cot[c
 + d*x]^4*(a + b*Tan[c + d*x])^2)/(20*d) - (a*A*Cot[c + d*x]^5*(a + b*Tan[c
 + d*x])^3)/(5*d)
```

Rubi [A] time = 0.732761, antiderivative size = 273, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3605, 3645, 3635, 3628, 3529, 3531, 3475}

$$\frac{a^2\left(10a^2A-25abB-18Ab^2\right)\cot^3(c+dx)}{30d}+\frac{a\left(40a^2Ab+10a^3B-55ab^2B-28Ab^3\right)\cot^2(c+dx)}{20d}-\frac{\left(-6a^2Ab^2+a^4A-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^6*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*x) - ((a^4*A - 6*a^
2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Cot[c + d*x])/d + (a*(40*a^2*A*b -
 28*A*b^3 + 10*a^3*B - 55*a*b^2*B)*Cot[c + d*x]^2)/(20*d) + (a^2*(10*a^2*A
- 18*A*b^2 - 25*a*b*B)*Cot[c + d*x]^3)/(30*d) + ((4*a^3*A*b - 4*a*A*b^3 + a
^4*B - 6*a^2*b^2*B + b^4*B)*Log[Sin[c + d*x]])/d - (a*(8*A*b + 5*a*B)*Cot[c
 + d*x]^4*(a + b*Tan[c + d*x])^2)/(20*d) - (a*A*Cot[c + d*x]^5*(a + b*Tan[c
 + d*x])^3)/(5*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
```

```
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
```

```
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^6(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^5(c+dx)(a+b\tan(c+dx))^3}{5d}+\frac{1}{5}\int \cot^5(c+dx)(a$$

$$= -\frac{a(8Ab+5aB)\cot^4(c+dx)(a+b\tan(c+dx))^2}{20d}-\frac{aA\cot^5}{}$$

$$= \frac{a^2\left(10a^2A-18Ab^2-25abB\right)\cot^3(c+dx)}{30d}-\frac{a(8Ab+5aB)}{}$$

$$= \frac{a\left(40a^2Ab-28Ab^3+10a^3B-55ab^2B\right)\cot^2(c+dx)}{20d}+\frac{a^2(}{}$$

$$= -\frac{\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)\cot(c+dx)}{d}+\frac{a(}{}$$

$$= -\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x-\frac{\left(a^4A-6a^2A\right.}{}$$

$$= -\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)x-\frac{\left(a^4A-6a^2A\right.}{}$$

Mathematica [C] time = 1.56371, size = 257, normalized size = 0.94

$$\frac{20a^2\left(a^2A-4abB-6Ab^2\right)\cot^3(c+dx)+30a\left(4a^2Ab+a^3B-6ab^2B-4Ab^3\right)\cot^2(c+dx)-60\left(-6a^2Ab^2+a^4A-4a^3b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^6*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-60*(a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Cot[c + d*x] + 3
0*a*(4*a^2*A*b - 4*A*b^3 + a^3*B - 6*a*b^2*B)*Cot[c + d*x]^2 + 20*a^2*(a^2*
A - 6*A*b^2 - 4*a*b*B)*Cot[c + d*x]^3 - 15*a^3*(4*A*b + a*B)*Cot[c + d*x]^4
 - 12*a^4*A*Cot[c + d*x]^5 + (30*I)*(a + I*b)^4*(A + I*B)*Log[I - Tan[c + d
*x]] + 60*(4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Log[Tan[c +
 d*x]] - 30*(a - I*b)^4*(I*A + B)*Log[I + Tan[c + d*x]])/(60*d)
```

Maple [A] time = 0.098, size = 440, normalized size = 1.6

$$-\frac{A\cot(dx+c)\,b^4}{d}+\frac{Bb^4\ln(\sin(dx+c))}{d}-Aa^4x+4\,\frac{Aa^3b\ln(\sin(dx+c))}{d}-4\,\frac{Bab^3c}{d}-Ab^4x+6\,\frac{Aa^2b^2c}{d}+4\,\frac{Ba^3bc}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^6*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/d*A*cot(d*x+c)*b^4+1/d*B*b^4*ln(sin(d*x+c))-A*a^4*x+4/d*A*a^3*b*ln(sin(d
*x+c))-4/d*B*a*b^3*c-A*b^4*x+6/d*A*a^2*b^2*c+4/d*B*a^3*b*c-4/d*A*a*b^3*ln(s
in(d*x+c))-2/d*A*a*b^3*cot(d*x+c)^2-4/d*B*cot(d*x+c)*a*b^3-2/d*A*a^2*b^2*co
t(d*x+c)^3-3/d*B*a^2*b^2*cot(d*x+c)^2-1/d*A*a^3*b*cot(d*x+c)^4-4/3/d*B*a^3*
b*cot(d*x+c)^3-1/5/d*A*a^4*cot(d*x+c)^5-1/4/d*B*a^4*cot(d*x+c)^4-1/d*A*cot(
d*x+c)*a^4+1/d*B*a^4*ln(sin(d*x+c))+1/3/d*A*a^4*cot(d*x+c)^3+1/2/d*B*a^4*co
t(d*x+c)^2-1/d*A*b^4*c-4*B*a*b^3*x+6*A*a^2*b^2*x+4*B*a^3*b*x+6/d*A*cot(d*x+
c)*a^2*b^2-6/d*B*a^2*b^2*ln(sin(d*x+c))+2/d*A*a^3*b*cot(d*x+c)^2+4/d*B*cot(
d*x+c)*a^3*b-1/d*A*a^4*c
```

Maxima [A] time = 1.46627, size = 390, normalized size = 1.43

$$-\frac{60\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)(dx+c)+30\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)\log\left(\tan(dx+c)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/60*(60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*(d*x + c) +
 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^
2 + 1) - 60*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log(tan(d
*x + c)) + (12*A*a^4 + 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*
b^4)*tan(d*x + c)^4 - 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*tan(
d*x + c)^3 - 20*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*tan(d*x + c)^2 + 15*(B*a^
4 + 4*A*a^3*b)*tan(d*x + c))/tan(d*x + c)^5)/d
```

Fricas [A] time = 1.83649, size = 695, normalized size = 2.55

$$30\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^5+15\left(3\,Ba^4+12\,Aa^3b-12\,Ba^2b^2-8\,Aab^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/60*(30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log(tan(d*x
+ c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^5 + 15*(3*B*a^4 + 12*A*a^3*b - 12
*B*a^2*b^2 - 8*A*a*b^3 - 4*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A
*b^4)*d*x)*tan(d*x + c)^5 - 12*A*a^4 - 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2
+ 4*B*a*b^3 + A*b^4)*tan(d*x + c)^4 + 30*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 -
 4*A*a*b^3)*tan(d*x + c)^3 + 20*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*tan(d*x +
 c)^2 - 15*(B*a^4 + 4*A*a^3*b)*tan(d*x + c))/(d*tan(d*x + c)^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**6*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 2.92577, size = 1030, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^6*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/960*(6*A*a^4*tan(1/2*d*x + 1/2*c)^5 - 15*B*a^4*tan(1/2*d*x + 1/2*c)^4 - 6
0*A*a^3*b*tan(1/2*d*x + 1/2*c)^4 - 70*A*a^4*tan(1/2*d*x + 1/2*c)^3 + 160*B*
a^3*b*tan(1/2*d*x + 1/2*c)^3 + 240*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^3 + 180*B
*a^4*tan(1/2*d*x + 1/2*c)^2 + 720*A*a^3*b*tan(1/2*d*x + 1/2*c)^2 - 720*B*a^
2*b^2*tan(1/2*d*x + 1/2*c)^2 - 480*A*a*b^3*tan(1/2*d*x + 1/2*c)^2 + 660*A*a
^4*tan(1/2*d*x + 1/2*c) - 2400*B*a^3*b*tan(1/2*d*x + 1/2*c) - 3600*A*a^2*b^
2*tan(1/2*d*x + 1/2*c) + 1920*B*a*b^3*tan(1/2*d*x + 1/2*c) + 480*A*b^4*tan(
1/2*d*x + 1/2*c) - 960*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4
)*(d*x + c) - 960*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*log
(tan(1/2*d*x + 1/2*c)^2 + 1) + 960*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a
*b^3 + B*b^4)*log(abs(tan(1/2*d*x + 1/2*c))) - (2192*B*a^4*tan(1/2*d*x + 1/
2*c)^5 + 8768*A*a^3*b*tan(1/2*d*x + 1/2*c)^5 - 13152*B*a^2*b^2*tan(1/2*d*x
+ 1/2*c)^5 - 8768*A*a*b^3*tan(1/2*d*x + 1/2*c)^5 + 2192*B*b^4*tan(1/2*d*x +
 1/2*c)^5 + 660*A*a^4*tan(1/2*d*x + 1/2*c)^4 - 2400*B*a^3*b*tan(1/2*d*x + 1
/2*c)^4 - 3600*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^4 + 1920*B*a*b^3*tan(1/2*d*x
+ 1/2*c)^4 + 480*A*b^4*tan(1/2*d*x + 1/2*c)^4 - 180*B*a^4*tan(1/2*d*x + 1/2
*c)^3 - 720*A*a^3*b*tan(1/2*d*x + 1/2*c)^3 + 720*B*a^2*b^2*tan(1/2*d*x + 1/
2*c)^3 + 480*A*a*b^3*tan(1/2*d*x + 1/2*c)^3 - 70*A*a^4*tan(1/2*d*x + 1/2*c)
^2 + 160*B*a^3*b*tan(1/2*d*x + 1/2*c)^2 + 240*A*a^2*b^2*tan(1/2*d*x + 1/2*c
)^2 + 15*B*a^4*tan(1/2*d*x + 1/2*c) + 60*A*a^3*b*tan(1/2*d*x + 1/2*c) + 6*A
*a^4)/tan(1/2*d*x + 1/2*c)^5)/d
```

3.266 $\int \cot^7(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=323

$$\frac{a^2\left(5a^2A-12abB-8Ab^2\right)\cot^4(c+dx)}{20d}+\frac{a\left(20a^2Ab+5a^3B-27ab^2B-13Ab^3\right)\cot^3(c+dx)}{15d}-\frac{\left(-6a^2Ab^2+a^4A-4a^3b\right.}{}$$

```
[Out] -((4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x) - ((4*a^3*A*b -
4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Cot[c + d*x])/d - ((a^4*A - 6*a^2*
A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Cot[c + d*x]^2)/(2*d) + (a*(20*a^2*A
*b - 13*A*b^3 + 5*a^3*B - 27*a*b^2*B)*Cot[c + d*x]^3)/(15*d) + (a^2*(5*a^2*
A - 8*A*b^2 - 12*a*b*B)*Cot[c + d*x]^4)/(20*d) - ((a^4*A - 6*a^2*A*b^2 + A*
b^4 - 4*a^3*b*B + 4*a*b^3*B)*Log[Sin[c + d*x]])/d - (a*(3*A*b + 2*a*B)*Cot[
c + d*x]^5*(a + b*Tan[c + d*x])^2)/(10*d) - (a*A*Cot[c + d*x]^6*(a + b*Tan[
c + d*x])^3)/(6*d)
```

Rubi [A] time = 0.858379, antiderivative size = 323, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3605, 3645, 3635, 3628, 3529, 3531, 3475}

$$\frac{a^2\left(5a^2A-12abB-8Ab^2\right)\cot^4(c+dx)}{20d}+\frac{a\left(20a^2Ab+5a^3B-27ab^2B-13Ab^3\right)\cot^3(c+dx)}{15d}-\frac{\left(-6a^2Ab^2+a^4A-4a^3b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^7*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*x) - ((4*a^3*A*b -
4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Cot[c + d*x])/d - ((a^4*A - 6*a^2*
A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Cot[c + d*x]^2)/(2*d) + (a*(20*a^2*A
*b - 13*A*b^3 + 5*a^3*B - 27*a*b^2*B)*Cot[c + d*x]^3)/(15*d) + (a^2*(5*a^2*
A - 8*A*b^2 - 12*a*b*B)*Cot[c + d*x]^4)/(20*d) - ((a^4*A - 6*a^2*A*b^2 + A*
b^4 - 4*a^3*b*B + 4*a*b^3*B)*Log[Sin[c + d*x]])/d - (a*(3*A*b + 2*a*B)*Cot[
c + d*x]^5*(a + b*Tan[c + d*x])^2)/(10*d) - (a*A*Cot[c + d*x]^6*(a + b*Tan[
c + d*x])^3)/(6*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cot^7(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = -\frac{aA\cot^6(c+dx)(a+b\tan(c+dx))^3}{6d}+\frac{1}{6}\int \cot^6(c+dx)(a$$

$$= -\frac{a(3Ab+2aB)\cot^5(c+dx)(a+b\tan(c+dx))^2}{10d}-\frac{aA\cot^6}{}$$

$$= \frac{a^2\left(5a^2A-8Ab^2-12abB\right)\cot^4(c+dx)}{20d}-\frac{a(3Ab+2aB)\,\mathrm{co}}{}$$

$$= \frac{a\left(20a^2Ab-13Ab^3+5a^3B-27ab^2B\right)\cot^3(c+dx)}{15d}+\frac{a^2\left(5a\right.}{}$$

$$= -\frac{\left(a^4A-6a^2Ab^2+Ab^4-4a^3bB+4ab^3B\right)\cot^2(c+dx)}{2d}+\frac{a}{}$$

$$= -\frac{\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)\cot(c+dx)}{d}-\frac{\left(a^4\right.}{}$$

$$= -\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x-\frac{\left(4a^3Ab-4a\right.}{}$$

$$= -\left(4a^3Ab-4aAb^3+a^4B-6a^2b^2B+b^4B\right)x-\frac{\left(4a^3Ab-4a\right.}{}$$

Mathematica [C] time = 1.26809, size = 299, normalized size = 0.93

$$\frac{15a^2\left(a^2A-4abB-6Ab^2\right)\cot^4(c+dx)+20a\left(4a^2Ab+a^3B-6ab^2B-4Ab^3\right)\cot^3(c+dx)-30\left(-6a^2Ab^2+a^4A-4a^3\ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^7*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-60*(4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Cot[c + d*x] - 3
0*(a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Cot[c + d*x]^2 + 20
*a*(4*a^2*A*b - 4*A*b^3 + a^3*B - 6*a*b^2*B)*Cot[c + d*x]^3 + 15*a^2*(a^2*A
 - 6*A*b^2 - 4*a*b*B)*Cot[c + d*x]^4 - 12*a^3*(4*A*b + a*B)*Cot[c + d*x]^5
- 10*a^4*A*Cot[c + d*x]^6 + 30*(a + I*b)^4*(A + I*B)*Log[I - Tan[c + d*x]]
- 60*(a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*Log[Tan[c + d*x]
] + 30*(a - I*b)^4*(A - I*B)*Log[I + Tan[c + d*x]])/(60*d)
```

Maple [A] time = 0.106, size = 532, normalized size = 1.7

$$4\,Aab^3x+6\,Ba^2b^2x-4\,Axa^3b-\frac{Ab^4\left(\cot\left(dx+c\right)\right)^2}{2\,d}-\frac{B\cot\left(dx+c\right)b^4}{d}+4\,\frac{Aab^3c}{d}-\frac{Ab^4\ln\left(\sin\left(dx+c\right)\right)}{d}-\frac{4\,Aab^3\left(\mathrm{c}\ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^7*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] 4*A*a*b^3*x+6*B*a^2*b^2*x-4*A*x*a^3*b-1/2/d*A*b^4*cot(d*x+c)^2-1/d*B*cot(d*
x+c)*b^4+4/d*A*a*b^3*c-1/d*A*b^4*ln(sin(d*x+c))-4/3/d*A*a*b^3*cot(d*x+c)^3-
2/d*B*a*b^3*cot(d*x+c)^2-3/2/d*A*a^2*b^2*cot(d*x+c)^4+1/4/d*A*a^4*cot(d*x+c
)^4+1/3/d*B*a^4*cot(d*x+c)^3-B*a^4*x-B*b^4*x-a^4*A*ln(sin(d*x+c))/d-1/6/d*A
*a^4*cot(d*x+c)^6-1/2/d*A*a^4*cot(d*x+c)^2-1/d*B*cot(d*x+c)*a^4-1/d*B*a^4*c
+6/d*A*a^2*b^2*ln(sin(d*x+c))-4/d*A*cot(d*x+c)*a^3*b+4/d*B*a^3*b*ln(sin(d*x
+c))-1/d*B*b^4*c+6/d*B*a^2*b^2*c-4/d*A*a^3*b*c-2/d*B*a^2*b^2*cot(d*x+c)^3-4
/5/d*A*a^3*b*cot(d*x+c)^5-1/d*B*a^3*b*cot(d*x+c)^4+2/d*B*a^3*b*cot(d*x+c)^2
+4/d*A*cot(d*x+c)*a*b^3-4/d*B*a*b^3*ln(sin(d*x+c))+3/d*A*a^2*b^2*cot(d*x+c)
^2+6/d*B*cot(d*x+c)*a^2*b^2+4/3/d*A*a^3*b*cot(d*x+c)^3-1/5/d*B*a^4*cot(d*x+
c)^5
```

Maxima [A] time = 1.50254, size = 450, normalized size = 1.39

$$-\frac{60\left(Ba^4+4\,Aa^3b-6\,Ba^2b^2-4\,Aab^3+Bb^4\right)(dx+c)-30\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)\log\left(\tan\left(dx+c\right)^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^7*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/60*(60*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*(d*x + c) -
 30*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^
2 + 1) + 60*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(d
*x + c)) + (60*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*tan(d*
x + c)^5 + 10*A*a^4 + 30*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b
^4)*tan(d*x + c)^4 - 20*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3)*tan(d
*x + c)^3 - 15*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2)*tan(d*x + c)^2 + 12*(B*a^4
 + 4*A*a^3*b)*tan(d*x + c))/tan(d*x + c)^6)/d
```

Fricas [A] time = 1.80574, size = 813, normalized size = 2.52

$$-\frac{30\left(Aa^4-4\,Ba^3b-6\,Aa^2b^2+4\,Bab^3+Ab^4\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^6+5\left(11\,Aa^4-36\,Ba^3b-54\,Aa^2b^2+24\,Ba\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^7*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/60*(30*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(d*x
 + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^6 + 5*(11*A*a^4 - 36*B*a^3*b - 5
4*A*a^2*b^2 + 24*B*a*b^3 + 6*A*b^4 + 12*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^2 -
4*A*a*b^3 + B*b^4)*d*x)*tan(d*x + c)^6 + 60*(B*a^4 + 4*A*a^3*b - 6*B*a^2*b^
2 - 4*A*a*b^3 + B*b^4)*tan(d*x + c)^5 + 10*A*a^4 + 30*(A*a^4 - 4*B*a^3*b -
6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*tan(d*x + c)^4 - 20*(B*a^4 + 4*A*a^3*b - 6
*B*a^2*b^2 - 4*A*a*b^3)*tan(d*x + c)^3 - 15*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^
2)*tan(d*x + c)^2 + 12*(B*a^4 + 4*A*a^3*b)*tan(d*x + c))/(d*tan(d*x + c)^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**7*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 3.02937, size = 1273, normalized size = 3.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^7*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] -1/1920*(5*A*a^4*tan(1/2*d*x + 1/2*c)^6 - 12*B*a^4*tan(1/2*d*x + 1/2*c)^5 -
 48*A*a^3*b*tan(1/2*d*x + 1/2*c)^5 - 60*A*a^4*tan(1/2*d*x + 1/2*c)^4 + 120*
B*a^3*b*tan(1/2*d*x + 1/2*c)^4 + 180*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^4 + 140
*B*a^4*tan(1/2*d*x + 1/2*c)^3 + 560*A*a^3*b*tan(1/2*d*x + 1/2*c)^3 - 480*B*
a^2*b^2*tan(1/2*d*x + 1/2*c)^3 - 320*A*a*b^3*tan(1/2*d*x + 1/2*c)^3 + 435*A
*a^4*tan(1/2*d*x + 1/2*c)^2 - 1440*B*a^3*b*tan(1/2*d*x + 1/2*c)^2 - 2160*A*
a^2*b^2*tan(1/2*d*x + 1/2*c)^2 + 960*B*a*b^3*tan(1/2*d*x + 1/2*c)^2 + 240*A
*b^4*tan(1/2*d*x + 1/2*c)^2 - 1320*B*a^4*tan(1/2*d*x + 1/2*c) - 5280*A*a^3*
b*tan(1/2*d*x + 1/2*c) + 7200*B*a^2*b^2*tan(1/2*d*x + 1/2*c) + 4800*A*a*b^3
*tan(1/2*d*x + 1/2*c) - 960*B*b^4*tan(1/2*d*x + 1/2*c) + 1920*(B*a^4 + 4*A*
a^3*b - 6*B*a^2*b^2 - 4*A*a*b^3 + B*b^4)*(d*x + c) - 1920*(A*a^4 - 4*B*a^3*
b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(tan(1/2*d*x + 1/2*c)^2 + 1) + 1920
*(A*a^4 - 4*B*a^3*b - 6*A*a^2*b^2 + 4*B*a*b^3 + A*b^4)*log(abs(tan(1/2*d*x
+ 1/2*c))) - (4704*A*a^4*tan(1/2*d*x + 1/2*c)^6 - 18816*B*a^3*b*tan(1/2*d*x
 + 1/2*c)^6 - 28224*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^6 + 18816*B*a*b^3*tan(1/
2*d*x + 1/2*c)^6 + 4704*A*b^4*tan(1/2*d*x + 1/2*c)^6 - 1320*B*a^4*tan(1/2*d
*x + 1/2*c)^5 - 5280*A*a^3*b*tan(1/2*d*x + 1/2*c)^5 + 7200*B*a^2*b^2*tan(1/
2*d*x + 1/2*c)^5 + 4800*A*a*b^3*tan(1/2*d*x + 1/2*c)^5 - 960*B*b^4*tan(1/2*
d*x + 1/2*c)^5 - 435*A*a^4*tan(1/2*d*x + 1/2*c)^4 + 1440*B*a^3*b*tan(1/2*d*
x + 1/2*c)^4 + 2160*A*a^2*b^2*tan(1/2*d*x + 1/2*c)^4 - 960*B*a*b^3*tan(1/2*
d*x + 1/2*c)^4 - 240*A*b^4*tan(1/2*d*x + 1/2*c)^4 + 140*B*a^4*tan(1/2*d*x +
 1/2*c)^3 + 560*A*a^3*b*tan(1/2*d*x + 1/2*c)^3 - 480*B*a^2*b^2*tan(1/2*d*x
+ 1/2*c)^3 - 320*A*a*b^3*tan(1/2*d*x + 1/2*c)^3 + 60*A*a^4*tan(1/2*d*x + 1/
```

```
2*c)^2 - 120*B*a^3*b*tan(1/2*d*x + 1/2*c)^2 - 180*A*a^2*b^2*tan(1/2*d*x + 1
/2*c)^2 - 12*B*a^4*tan(1/2*d*x + 1/2*c) - 48*A*a^3*b*tan(1/2*d*x + 1/2*c) -
 5*A*a^4)/tan(1/2*d*x + 1/2*c)^6)/d
```

3.267 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=127

$$-\frac{a^3(Ab-aB)\log(a+b\tan(c+dx))}{b^3d\left(a^2+b^2\right)}+\frac{(aA+bB)\log(\cos(c+dx))}{d\left(a^2+b^2\right)}-\frac{x(Ab-aB)}{a^2+b^2}+\frac{(Ab-aB)\tan(c+dx)}{b^2d}+\frac{B\tan^2(c}{2bd}$$

```
[Out] -(((A*b - a*B)*x)/(a^2 + b^2)) + ((a*A + b*B)*Log[Cos[c + d*x]])/((a^2 + b^
2)*d) - (a^3*(A*b - a*B)*Log[a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)*d) + ((A
*b - a*B)*Tan[c + d*x])/(b^2*d) + (B*Tan[c + d*x]^2)/(2*b*d)
```

Rubi [A] time = 0.396986, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3607, 3647, 3626, 3617, 31, 3475}

$$-\frac{a^3(Ab-aB)\log(a+b\tan(c+dx))}{b^3d\left(a^2+b^2\right)}+\frac{(aA+bB)\log(\cos(c+dx))}{d\left(a^2+b^2\right)}-\frac{x(Ab-aB)}{a^2+b^2}+\frac{(Ab-aB)\tan(c+dx)}{b^2d}+\frac{B\tan^2(c}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(((A*b - a*B)*x)/(a^2 + b^2)) + ((a*A + b*B)*Log[Cos[c + d*x]])/((a^2 + b^
2)*d) - (a^3*(A*b - a*B)*Log[a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)*d) + ((A
*b - a*B)*Tan[c + d*x])/(b^2*d) + (B*Tan[c + d*x]^2)/(2*b*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}dx = \frac{B\tan^2(c+dx)}{2bd} + \frac{\int \frac{\tan(c+dx)\left(-2aB-2bB\tan(c+dx)+2(Ab-aB)\tan^2(c+dx)\right)}{a+b\tan(c+dx)}dx}{2b}$$

$$= \frac{(Ab-aB)\tan(c+dx)}{b^2d} + \frac{B\tan^2(c+dx)}{2bd} + \frac{\int \frac{-2a(Ab-aB)-2Ab^2\tan(c+dx)-2\left(aAb-a^2\right.}{a+b\tan(c+dx)}}{2b^2}$$

$$= -\frac{(Ab-aB)x}{a^2+b^2} + \frac{(Ab-aB)\tan(c+dx)}{b^2d} + \frac{B\tan^2(c+dx)}{2bd} - \frac{\left(a^3(Ab-aB)\right)\int}{b^2\left(a^2+\right.}$$

$$= -\frac{(Ab-aB)x}{a^2+b^2} + \frac{(aA+bB)\log(\cos(c+dx))}{(a^2+b^2)d} + \frac{(Ab-aB)\tan(c+dx)}{b^2d} + \frac{B\tan}{}$$

$$= -\frac{(Ab-aB)x}{a^2+b^2} + \frac{(aA+bB)\log(\cos(c+dx))}{(a^2+b^2)d} - \frac{a^3(Ab-aB)\log(a+b\tan(c+}{b^3(a^2+b^2)d}$$

Mathematica [C] time = 1.37736, size = 138, normalized size = 1.09

$$\frac{\frac{2a^3(aB-Ab)\log(a+b\tan(c+dx))}{b^2(a^2+b^2)} + \frac{2(Ab-aB)\tan(c+dx)}{b} - \frac{b(A+iB)\log(-\tan(c+dx)+i)}{a+ib} - \frac{b(A-iB)\log(\tan(c+dx)+i)}{a-ib} + B\tan^2(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (-((b*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b)) - (b*(A - I*B)*Log[I + Ta
n[c + d*x]])/(a - I*b) + (2*a^3*(-(A*b) + a*B)*Log[a + b*Tan[c + d*x]])/(b^
2*(a^2 + b^2)) + (2*(A*b - a*B)*Tan[c + d*x])/b + B*Tan[c + d*x]^2)/(2*b*d)
```

Maple [A] time = 0.033, size = 211, normalized size = 1.7

$$\frac{B(\tan(dx+c))^2}{2bd} + \frac{A\tan(dx+c)}{bd} - \frac{B\tan(dx+c)a}{b^2d} - \frac{\ln\left(1+(\tan(dx+c))^2\right)Aa}{2d(a^2+b^2)} - \frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d(a^2+b^2)} - \frac{Aa}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*B*tan(d*x+c)^2/b/d+1/d/b*A*tan(d*x+c)-a*B*tan(d*x+c)/b^2/d-1/2/d/(a^2+b
^2)*ln(1+tan(d*x+c)^2)*A*a-1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*B*b-1/d/(a^2+
b^2)*A*arctan(tan(d*x+c))*b+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*a-1/d/b^2*a^
3/(a^2+b^2)*ln(a+b*tan(d*x+c))*A+a^4*B*ln(a+b*tan(d*x+c))/b^3/(a^2+b^2)/d
```

Maxima [A] time = 1.51221, size = 176, normalized size = 1.39

$$\frac{\frac{2\,(Ba-Ab)(dx+c)}{a^2+b^2}+\frac{2\left(Ba^4-Aa^3b\right)\log(b\tan(dx+c)+a)}{a^2b^3+b^5}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{Bb\tan(dx+c)^2-2\,(Ba-Ab)\tan(dx+c)}{b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 2.03641, size = 412, normalized size = 3.24

$$\frac{2\left(Bab^3-Ab^4\right)dx+\left(Ba^2b^2+Bb^4\right)\tan\left(dx+c\right)^2+\left(Ba^4-Aa^3b\right)\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)-\left(Ba^4-Aa^3b-Aab^3\right.}{2\left(a^2b^3+b^5\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 48.5366, size = 1297, normalized size = 10.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x*(A + B*tan(c))*tan(c)**2, Eq(a, 0) & Eq(b, 0) & Eq(d, 0)),
 ((-A*log(tan(c + d*x)**2 + 1)/(2*d) + A*tan(c + d*x)**2/(2*d) + B*x + B*ta
n(c + d*x)**3/(3*d) - B*tan(c + d*x)/d)/a, Eq(b, 0)), (3*A*d*x*tan(c + d*x)
/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 3*I*A*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*d
) - I*A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*
d) - A*log(tan(c + d*x)**2 + 1)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 2*A*tan(c
 + d*x)**2/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 3*A/(-2*b*d*tan(c + d*x) + 2*I
*b*d) + 3*I*B*d*x*tan(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) + 3*B*d*x/(-
2*b*d*tan(c + d*x) + 2*I*b*d) + 2*B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(
-2*b*d*tan(c + d*x) + 2*I*b*d) - 2*I*B*log(tan(c + d*x)**2 + 1)/(-2*b*d*tan
(c + d*x) + 2*I*b*d) - B*tan(c + d*x)**3/(-2*b*d*tan(c + d*x) + 2*I*b*d) -
I*B*tan(c + d*x)**2/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 3*I*B/(-2*b*d*tan(c +
 d*x) + 2*I*b*d), Eq(a, -I*b)), (-3*A*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x)
+ 2*I*b*d) - 3*I*A*d*x/(2*b*d*tan(c + d*x) + 2*I*b*d) - I*A*log(tan(c + d*x
)**2 + 1)*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) + A*log(tan(c + d*x)*
*2 + 1)/(2*b*d*tan(c + d*x) + 2*I*b*d) + 2*A*tan(c + d*x)**2/(2*b*d*tan(c +
 d*x) + 2*I*b*d) + 3*A/(2*b*d*tan(c + d*x) + 2*I*b*d) + 3*I*B*d*x*tan(c + d
*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) - 3*B*d*x/(2*b*d*tan(c + d*x) + 2*I*b*d)
 - 2*B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d)
 - 2*I*B*log(tan(c + d*x)**2 + 1)/(2*b*d*tan(c + d*x) + 2*I*b*d) + B*tan(c
+ d*x)**3/(2*b*d*tan(c + d*x) + 2*I*b*d) - I*B*tan(c + d*x)**2/(2*b*d*tan(c
 + d*x) + 2*I*b*d) - 3*I*B/(2*b*d*tan(c + d*x) + 2*I*b*d), Eq(a, I*b)), (x*
(A + B*tan(c))*tan(c)**3/(a + b*tan(c)), Eq(d, 0)), (-2*A*a**3*b*log(a/b +
tan(c + d*x))/(2*a**2*b**3*d + 2*b**5*d) + 2*A*a**2*b**2*tan(c + d*x)/(2*a*
*2*b**3*d + 2*b**5*d) - A*a*b**3*log(tan(c + d*x)**2 + 1)/(2*a**2*b**3*d +
2*b**5*d) - 2*A*b**4*d*x/(2*a**2*b**3*d + 2*b**5*d) + 2*A*b**4*tan(c + d*x)
/(2*a**2*b**3*d + 2*b**5*d) + 2*B*a**4*log(a/b + tan(c + d*x))/(2*a**2*b**3
*d + 2*b**5*d) - 2*B*a**3*b*tan(c + d*x)/(2*a**2*b**3*d + 2*b**5*d) + B*a**
2*b**2*tan(c + d*x)**2/(2*a**2*b**3*d + 2*b**5*d) + 2*B*a*b**3*d*x/(2*a**2*
b**3*d + 2*b**5*d) - 2*B*a*b**3*tan(c + d*x)/(2*a**2*b**3*d + 2*b**5*d) - B
*b**4*log(tan(c + d*x)**2 + 1)/(2*a**2*b**3*d + 2*b**5*d) + B*b**4*tan(c +
d*x)**2/(2*a**2*b**3*d + 2*b**5*d), True))
```

Giac [A] time = 1.76828, size = 182, normalized size = 1.43

$$\frac{\frac{2\,(Ba-Ab)(dx+c)}{a^2+b^2}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Ba^4-Aa^3b\right)\log(|b\tan(dx+c)+a|)}{a^2b^3+b^5}+\frac{Bb\tan(dx+c)^2-2\,Ba\tan(dx+c)+2\,Ab\tan(dx+c)}{b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(B*a - A*b)*(d*x + c)/(a^2 + b^2) - (A*a + B*b)*log(tan(d*x + c)^2 +
 1)/(a^2 + b^2) + 2*(B*a^4 - A*a^3*b)*log(abs(b*tan(d*x + c) + a))/(a^2*b^3
 + b^5) + (B*b*tan(d*x + c)^2 - 2*B*a*tan(d*x + c) + 2*A*b*tan(d*x + c))/b^
2)/d
```

3.268 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=101

$$\frac{a^2(Ab-aB)\log(a+b\tan(c+dx))}{b^2d\left(a^2+b^2\right)}-\frac{(Ab-aB)\log(\cos(c+dx))}{d\left(a^2+b^2\right)}-\frac{x(aA+bB)}{a^2+b^2}+\frac{B\tan(c+dx)}{bd}$$

```
[Out] -(((a*A + b*B)*x)/(a^2 + b^2)) - ((A*b - a*B)*Log[Cos[c + d*x]])/((a^2 + b^
2)*d) + (a^2*(A*b - a*B)*Log[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)*d) + (B*
Tan[c + d*x])/(b*d)
```

Rubi [A] time = 0.197371, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3606, 3626, 3617, 31, 3475}

$$\frac{a^2(Ab-aB)\log(a+b\tan(c+dx))}{b^2d\left(a^2+b^2\right)}-\frac{(Ab-aB)\log(\cos(c+dx))}{d\left(a^2+b^2\right)}-\frac{x(aA+bB)}{a^2+b^2}+\frac{B\tan(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(((a*A + b*B)*x)/(a^2 + b^2)) - ((A*b - a*B)*Log[Cos[c + d*x]])/((a^2 + b^
2)*d) + (a^2*(A*b - a*B)*Log[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)*d) + (B*
Tan[c + d*x])/(b*d)
```

Rule 3606

```
Int[(((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (
f_.)*(x_)]))/((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(b^
2*B*Tan[e + f*x])/(d*f), x] + Dist[1/d, Int[(a^2*A*d - b^2*B*c + (2*a*A*b +
 B*(a^2 - b^2))*d*Tan[e + f*x] + (A*b^2*d - b*B*(b*c - 2*a*d))*Tan[e + f*x]
^2)/(c + d*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && N
eQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
```

```
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \frac{B\tan(c+dx)}{bd} + \frac{\int \frac{-aB-bB\tan(c+dx)+(Ab-aB)\tan^2(c+dx)}{a+b\tan(c+dx)}\,dx}{b}$$

$$= -\frac{(aA+bB)x}{a^2+b^2} + \frac{B\tan(c+dx)}{bd} + \frac{(Ab-aB)\int\tan(c+dx)\,dx}{a^2+b^2} + \frac{\left(a^2(Ab-aB)\right)}{b\left(a^2\right.}$$

$$= -\frac{(aA+bB)x}{a^2+b^2} - \frac{(Ab-aB)\log(\cos(c+dx))}{\left(a^2+b^2\right)d} + \frac{B\tan(c+dx)}{bd} + \frac{\left(a^2(Ab-aB)\right)\mathrm{S}}{}$$

$$= -\frac{(aA+bB)x}{a^2+b^2} - \frac{(Ab-aB)\log(\cos(c+dx))}{\left(a^2+b^2\right)d} + \frac{a^2(Ab-aB)\log(a+b\tan(c+d}{b^2\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.555355, size = 118, normalized size = 1.17

$$\frac{\frac{2a^2(Ab-aB)\log(a+b\tan(c+dx))}{b^2\left(a^2+b^2\right)} + \frac{i(A+iB)\log(-\tan(c+dx)+i)}{a+ib} - \frac{(B+iA)\log(\tan(c+dx)+i)}{a-ib} + \frac{2B\tan(c+dx)}{b}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((I*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b) - ((I*A + B)*Log[I + Tan[c +
 d*x]])/(a - I*b) + (2*a^2*(A*b - a*B)*Log[a + b*Tan[c + d*x]])/(b^2*(a^2 +
 b^2)) + (2*B*Tan[c + d*x])/b)/(2*d)
```

Maple [A] time = 0.035, size = 179, normalized size = 1.8

$$\frac{B\tan(dx+c)}{bd}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab}{2d\left(a^2+b^2\right)}-\frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)}-\frac{A\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)}-\frac{B\arctan(\tan}{d\left(a^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] B*tan(d*x+c)/b/d+1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*b-1/2/d/(a^2+b^2)*ln(
1+tan(d*x+c)^2)*a*B-1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*a-1/d/(a^2+b^2)*B*ar
ctan(tan(d*x+c))*b+1/d/b*a^2/(a^2+b^2)*ln(a+b*tan(d*x+c))*A-a^3*B*ln(a+b*ta
n(d*x+c))/b^2/(a^2+b^2)/d
```

Maxima [A] time = 1.49143, size = 147, normalized size = 1.46

$$-\frac{\frac{2(Aa+Bb)(dx+c)}{a^2+b^2}+\frac{2\left(Ba^3-Aa^2b\right)\log(b\tan(dx+c)+a)}{a^2b^2+b^4}+\frac{(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2B\tan(dx+c)}{b}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 1.97233, size = 333, normalized size = 3.3

$$-\frac{2\left(Aab^2+Bb^3\right)dx+\left(Ba^3-Aa^2b\right)\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)-\left(Ba^3-Aa^2b+Bab^2-Ab^3\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right)-2}{2\left(a^2b^2+b^4\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 8.95012, size = 1015, normalized size = 10.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x*(A + B*tan(c))*tan(c), Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), (-
I*A*d*x*tan(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - A*d*x/(-2*b*d*tan(c
+ d*x) + 2*I*b*d) - A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(-2*b*d*tan(c +
 d*x) + 2*I*b*d) + I*A*log(tan(c + d*x)**2 + 1)/(-2*b*d*tan(c + d*x) + 2*I*
b*d) + I*A/(-2*b*d*tan(c + d*x) + 2*I*b*d) + 3*B*d*x*tan(c + d*x)/(-2*b*d*t
an(c + d*x) + 2*I*b*d) - 3*I*B*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*d) - I*B*lo
g(tan(c + d*x)**2 + 1)*tan(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - B*log
(tan(c + d*x)**2 + 1)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 2*B*tan(c + d*x)**2
/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 3*B/(-2*b*d*tan(c + d*x) + 2*I*b*d), Eq(
a, -I*b)), (-I*A*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) + A*d*x/(2
*b*d*tan(c + d*x) + 2*I*b*d) + A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*b
*d*tan(c + d*x) + 2*I*b*d) + I*A*log(tan(c + d*x)**2 + 1)/(2*b*d*tan(c + d*
x) + 2*I*b*d) + I*A/(2*b*d*tan(c + d*x) + 2*I*b*d) - 3*B*d*x*tan(c + d*x)/(
2*b*d*tan(c + d*x) + 2*I*b*d) - 3*I*B*d*x/(2*b*d*tan(c + d*x) + 2*I*b*d) -
I*B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) +
B*log(tan(c + d*x)**2 + 1)/(2*b*d*tan(c + d*x) + 2*I*b*d) + 2*B*tan(c + d*x
)**2/(2*b*d*tan(c + d*x) + 2*I*b*d) + 3*B/(2*b*d*tan(c + d*x) + 2*I*b*d), E
```

```
q(a, I*b)), ((-A*x + A*tan(c + d*x)/d - B*log(tan(c + d*x)**2 + 1)/(2*d) +
B*tan(c + d*x)**2/(2*d))/a, Eq(b, 0)), (x*(A + B*tan(c))*tan(c)**2/(a + b*t
an(c)), Eq(d, 0)), (2*A*a**2*b*log(a/b + tan(c + d*x))/(2*a**2*b**2*d + 2*b
**4*d) - 2*A*a*b**2*d*x/(2*a**2*b**2*d + 2*b**4*d) + A*b**3*log(tan(c + d*x
)**2 + 1)/(2*a**2*b**2*d + 2*b**4*d) - 2*B*a**3*log(a/b + tan(c + d*x))/(2*
a**2*b**2*d + 2*b**4*d) + 2*B*a**2*b*tan(c + d*x)/(2*a**2*b**2*d + 2*b**4*d
) - B*a*b**2*log(tan(c + d*x)**2 + 1)/(2*a**2*b**2*d + 2*b**4*d) - 2*B*b**3
*d*x/(2*a**2*b**2*d + 2*b**4*d) + 2*B*b**3*tan(c + d*x)/(2*a**2*b**2*d + 2*
b**4*d), True))
```

Giac [A] time = 1.44274, size = 149, normalized size = 1.48

$$-\frac{\frac{2\,(Aa+Bb)(dx+c)}{a^2+b^2}+\frac{(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Ba^3-Aa^2b\right)\log(|b\tan(dx+c)+a|)}{a^2b^2+b^4}-\frac{2\,B\tan(dx+c)}{b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(A*a + B*b)*(d*x + c)/(a^2 + b^2) + (B*a - A*b)*log(tan(d*x + c)^2
+ 1)/(a^2 + b^2) + 2*(B*a^3 - A*a^2*b)*log(abs(b*tan(d*x + c) + a))/(a^2*b^
2 + b^4) - 2*B*tan(d*x + c)/b)/d
```

3.269 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=80

$$-\frac{a(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{bd\left(a^2+b^2\right)}+\frac{x(Ab-aB)}{a^2+b^2}-\frac{B\log(\cos(c+dx))}{bd}$$

```
[Out] ((A*b - a*B)*x)/(a^2 + b^2) - (B*Log[Cos[c + d*x]])/(b*d) - (a*(A*b - a*B)*
Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(b*(a^2 + b^2)*d)
```

Rubi [A] time = 0.126949, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {3589, 3475, 12, 3531, 3530}

$$-\frac{a(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{bd\left(a^2+b^2\right)}+\frac{x(Ab-aB)}{a^2+b^2}-\frac{B\log(\cos(c+dx))}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((A*b - a*B)*x)/(a^2 + b^2) - (B*Log[Cos[c + d*x]])/(b*d) - (a*(A*b - a*B)*
Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(b*(a^2 + b^2)*d)
```

Rule 3589

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)]))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[(B*d)
/b, Int[Tan[e + f*x], x], x] + Dist[1/b, Int[Simp[A*b*c + (A*b*d + B*(b*c -
 a*d))*Tan[e + f*x], x]/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d,
e, f, A, B}, x] && NeQ[b*c - a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 12

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

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx &= \frac{\int \frac{(Ab-aB)\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{b}+\frac{B\int \tan(c+dx)\,dx}{b}\\
&= -\frac{B\log(\cos(c+dx))}{bd}+\frac{(Ab-aB)\int \frac{\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{b}\\
&= \frac{(Ab-aB)x}{a^2+b^2}-\frac{B\log(\cos(c+dx))}{bd}-\frac{(a(Ab-aB))\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{b\left(a^2+b^2\right)}\\
&= \frac{(Ab-aB)x}{a^2+b^2}-\frac{B\log(\cos(c+dx))}{bd}-\frac{a(Ab-aB)\log(a\cos(c+dx)+b\sin(c+a}{b\left(a^2+b^2\right)d}
\end{aligned}$$

Mathematica [C] time = 0.155029, size = 98, normalized size = 1.22

$$\frac{b(a-ib)(A+iB)\log(-\tan(c+dx)+i)+b(a+ib)(A-iB)\log(\tan(c+dx)+i)+2a(aB-Ab)\log(a+b\tan(c+dx))}{2bd\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((a - I*b)*b*(A + I*B)*Log[I - Tan[c + d*x]] + (a + I*b)*b*(A - I*B)*Log[I
+ Tan[c + d*x]] + 2*a*(-(A*b) + a*B)*Log[a + b*Tan[c + d*x]])/(2*b*(a^2 + b
^2)*d)
```

Maple [A] time = 0.032, size = 159, normalized size = 2.

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Aa}{2d\left(a^2+b^2\right)}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d\left(a^2+b^2\right)}+\frac{A\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)}-\frac{B\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)}-\frac{a\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*a+1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*B
*b+1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*b-1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*
a-1/d*a/(a^2+b^2)*ln(a+b*tan(d*x+c))*A+1/d*a^2/(a^2+b^2)/b*ln(a+b*tan(d*x+c
))*B
```

Maxima [A] time = 1.52825, size = 127, normalized size = 1.59

$$-\frac{\frac{2(Ba-Ab)(dx+c)}{a^2+b^2}-\frac{2\left(Ba^2-Aab\right)\log(b\tan(dx+c)+a)}{a^2b+b^3}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 1.86233, size = 251, normalized size = 3.14

$$-\frac{2\left(Bab-Ab^2\right)dx-\left(Ba^2-Aab\right)\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)+\left(Ba^2+Bb^2\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\left(a^2b+b^3\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 4.40048, size = 700, normalized size = 8.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x*(A + B*tan(c)), Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), ((A*log(t
an(c + d*x)**2 + 1)/(2*d) - B*x + B*tan(c + d*x)/d)/a, Eq(b, 0)), (-A*d*x*t
an(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) + I*A*d*x/(-2*b*d*tan(c + d*x)
+ 2*I*b*d) + A/(-2*b*d*tan(c + d*x) + 2*I*b*d) - I*B*d*x*tan(c + d*x)/(-2*b
*d*tan(c + d*x) + 2*I*b*d) - B*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*d) - B*log(
tan(c + d*x)**2 + 1)*tan(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) + I*B*log
(tan(c + d*x)**2 + 1)/(-2*b*d*tan(c + d*x) + 2*I*b*d) + I*B/(-2*b*d*tan(c +
 d*x) + 2*I*b*d), Eq(a, -I*b)), (A*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2
*I*b*d) + I*A*d*x/(2*b*d*tan(c + d*x) + 2*I*b*d) - A/(2*b*d*tan(c + d*x) +
2*I*b*d) - I*B*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) + B*d*x/(2*b
*d*tan(c + d*x) + 2*I*b*d) + B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*b*d
*tan(c + d*x) + 2*I*b*d) + I*B*log(tan(c + d*x)**2 + 1)/(2*b*d*tan(c + d*x)
 + 2*I*b*d) + I*B/(2*b*d*tan(c + d*x) + 2*I*b*d), Eq(a, I*b)), (x*(A + B*ta
n(c))*tan(c)/(a + b*tan(c)), Eq(d, 0)), (-2*A*a*b*log(a/b + tan(c + d*x))/(
2*a**2*b*d + 2*b**3*d) + A*a*b*log(tan(c + d*x)**2 + 1)/(2*a**2*b*d + 2*b**
3*d) + 2*A*b**2*d*x/(2*a**2*b*d + 2*b**3*d) + 2*B*a**2*log(a/b + tan(c + d*
x))/(2*a**2*b*d + 2*b**3*d) - 2*B*a*b*d*x/(2*a**2*b*d + 2*b**3*d) + B*b**2*
log(tan(c + d*x)**2 + 1)/(2*a**2*b*d + 2*b**3*d), True))
```

Giac [A] time = 1.21786, size = 128, normalized size = 1.6

$$-\frac{\frac{2\,(Ba-Ab)(dx+c)}{a^2+b^2}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2\left(Ba^2-Aab\right)\log(|b\tan(dx+c)+a|)}{a^2b+b^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(B*a - A*b)*(d*x + c)/(a^2 + b^2) - (A*a + B*b)*log(tan(d*x + c)^2
+ 1)/(a^2 + b^2) - 2*(B*a^2 - A*a*b)*log(abs(b*tan(d*x + c) + a))/(a^2*b +
b^3))/d
```

3.270 $\int \frac{A+B\tan(c+dx)}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=58

$$\frac{(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}+\frac{x(aA+bB)}{a^2+b^2}$$

```
[Out] ((a*A + b*B)*x)/(a^2 + b^2) + ((A*b - a*B)*Log[a*Cos[c + d*x] + b*Sin[c + d
*x]])/((a^2 + b^2)*d)
```

Rubi [A] time = 0.0678102, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {3531, 3530}

$$\frac{(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}+\frac{x(aA+bB)}{a^2+b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((a*A + b*B)*x)/(a^2 + b^2) + ((A*b - a*B)*Log[a*Cos[c + d*x] + b*Sin[c + d
*x]])/((a^2 + b^2)*d)
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{a+b\tan(c+dx)}\,dx = \frac{(aA+bB)x}{a^2+b^2} + \frac{(Ab-aB)\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2+b^2}$$
$$= \frac{(aA+bB)x}{a^2+b^2} + \frac{(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{(a^2+b^2)\,d}$$

Mathematica [A] time = 0.103249, size = 66, normalized size = 1.14

$$\frac{2(aA+bB)\tan^{-1}(\tan(c+dx)) - (Ab-aB)\left(\log\left(\sec^2(c+dx)\right) - 2\log(a+b\tan(c+dx))\right)}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x]),x]
```

```
[Out] (2*(a*A + b*B)*ArcTan[Tan[c + d*x]] - (A*b - a*B)*(Log[Sec[c + d*x]^2] - 2*
Log[a + b*Tan[c + d*x]]))/(2*(a^2 + b^2)*d)
```

Maple [B] time = 0.031, size = 153, normalized size = 2.6

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab}{2\,d\left(a^2+b^2\right)} + \frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2\,d\left(a^2+b^2\right)} + \frac{A\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)} + \frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)} + \frac{\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*b+1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*
a*B+1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*a+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))
*b+1/d/(a^2+b^2)*ln(a+b*tan(d*x+c))*A*b-1/d/(a^2+b^2)*ln(a+b*tan(d*x+c))*a*
B
```

Maxima [A] time = 1.48983, size = 119, normalized size = 2.05

$$\frac{\frac{2\,(Aa+Bb)(dx+c)}{a^2+b^2} - \frac{2\,(Ba-Ab)\log(b\tan(dx+c)+a)}{a^2+b^2} + \frac{(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(A*a + B*b)*(d*x + c)/(a^2 + b^2) - 2*(B*a - A*b)*log(b*tan(d*x + c)
 + a)/(a^2 + b^2) + (B*a - A*b)*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

Fricas [A] time = 1.64692, size = 174, normalized size = 3.

$$\frac{2\,(Aa+Bb)dx-(Ba-Ab)\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)}{2\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(A*a + B*b)*d*x - (B*a - A*b)*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*
x + c) + a^2)/(tan(d*x + c)^2 + 1)))/((a^2 + b^2)*d)
```

Sympy [A] time = 2.56906, size = 524, normalized size = 9.03

$$\begin{cases} \frac{\tilde{\infty}x(A+B\tan(c))}{\tan(c)} \\ \frac{Ax+\frac{B\log\left(\tan^2(c+dx)+1\right)}{2d}}{a} \\ -\frac{iAdx\tan(c+dx)}{-2bd\tan(c+dx)+2ibd}-\frac{Adx}{-2bd\tan(c+dx)+2ibd}-\frac{iA}{-2bd\tan(c+dx)+2ibd}-\frac{Bdx\tan(c+dx)}{-2bd\tan(c+dx)+2ibd}+\frac{iBdx}{-2bd\tan(c+dx)+2ibd}+\frac{B}{-2bd\tan(c+dx)+2ibd} \\ -\frac{iAdx\tan(c+dx)}{2bd\tan(c+dx)+2ibd}+\frac{Adx}{2bd\tan(c+dx)+2ibd}-\frac{iA}{2bd\tan(c+dx)+2ibd}+\frac{Bdx\tan(c+dx)}{2bd\tan(c+dx)+2ibd}+\frac{iBdx}{2bd\tan(c+dx)+2ibd}-\frac{B}{2bd\tan(c+dx)+2ibd} \\ \frac{x(A+B\tan(c))}{a+b\tan(c)} \\ \frac{2Aadx}{2a^2d+2b^2d}+\frac{2Ab\log\left(\frac{a}{b}+\tan(c+dx)\right)}{2a^2d+2b^2d}-\frac{Ab\log\left(\tan^2(c+dx)+1\right)}{2a^2d+2b^2d}-\frac{2Ba\log\left(\frac{a}{b}+\tan(c+dx)\right)}{2a^2d+2b^2d}+\frac{Ba\log\left(\tan^2(c+dx)+1\right)}{2a^2d+2b^2d}+\frac{2Bbdx}{2a^2d+2b^2d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x*(A + B*tan(c))/tan(c), Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), ((
A*x + B*log(tan(c + d*x)**2 + 1)/(2*d))/a, Eq(b, 0)), (-I*A*d*x*tan(c + d*x
)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - A*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*d) -
```

```
I*A/(-2*b*d*tan(c + d*x) + 2*I*b*d) - B*d*x*tan(c + d*x)/(-2*b*d*tan(c + d
*x) + 2*I*b*d) + I*B*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*d) + B/(-2*b*d*tan(c
+ d*x) + 2*I*b*d), Eq(a, -I*b)), (-I*A*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x)
 + 2*I*b*d) + A*d*x/(2*b*d*tan(c + d*x) + 2*I*b*d) - I*A/(2*b*d*tan(c + d*x
) + 2*I*b*d) + B*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) + I*B*d*x/
(2*b*d*tan(c + d*x) + 2*I*b*d) - B/(2*b*d*tan(c + d*x) + 2*I*b*d), Eq(a, I*
b)), (x*(A + B*tan(c))/(a + b*tan(c)), Eq(d, 0)), (2*A*a*d*x/(2*a**2*d + 2*
b**2*d) + 2*A*b*log(a/b + tan(c + d*x))/(2*a**2*d + 2*b**2*d) - A*b*log(tan
(c + d*x)**2 + 1)/(2*a**2*d + 2*b**2*d) - 2*B*a*log(a/b + tan(c + d*x))/(2*
a**2*d + 2*b**2*d) + B*a*log(tan(c + d*x)**2 + 1)/(2*a**2*d + 2*b**2*d) + 2
*B*b*d*x/(2*a**2*d + 2*b**2*d), True))
```

Giac [A] time = 1.22887, size = 127, normalized size = 2.19

$$\frac{\frac{2\,(Aa+Bb)(dx+c)}{a^2+b^2}+\frac{(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2\left(Bab-Ab^2\right)\log(|b\tan(dx+c)+a|)}{a^2b+b^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(A*a + B*b)*(d*x + c)/(a^2 + b^2) + (B*a - A*b)*log(tan(d*x + c)^2 +
 1)/(a^2 + b^2) - 2*(B*a*b - A*b^2)*log(abs(b*tan(d*x + c) + a))/(a^2*b + b
^3))/d
```

3.271 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=80

$$-\frac{b(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{ad\left(a^2+b^2\right)}-\frac{x(Ab-aB)}{a^2+b^2}+\frac{A\log(\sin(c+dx))}{ad}$$

```
[Out] -(((A*b - a*B)*x)/(a^2 + b^2)) + (A*Log[Sin[c + d*x]])/(a*d) - (b*(A*b - a*
B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a*(a^2 + b^2)*d)
```

Rubi [A] time = 0.108994, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {3611, 3530, 3475}

$$-\frac{b(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{ad\left(a^2+b^2\right)}-\frac{x(Ab-aB)}{a^2+b^2}+\frac{A\log(\sin(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(((A*b - a*B)*x)/(a^2 + b^2)) + (A*Log[Sin[c + d*x]])/(a*d) - (b*(A*b - a*
B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a*(a^2 + b^2)*d)
```

Rule 3611

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*tan[(e_.) + (f_.
)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])), x_Symbol] :> Simp[((B*(b
*c + a*d) + A*(a*c - b*d))*x)/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(b*(A*b
 - a*B))/((b*c - a*d)*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e +
 f*x]), x], x] + Dist[(d*(B*c - A*d))/((b*c - a*d)*(c^2 + d^2)), Int[(d - c
*Tan[e + f*x])/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A,
 B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = -\frac{(Ab-aB)x}{a^2+b^2}+\frac{A\int \cot(c+dx)\,dx}{a}-\frac{(b(Ab-aB))\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a\left(a^2+b^2\right)}$$
$$= -\frac{(Ab-aB)x}{a^2+b^2}+\frac{A\log(\sin(c+dx))}{ad}-\frac{b(Ab-aB)\log(a\cos(c+dx)+b\sin(c+d}{a\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.334887, size = 113, normalized size = 1.41

$$-\frac{\frac{2b(Ab-aB)\log(a+b\tan(c+dx))}{a\left(a^2+b^2\right)}+\frac{(A+iB)\log(-\tan(c+dx)+i)}{a+ib}+\frac{(A-iB)\log(\tan(c+dx)+i)}{a-ib}-\frac{2A\log(\tan(c+dx))}{a}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -((((A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b) - (2*A*Log[Tan[c + d*x]])/a +
 ((A - I*B)*Log[I + Tan[c + d*x]])/(a - I*b) + (2*b*(A*b - a*B)*Log[a + b*T
an[c + d*x]])/(a*(a^2 + b^2)))/(2*d)
```

Maple [B] time = 0.1, size = 174, normalized size = 2.2

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)Aa}{2d\left(a^2+b^2\right)}-\frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d\left(a^2+b^2\right)}-\frac{A\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)}+\frac{B\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)}+\frac{A\,l}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*a-1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*
B*b-1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*b+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))
*a+1/a/d*A*ln(tan(d*x+c))-1/d*b^2/a/(a^2+b^2)*ln(a+b*tan(d*x+c))*A+1/d*b/(a
```

```
^2+b^2)*ln(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.4947, size = 144, normalized size = 1.8

$$\frac{\frac{2\,(Ba-Ab)(dx+c)}{a^2+b^2}+\frac{2\left(Bab-Ab^2\right)\log(b\tan(dx+c)+a)}{a^3+ab^2}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\,A\log(\tan(dx+c))}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxima
")
```

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

Fricas [A] time = 1.82097, size = 267, normalized size = 3.34

$$\frac{2\left(Ba^2-Aab\right)dx+\left(Aa^2+Ab^2\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)+\left(Bab-Ab^2\right)\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)}{2\left(a^3+ab^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fricas
")
```

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

Sympy [A] time = 21.1286, size = 952, normalized size = 11.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x*(A + B*tan(c))*cot(c)/tan(c), Eq(a, 0) & Eq(b, 0) & Eq(d,
0)), ((-A*log(tan(c + d*x)**2 + 1)/(2*d) + A*log(tan(c + d*x))/d + B*x)/a,
Eq(b, 0)), ((-A*x - A/(d*tan(c + d*x)) - B*log(tan(c + d*x)**2 + 1)/(2*d) +
 B*log(tan(c + d*x))/d)/b, Eq(a, 0)), (-A*d*x*tan(c + d*x)/(-2*b*d*tan(c +
d*x) + 2*I*b*d) + I*A*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*d) + I*A*log(tan(c +
 d*x)**2 + 1)*tan(c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) + A*log(tan(c +
d*x)**2 + 1)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 2*I*A*log(tan(c + d*x))*tan(
c + d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - 2*A*log(tan(c + d*x))/(-2*b*d*ta
n(c + d*x) + 2*I*b*d) - A/(-2*b*d*tan(c + d*x) + 2*I*b*d) - I*B*d*x*tan(c +
 d*x)/(-2*b*d*tan(c + d*x) + 2*I*b*d) - B*d*x/(-2*b*d*tan(c + d*x) + 2*I*b*
d) - I*B/(-2*b*d*tan(c + d*x) + 2*I*b*d), Eq(a, -I*b)), (A*d*x*tan(c + d*x)
/(2*b*d*tan(c + d*x) + 2*I*b*d) + I*A*d*x/(2*b*d*tan(c + d*x) + 2*I*b*d) +
I*A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) -
A*log(tan(c + d*x)**2 + 1)/(2*b*d*tan(c + d*x) + 2*I*b*d) - 2*I*A*log(tan(c
 + d*x))*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) + 2*A*log(tan(c + d*x)
)/(2*b*d*tan(c + d*x) + 2*I*b*d) + A/(2*b*d*tan(c + d*x) + 2*I*b*d) - I*B*d
*x*tan(c + d*x)/(2*b*d*tan(c + d*x) + 2*I*b*d) + B*d*x/(2*b*d*tan(c + d*x)
+ 2*I*b*d) - I*B/(2*b*d*tan(c + d*x) + 2*I*b*d), Eq(a, I*b)), (x*(A + B*tan
(c))*cot(c)/(a + b*tan(c)), Eq(d, 0)), (-A*a**2*log(tan(c + d*x)**2 + 1)/(2
*a**3*d + 2*a*b**2*d) + 2*A*a**2*log(tan(c + d*x))/(2*a**3*d + 2*a*b**2*d)
- 2*A*a*b*d*x/(2*a**3*d + 2*a*b**2*d) - 2*A*b**2*log(a/b + tan(c + d*x))/(2
*a**3*d + 2*a*b**2*d) + 2*A*b**2*log(tan(c + d*x))/(2*a**3*d + 2*a*b**2*d)
+ 2*B*a**2*d*x/(2*a**3*d + 2*a*b**2*d) + 2*B*a*b*log(a/b + tan(c + d*x))/(2
*a**3*d + 2*a*b**2*d) - B*a*b*log(tan(c + d*x)**2 + 1)/(2*a**3*d + 2*a*b**2
*d), True))
```

Giac [A] time = 1.29314, size = 153, normalized size = 1.91

$$\frac{\frac{2\,(Ba-Ab)(dx+c)}{a^2+b^2}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Bab^2-Ab^3\right)\log(|b\tan(dx+c)+a|)}{a^3b+ab^3}+\frac{2\,A\log(|\tan(dx+c)|)}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*(B*a - A*b)*(d*x + c)/(a^2 + b^2) - (A*a + B*b)*log(tan(d*x + c)^2 +
 1)/(a^2 + b^2) + 2*(B*a*b^2 - A*b^3)*log(abs(b*tan(d*x + c) + a))/(a^3*b +
 a*b^3) + 2*A*log(abs(tan(d*x + c)))/a)/d
```

3.272 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=103

$$\frac{b^2(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{a^2d\left(a^2+b^2\right)}-\frac{x(aA+bB)}{a^2+b^2}-\frac{(Ab-aB)\log(\sin(c+dx))}{a^2d}-\frac{A\cot(c+dx)}{ad}$$

```
[Out] -(((a*A + b*B)*x)/(a^2 + b^2)) - (A*Cot[c + d*x])/(a*d) - ((A*b - a*B)*Log[
Sin[c + d*x]])/(a^2*d) + (b^2*(A*b - a*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*
x]])/(a^2*(a^2 + b^2)*d)
```

Rubi [A] time = 0.251384, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {3609, 3651, 3530, 3475}

$$\frac{b^2(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{a^2d\left(a^2+b^2\right)}-\frac{x(aA+bB)}{a^2+b^2}-\frac{(Ab-aB)\log(\sin(c+dx))}{a^2d}-\frac{A\cot(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(((a*A + b*B)*x)/(a^2 + b^2)) - (A*Cot[c + d*x])/(a*d) - ((A*b - a*B)*Log[
Sin[c + d*x]])/(a^2*d) + (b^2*(A*b - a*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*
x]])/(a^2*(a^2 + b^2)*d)
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = -\frac{A\cot(c+dx)}{ad} - \frac{\int \frac{\cot(c+dx)\left(Ab-aB+aA\tan(c+dx)+Ab\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{a}$$

$$= -\frac{(aA+bB)x}{a^2+b^2} - \frac{A\cot(c+dx)}{ad} - \frac{(Ab-aB)\int\cot(c+dx)\,dx}{a^2} + \frac{\left(b^2(Ab-aB)\right)\int}{a^2\left(a^2\right.}$$

$$= -\frac{(aA+bB)x}{a^2+b^2} - \frac{A\cot(c+dx)}{ad} - \frac{(Ab-aB)\log(\sin(c+dx))}{a^2d} + \frac{b^2(Ab-aB)\log}{}$$

Mathematica [C] time = 0.830609, size = 138, normalized size = 1.34

$$\frac{\frac{2b^2(Ab-aB)\log(a+b\tan(c+dx))}{a^2\left(a^2+b^2\right)} + \frac{2(aB-Ab)\log(\tan(c+dx))}{a^2} + \frac{i(A+iB)\log(-\tan(c+dx)+i)}{a+ib} - \frac{(B+iA)\log(\tan(c+dx)+i)}{a-ib} - \frac{2A\cot(c+dx)}{a}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((-2*A*Cot[c + d*x])/a + (I*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b) + (2
*(-(A*b) + a*B)*Log[Tan[c + d*x]])/a^2 - ((I*A + B)*Log[I + Tan[c + d*x]])/
(a - I*b) + (2*b^2*(A*b - a*B)*Log[a + b*Tan[c + d*x]])/(a^2*(a^2 + b^2)))/
(2*d)
```

Maple [B] time = 0.1, size = 214, normalized size = 2.1

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab}{2d\left(a^2+b^2\right)}-\frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)}-\frac{A\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)}-\frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)}-\frac{}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*b-1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*a
*B-1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*a-1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*
b-1/d/a*A/tan(d*x+c)-1/d/a^2*ln(tan(d*x+c))*A*b+1/d/a*B*ln(tan(d*x+c))+1/d*
b^3/a^2/(a^2+b^2)*ln(a+b*tan(d*x+c))*A-1/d*b^2/a/(a^2+b^2)*ln(a+b*tan(d*x+c
))*B
```

Maxima [A] time = 1.48319, size = 177, normalized size = 1.72

$$-\frac{\frac{2(Aa+Bb)(dx+c)}{a^2+b^2}+\frac{2\left(Bab^2-Ab^3\right)\log(b\tan(dx+c)+a)}{a^4+a^2b^2}+\frac{(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2(Ba-Ab)\log(\tan(dx+c))}{a^2}+\frac{2A}{a\tan(dx+c)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 1.90485, size = 404, normalized size = 3.92

$$-\frac{2\,Aa^3+2\,Aab^2+2\left(Aa^3+Ba^2b\right)dx\tan\left(dx+c\right)-\left(Ba^3-Aa^2b+Bab^2-Ab^3\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)+\left(Bab^2-\right.}{2\left(a^4+a^2b^2\right)d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 151.578, size = 2066, normalized size = 20.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x, Eq(a, 0) & Eq(b, 0) & Eq(c, 0) & Eq(d, 0)), ((-A*x - A/(d
*tan(c + d*x)) - B*log(tan(c + d*x)**2 + 1)/(2*d) + B*log(tan(c + d*x))/d)/
a, Eq(b, 0)), ((A*log(tan(c + d*x)**2 + 1)/(2*d) - A*log(tan(c + d*x))/d -
A/(2*d*tan(c + d*x)**2) - B*x - B/(d*tan(c + d*x)))/b, Eq(a, 0)), (3*I*A*d*
x*tan(c + d*x)**2/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 3*A*d*x
*tan(c + d*x)/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + A*log(tan(c
 + d*x)**2 + 1)*tan(c + d*x)**2/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d
*x)) - I*A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(-2*b*d*tan(c + d*x)**2 +
2*I*b*d*tan(c + d*x)) - 2*A*log(tan(c + d*x))*tan(c + d*x)**2/(-2*b*d*tan(c
 + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 2*I*A*log(tan(c + d*x))*tan(c + d*x)/(
-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 3*I*A*tan(c + d*x)/(-2*b*d
*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 2*A/(-2*b*d*tan(c + d*x)**2 + 2*
I*b*d*tan(c + d*x)) - B*d*x*tan(c + d*x)**2/(-2*b*d*tan(c + d*x)**2 + 2*I*b
*d*tan(c + d*x)) + I*B*d*x*tan(c + d*x)/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*t
an(c + d*x)) + I*B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**2/(-2*b*d*tan(c +
 d*x)**2 + 2*I*b*d*tan(c + d*x)) + B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/
(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) - 2*I*B*log(tan(c + d*x))*t
```

```
an(c + d*x)**2/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) - 2*B*log(ta
n(c + d*x))*tan(c + d*x)/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) -
B*tan(c + d*x)/(-2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)), Eq(a, -I*b)
), (3*I*A*d*x*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)
) - 3*A*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) - A
*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*
tan(c + d*x)) - I*A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*b*d*tan(c + d*
x)**2 + 2*I*b*d*tan(c + d*x)) + 2*A*log(tan(c + d*x))*tan(c + d*x)**2/(2*b*
d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 2*I*A*log(tan(c + d*x))*tan(c +
 d*x)/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 3*I*A*tan(c + d*x)/(
2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) - 2*A/(2*b*d*tan(c + d*x)**2
+ 2*I*b*d*tan(c + d*x)) + B*d*x*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**2 + 2*
I*b*d*tan(c + d*x)) + I*B*d*x*tan(c + d*x)/(2*b*d*tan(c + d*x)**2 + 2*I*b*d
*tan(c + d*x)) + I*B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**2/(2*b*d*tan(c
+ d*x)**2 + 2*I*b*d*tan(c + d*x)) - B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)
/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) - 2*I*B*log(tan(c + d*x))*t
an(c + d*x)**2/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + 2*B*log(tan
(c + d*x))*tan(c + d*x)/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)) + B*
tan(c + d*x)/(2*b*d*tan(c + d*x)**2 + 2*I*b*d*tan(c + d*x)), Eq(a, I*b)), (
zoo*A*x/a, Eq(c, -d*x)), (x*(A + B*tan(c))*cot(c)**2/(a + b*tan(c)), Eq(d,
0)), (-2*A*a**3*d*x*tan(c + d*x)/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan
(c + d*x)) - 2*A*a**3/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan(c + d*x))
+ A*a**2*b*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*a**4*d*tan(c + d*x) + 2
*a**2*b**2*d*tan(c + d*x)) - 2*A*a**2*b*log(tan(c + d*x))*tan(c + d*x)/(2*a
**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan(c + d*x)) - 2*A*a*b**2/(2*a**4*d*tan
(c + d*x) + 2*a**2*b**2*d*tan(c + d*x)) + 2*A*b**3*log(a/b + tan(c + d*x))*
tan(c + d*x)/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan(c + d*x)) - 2*A*b**
3*log(tan(c + d*x))*tan(c + d*x)/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan
(c + d*x)) - B*a**3*log(tan(c + d*x)**2 + 1)*tan(c + d*x)/(2*a**4*d*tan(c +
 d*x) + 2*a**2*b**2*d*tan(c + d*x)) + 2*B*a**3*log(tan(c + d*x))*tan(c + d*
x)/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan(c + d*x)) - 2*B*a**2*b*d*x*ta
n(c + d*x)/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2*d*tan(c + d*x)) - 2*B*a*b**
2*log(a/b + tan(c + d*x))*tan(c + d*x)/(2*a**4*d*tan(c + d*x) + 2*a**2*b**2
*d*tan(c + d*x)) + 2*B*a*b**2*log(tan(c + d*x))*tan(c + d*x)/(2*a**4*d*tan(
c + d*x) + 2*a**2*b**2*d*tan(c + d*x)), True))
```

Giac [A] time = 1.32016, size = 212, normalized size = 2.06

$$-\frac{\frac{2(Aa+Bb)(dx+c)}{a^2+b^2}+\frac{(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Bab^3-Ab^4\right)\log(|b\tan(dx+c)+a|)}{a^4b+a^2b^3}-\frac{2(Ba-Ab)\log(|\tan(dx+c)|)}{a^2}+\frac{2(Ba\tan(dx+c)-Ab\tan(dx+c}{a^2\tan(dx+c)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(A*a + B*b)*(d*x + c)/(a^2 + b^2) + (B*a - A*b)*log(tan(d*x + c)^2
+ 1)/(a^2 + b^2) + 2*(B*a*b^3 - A*b^4)*log(abs(b*tan(d*x + c) + a))/(a^4*b
+ a^2*b^3) - 2*(B*a - A*b)*log(abs(tan(d*x + c)))/a^2 + 2*(B*a*tan(d*x + c)
 - A*b*tan(d*x + c) + A*a)/(a^2*tan(d*x + c)))/d
```

3.273 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=137

$$-\frac{(a^2A+abB-Ab^2)\log(\sin(c+dx))}{a^3d}-\frac{b^3(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{a^3d(a^2+b^2)}+\frac{x(Ab-aB)}{a^2+b^2}+\frac{(Ab-aB)\cot(}{a^2d}$$

```
[Out] ((A*b - a*B)*x)/(a^2 + b^2) + ((A*b - a*B)*Cot[c + d*x])/(a^2*d) - (A*Cot[c
 + d*x]^2)/(2*a*d) - ((a^2*A - A*b^2 + a*b*B)*Log[Sin[c + d*x]])/(a^3*d) -
(b^3*(A*b - a*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^3*(a^2 + b^2)*d)
```

Rubi [A] time = 0.550286, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$-\frac{(a^2A+abB-Ab^2)\log(\sin(c+dx))}{a^3d}-\frac{b^3(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{a^3d(a^2+b^2)}+\frac{x(Ab-aB)}{a^2+b^2}+\frac{(Ab-aB)\cot(}{a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] ((A*b - a*B)*x)/(a^2 + b^2) + ((A*b - a*B)*Cot[c + d*x])/(a^2*d) - (A*Cot[c
 + d*x]^2)/(2*a*d) - ((a^2*A - A*b^2 + a*b*B)*Log[Sin[c + d*x]])/(a^3*d) -
(b^3*(A*b - a*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^3*(a^2 + b^2)*d)
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = -\frac{A\cot^2(c+dx)}{2ad} - \frac{\int \frac{\cot^2(c+dx)\left(2(Ab-aB)+2aA\tan(c+dx)+2Ab\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{2a}$$

$$= \frac{(Ab-aB)\cot(c+dx)}{a^2d} - \frac{A\cot^2(c+dx)}{2ad} + \frac{\int \frac{\cot(c+dx)\left(-2\left(a^2A-Ab^2+abB\right)-2a^2B\tan(\right.}{a+b\tan(c+d}}{2a^2}$$

$$= \frac{(Ab-aB)x}{a^2+b^2} + \frac{(Ab-aB)\cot(c+dx)}{a^2d} - \frac{A\cot^2(c+dx)}{2ad} - \frac{\left(b^3(Ab-aB)\right)\int \frac{b-a}{a+b}}{a^3\left(a^2+b\right.}$$

$$= \frac{(Ab-aB)x}{a^2+b^2} + \frac{(Ab-aB)\cot(c+dx)}{a^2d} - \frac{A\cot^2(c+dx)}{2ad} - \frac{\left(a^2A-Ab^2+abB\right)}{a^3d}$$

Mathematica [C] time = 1.35034, size = 163, normalized size = 1.19

$$\frac{\frac{2b^3(aB-Ab)\log(a+b\tan(c+dx))}{a^3\left(a^2+b^2\right)} - \frac{2\left(a^2A+abB-Ab^2\right)\log(\tan(c+dx))}{a^3} + \frac{2(Ab-aB)\cot(c+dx)}{a^2} + \frac{(A+iB)\log(-\tan(c+dx)+i)}{a+ib} + \frac{(A-iB)\log(\tan(c+dx)+i)}{a-ib}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((2*(A*b - a*B)*Cot[c + d*x])/a^2 - (A*Cot[c + d*x]^2)/a + ((A + I*B)*Log[I
 - Tan[c + d*x]])/(a + I*b) - (2*(a^2*A - A*b^2 + a*b*B)*Log[Tan[c + d*x]])
/a^3 + ((A - I*B)*Log[I + Tan[c + d*x]])/(a - I*b) + (2*b^3*(-(A*b) + a*B)*
Log[a + b*Tan[c + d*x]])/(a^3*(a^2 + b^2)))/(2*d)
```

Maple [A] time = 0.114, size = 266, normalized size = 1.9

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Aa}{2d\left(a^2+b^2\right)} + \frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d\left(a^2+b^2\right)} + \frac{A\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)} - \frac{B\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)} - \frac{}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*a+1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*B
*b+1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*b-1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*
```

```
a-1/2/d/a*A/tan(d*x+c)^2+1/d/a^2/tan(d*x+c)*A*b-1/d/a/tan(d*x+c)*B-1/a/d*A*
ln(tan(d*x+c))+1/d/a^3*ln(tan(d*x+c))*A*b^2-1/d/a^2*ln(tan(d*x+c))*B*b-1/d*
b^4/a^3/(a^2+b^2)*ln(a+b*tan(d*x+c))*A+1/d*b^3/a^2/(a^2+b^2)*ln(a+b*tan(d*x
+c))*B
```

Maxima [A] time = 1.47878, size = 213, normalized size = 1.55

$$-\frac{\frac{2(Ba-Ab)(dx+c)}{a^2+b^2}-\frac{2\left(Bab^3-Ab^4\right)\log(b\tan(dx+c)+a)}{a^5+a^3b^2}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Aa^2+Bab-Ab^2\right)\log(\tan(dx+c))}{a^3}+\frac{Aa+2(Ba-Ab)\tan(dx+c)}{a^2\tan(dx+c)^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxi
ma")
```

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

Fricas [A] time = 2.03542, size = 518, normalized size = 3.78

$$-\frac{Aa^4+Aa^2b^2+\left(Aa^4+Ba^3b+Bab^3-Ab^4\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan(dx+c)^2-\left(Bab^3-Ab^4\right)\log\left(\frac{b^2\tan(dx+c)^2+2ab\tan(dx+c}{\tan(dx+c)^2+1}\right.}{2\left(a^5+a^3b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fric
as")
```

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

Sympy [A] time = 159.793, size = 2594, normalized size = 18.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x, Eq(a, 0) & Eq(b, 0) & Eq(c, 0) & Eq(d, 0)), ((A*log(tan(c
 + d*x)**2 + 1)/(2*d) - A*log(tan(c + d*x))/d - A/(2*d*tan(c + d*x)**2) - B
*x - B/(d*tan(c + d*x)))/a, Eq(b, 0)), ((A*x + A/(d*tan(c + d*x)) - A/(3*d*
tan(c + d*x)**3) + B*log(tan(c + d*x)**2 + 1)/(2*d) - B*log(tan(c + d*x))/d
 - B/(2*d*tan(c + d*x)**2))/b, Eq(a, 0)), (3*A*d*x*tan(c + d*x)**3/(-2*b*d*
tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 3*I*A*d*x*tan(c + d*x)**2/(-2*
b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 2*I*A*log(tan(c + d*x)**2
+ 1)*tan(c + d*x)**3/(-2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 2
*A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**2/(-2*b*d*tan(c + d*x)**3 + 2*I*b
*d*tan(c + d*x)**2) + 4*I*A*log(tan(c + d*x))*tan(c + d*x)**3/(-2*b*d*tan(c
 + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) + 4*A*log(tan(c + d*x))*tan(c + d*x)*
*2/(-2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 3*I*A*tan(c + d*x)*
*3/(-2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - I*A*tan(c + d*x)/(-
2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) + A/(-2*b*d*tan(c + d*x)**
3 + 2*I*b*d*tan(c + d*x)**2) + 3*I*B*d*x*tan(c + d*x)**3/(-2*b*d*tan(c + d*
x)**3 + 2*I*b*d*tan(c + d*x)**2) + 3*B*d*x*tan(c + d*x)**2/(-2*b*d*tan(c +
d*x)**3 + 2*I*b*d*tan(c + d*x)**2) + B*log(tan(c + d*x)**2 + 1)*tan(c + d*x
)**3/(-2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - I*B*log(tan(c + d
*x)**2 + 1)*tan(c + d*x)**2/(-2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)*
*2) - 2*B*log(tan(c + d*x))*tan(c + d*x)**3/(-2*b*d*tan(c + d*x)**3 + 2*I*b
*d*tan(c + d*x)**2) + 2*I*B*log(tan(c + d*x))*tan(c + d*x)**2/(-2*b*d*tan(c
 + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) + 3*B*tan(c + d*x)**3/(-2*b*d*tan(c +
 d*x)**3 + 2*I*b*d*tan(c + d*x)**2) + 2*B*tan(c + d*x)/(-2*b*d*tan(c + d*x)
**3 + 2*I*b*d*tan(c + d*x)**2), Eq(a, -I*b)), (-3*A*d*x*tan(c + d*x)**3/(2*
b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 3*I*A*d*x*tan(c + d*x)**2/
(2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 2*I*A*log(tan(c + d*x)*
*2 + 1)*tan(c + d*x)**3/(2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) +
 2*A*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**3 + 2*I*
b*d*tan(c + d*x)**2) + 4*I*A*log(tan(c + d*x))*tan(c + d*x)**3/(2*b*d*tan(c
 + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 4*A*log(tan(c + d*x))*tan(c + d*x)*
*2/(2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - 3*I*A*tan(c + d*x)**
3/(2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - I*A*tan(c + d*x)/(2*b
*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - A/(2*b*d*tan(c + d*x)**3 +
2*I*b*d*tan(c + d*x)**2) + 3*I*B*d*x*tan(c + d*x)**3/(2*b*d*tan(c + d*x)**3
 + 2*I*b*d*tan(c + d*x)**2) - 3*B*d*x*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**
3 + 2*I*b*d*tan(c + d*x)**2) - B*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**3/(
```

```
2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) - I*B*log(tan(c + d*x)**2
+ 1)*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c + d*x)**2) + 2*
B*log(tan(c + d*x))*tan(c + d*x)**3/(2*b*d*tan(c + d*x)**3 + 2*I*b*d*tan(c
+ d*x)**2) + 2*I*B*log(tan(c + d*x))*tan(c + d*x)**2/(2*b*d*tan(c + d*x)**3
 + 2*I*b*d*tan(c + d*x)**2) - 3*B*tan(c + d*x)**3/(2*b*d*tan(c + d*x)**3 +
2*I*b*d*tan(c + d*x)**2) - 2*B*tan(c + d*x)/(2*b*d*tan(c + d*x)**3 + 2*I*b*
d*tan(c + d*x)**2), Eq(a, I*b)), (zoo*A*x/a, Eq(c, -d*x)), (x*(A + B*tan(c)
)*cot(c)**3/(a + b*tan(c)), Eq(d, 0)), (A*a**4*log(tan(c + d*x)**2 + 1)*tan
(c + d*x)**2/(2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) - 2
*A*a**4*log(tan(c + d*x))*tan(c + d*x)**2/(2*a**5*d*tan(c + d*x)**2 + 2*a**
3*b**2*d*tan(c + d*x)**2) - A*a**4/(2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*
d*tan(c + d*x)**2) + 2*A*a**3*b*d*x*tan(c + d*x)**2/(2*a**5*d*tan(c + d*x)*
*2 + 2*a**3*b**2*d*tan(c + d*x)**2) + 2*A*a**3*b*tan(c + d*x)/(2*a**5*d*tan
(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) - A*a**2*b**2/(2*a**5*d*tan(c
 + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) + 2*A*a*b**3*tan(c + d*x)/(2*a*
*5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) - 2*A*b**4*log(a/b +
tan(c + d*x))*tan(c + d*x)**2/(2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan
(c + d*x)**2) + 2*A*b**4*log(tan(c + d*x))*tan(c + d*x)**2/(2*a**5*d*tan(c
+ d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) - 2*B*a**4*d*x*tan(c + d*x)**2/(
2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) - 2*B*a**4*tan(c
+ d*x)/(2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) + B*a**3*
b*log(tan(c + d*x)**2 + 1)*tan(c + d*x)**2/(2*a**5*d*tan(c + d*x)**2 + 2*a*
*3*b**2*d*tan(c + d*x)**2) - 2*B*a**3*b*log(tan(c + d*x))*tan(c + d*x)**2/(
2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) - 2*B*a**2*b**2*t
an(c + d*x)/(2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2) + 2*
B*a*b**3*log(a/b + tan(c + d*x))*tan(c + d*x)**2/(2*a**5*d*tan(c + d*x)**2
+ 2*a**3*b**2*d*tan(c + d*x)**2) - 2*B*a*b**3*log(tan(c + d*x))*tan(c + d*x
)**2/(2*a**5*d*tan(c + d*x)**2 + 2*a**3*b**2*d*tan(c + d*x)**2), True))
```

Giac [A] time = 1.29315, size = 289, normalized size = 2.11

$$-\frac{\frac{2\,(Ba-Ab)(dx+c)}{a^2+b^2}-\frac{(Aa+Bb)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2\left(Bab^4-Ab^5\right)\log(|b\tan(dx+c)+a|)}{a^5b+a^3b^3}+\frac{2\left(Aa^2+Bab-Ab^2\right)\log(|\tan(dx+c)|)}{a^3}-\frac{3\,Aa^2\tan(dx+c)^2+3\,Bab}{}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(B*a - A*b)*(d*x + c)/(a^2 + b^2) - (A*a + B*b)*log(tan(d*x + c)^2
+ 1)/(a^2 + b^2) - 2*(B*a*b^4 - A*b^5)*log(abs(b*tan(d*x + c) + a))/(a^5*b
+ a^3*b^3) + 2*(A*a^2 + B*a*b - A*b^2)*log(abs(tan(d*x + c)))/a^3 - (3*A*a^
```

```
2*tan(d*x + c)^2 + 3*B*a*b*tan(d*x + c)^2 - 3*A*b^2*tan(d*x + c)^2 - 2*B*a^
2*tan(d*x + c) + 2*A*a*b*tan(d*x + c) - A*a^2)/(a^3*tan(d*x + c)^2))/d
```

3.274 $\int \frac{\cot^4(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=169

$$\frac{(a^2A+abB-Ab^2)\cot(c+dx)}{a^3d}+\frac{(a^2-b^2)(Ab-aB)\log(\sin(c+dx))}{a^4d}+\frac{b^4(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{a^4d(a^2+b^2)}$$

```
[Out] ((a*A + b*B)*x)/(a^2 + b^2) + ((a^2*A - A*b^2 + a*b*B)*Cot[c + d*x])/(a^3*d
) + ((A*b - a*B)*Cot[c + d*x]^2)/(2*a^2*d) - (A*Cot[c + d*x]^3)/(3*a*d) + (
(a^2 - b^2)*(A*b - a*B)*Log[Sin[c + d*x]])/(a^4*d) + (b^4*(A*b - a*B)*Log[a
*Cos[c + d*x] + b*Sin[c + d*x]])/(a^4*(a^2 + b^2)*d)
```

Rubi [A] time = 0.832577, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$\frac{(a^2A+abB-Ab^2)\cot(c+dx)}{a^3d}+\frac{(a^2-b^2)(Ab-aB)\log(\sin(c+dx))}{a^4d}+\frac{b^4(Ab-aB)\log(a\cos(c+dx)+b\sin(c+dx))}{a^4d(a^2+b^2)}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((a*A + b*B)*x)/(a^2 + b^2) + ((a^2*A - A*b^2 + a*b*B)*Cot[c + d*x])/(a^3*d
) + ((A*b - a*B)*Cot[c + d*x]^2)/(2*a^2*d) - (A*Cot[c + d*x]^3)/(3*a*d) + (
(a^2 - b^2)*(A*b - a*B)*Log[Sin[c + d*x]])/(a^4*d) + (b^4*(A*b - a*B)*Log[a
*Cos[c + d*x] + b*Sin[c + d*x]])/(a^4*(a^2 + b^2)*d)
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
```

```
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^4(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = -\frac{A\cot^3(c+dx)}{3ad} - \frac{\int \frac{\cot^3(c+dx)\left(3(Ab-aB)+3aA\tan(c+dx)+3Ab\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{3a}$$

$$= \frac{(Ab-aB)\cot^2(c+dx)}{2a^2d} - \frac{A\cot^3(c+dx)}{3ad} + \frac{\int \frac{\cot^2(c+dx)\left(-6\left(a^2A-Ab^2+abB\right)-6a^2B\tan(\ldots}{a+b\tan(c+d\ldots}}{6a^2}$$

$$= \frac{\left(a^2A-Ab^2+abB\right)\cot(c+dx)}{a^3d} + \frac{(Ab-aB)\cot^2(c+dx)}{2a^2d} - \frac{A\cot^3(c+dx)}{3ad} - \ldots$$

$$= \frac{(aA+bB)x}{a^2+b^2} + \frac{\left(a^2A-Ab^2+abB\right)\cot(c+dx)}{a^3d} + \frac{(Ab-aB)\cot^2(c+dx)}{2a^2d} - \frac{A\,c\ldots}{}$$

$$= \frac{(aA+bB)x}{a^2+b^2} + \frac{\left(a^2A-Ab^2+abB\right)\cot(c+dx)}{a^3d} + \frac{(Ab-aB)\cot^2(c+dx)}{2a^2d} - \frac{A\,c\ldots}{}$$

Mathematica [C] time = 2.48529, size = 194, normalized size = 1.15

$$\frac{\frac{6\left(a^2A+abB-Ab^2\right)\cot(c+dx)}{a^3} + \frac{6b^4(Ab-aB)\log(a+b\tan(c+dx))}{a^4\left(a^2+b^2\right)} + \frac{3(Ab-aB)\cot^2(c+dx)}{a^2} + \frac{6(a-b)(a+b)(Ab-aB)\log(\tan(c+dx))}{a^4} + \frac{3(B-iA)\log(-\tan(c+d\ldots}{a+ib}\ldots}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((6*(a^2*A - A*b^2 + a*b*B)*Cot[c + d*x])/a^3 + (3*(A*b - a*B)*Cot[c + d*x]
^2)/a^2 - (2*A*Cot[c + d*x]^3)/a + (3*((-I)*A + B)*Log[I - Tan[c + d*x]])/(
a + I*b) + (6*(a - b)*(a + b)*(A*b - a*B)*Log[Tan[c + d*x]])/a^4 + (3*(I*A
+ B)*Log[I + Tan[c + d*x]])/(a - I*b) + (6*b^4*(A*b - a*B)*Log[a + b*Tan[c
+ d*x]])/(a^4*(a^2 + b^2)))/(6*d)
```

Maple [B] time = 0.11, size = 337, normalized size = 2.

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab}{2d\left(a^2+b^2\right)} + \frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)} + \frac{A\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)} + \frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)} - \frac{\ldots}{3\,a\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*A*b+1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*
a*B+1/d/(a^2+b^2)*A*arctan(tan(d*x+c))*a+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))
*b-1/3/d/a*A/tan(d*x+c)^3+1/2/d/a^2/tan(d*x+c)^2*A*b-1/2/d/a/tan(d*x+c)^2*B
+1/d/a*A/tan(d*x+c)-1/d/a^3/tan(d*x+c)*A*b^2+1/d/a^2/tan(d*x+c)*B*b+1/d/a^2
*ln(tan(d*x+c))*A*b-1/d/a^4*ln(tan(d*x+c))*A*b^3-1/d/a*B*ln(tan(d*x+c))+1/d
/a^3*ln(tan(d*x+c))*B*b^2+1/d*b^5/a^4/(a^2+b^2)*ln(a+b*tan(d*x+c))*A-1/d*b^
4/a^3/(a^2+b^2)*ln(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.48449, size = 270, normalized size = 1.6

$$\frac{\frac{6\,(Aa+Bb)(dx+c)}{a^2+b^2} - \frac{6\left(Bab^4-Ab^5\right)\log(b\tan(dx+c)+a)}{a^6+a^4b^2} + \frac{3\,(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2} - \frac{6\left(Ba^3-Aa^2b-Bab^2+Ab^3\right)\log(\tan(dx+c))}{a^4} - \frac{2\,Aa^2-6\left(Aa^2+Ba\right.}{}}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] 1/6*(6*(A*a + B*b)*(d*x + c)/(a^2 + b^2) - 6*(B*a*b^4 - A*b^5)*log(b*tan(d*
x + c) + a)/(a^6 + a^4*b^2) + 3*(B*a - A*b)*log(tan(d*x + c)^2 + 1)/(a^2 +
b^2) - 6*(B*a^3 - A*a^2*b - B*a*b^2 + A*b^3)*log(tan(d*x + c))/a^4 - (2*A*a
^2 - 6*(A*a^2 + B*a*b - A*b^2)*tan(d*x + c)^2 + 3*(B*a^2 - A*a*b)*tan(d*x +
 c))/(a^3*tan(d*x + c)^3))/d
```

Fricas [A] time = 2.0828, size = 644, normalized size = 3.81

$$-\frac{2\,Aa^5 + 2\,Aa^3b^2 + 3\left(Ba^5 - Aa^4b - Bab^4 + Ab^5\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^3 + 3\left(Bab^4 - Ab^5\right)\log\left(\frac{b^2\tan(dx+c)^2+2\,a}{\tan(dx+}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] -1/6*(2*A*a^5 + 2*A*a^3*b^2 + 3*(B*a^5 - A*a^4*b - B*a*b^4 + A*b^5)*log(tan
(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^3 + 3*(B*a*b^4 - A*b^5)*log(
(b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1))*tan(d
*x + c)^3 + 3*(B*a^5 - A*a^4*b + B*a^3*b^2 - A*a^2*b^3 - 2*(A*a^5 + B*a^4*b
```

```
)*d*x)*tan(d*x + c)^3 - 6*(A*a^5 + B*a^4*b + B*a^2*b^3 - A*a*b^4)*tan(d*x +
 c)^2 + 3*(B*a^5 - A*a^4*b + B*a^3*b^2 - A*a^2*b^3)*tan(d*x + c))/((a^6 + a
^4*b^2)*d*tan(d*x + c)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.27118, size = 385, normalized size = 2.28

$$\frac{\frac{6\,(Aa+Bb)(dx+c)}{a^2+b^2}+\frac{3\,(Ba-Ab)\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{6\left(Bab^5-Ab^6\right)\log(|b\tan(dx+c)+a|)}{a^6b+a^4b^3}-\frac{6\left(Ba^3-Aa^2b-Bab^2+Ab^3\right)\log(|\tan(dx+c)|)}{a^4}+\frac{11\,Ba^3\tan(dx+c)}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] 1/6*(6*(A*a + B*b)*(d*x + c)/(a^2 + b^2) + 3*(B*a - A*b)*log(tan(d*x + c)^2
 + 1)/(a^2 + b^2) - 6*(B*a*b^5 - A*b^6)*log(abs(b*tan(d*x + c) + a))/(a^6*b
 + a^4*b^3) - 6*(B*a^3 - A*a^2*b - B*a*b^2 + A*b^3)*log(abs(tan(d*x + c)))/
a^4 + (11*B*a^3*tan(d*x + c)^3 - 11*A*a^2*b*tan(d*x + c)^3 - 11*B*a*b^2*tan
(d*x + c)^3 + 11*A*b^3*tan(d*x + c)^3 + 6*A*a^3*tan(d*x + c)^2 + 6*B*a^2*b*
tan(d*x + c)^2 - 6*A*a*b^2*tan(d*x + c)^2 - 3*B*a^3*tan(d*x + c) + 3*A*a^2*
b*tan(d*x + c) - 2*A*a^3)/(a^4*tan(d*x + c)^3))/d
```

3.275 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2} dx$

Optimal. Leaf size=208

$$\frac{a(Ab-aB)\tan^2(c+dx)}{bd\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{\left(-2a^2B+aAb-b^2B\right)\tan(c+dx)}{b^2d\left(a^2+b^2\right)}+\frac{a^2\left(a^2Ab-2a^3B-4ab^2B+3Ab^3\right)\log(a+b\tan}{b^3d\left(a^2+b^2\right)^2}$$

```
[Out] -(((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2) + ((a^2*A - A*b^2 + 2*a*b*B)
*Log[Cos[c + d*x]])/((a^2 + b^2)^2*d) + (a^2*(a^2*A*b + 3*A*b^3 - 2*a^3*B -
 4*a*b^2*B)*Log[a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)^2*d) - ((a*A*b - 2*a^
2*B - b^2*B)*Tan[c + d*x])/(b^2*(a^2 + b^2)*d) + (a*(A*b - a*B)*Tan[c + d*x
]^2)/(b*(a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.454827, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3605, 3647, 3626, 3617, 31, 3475}

$$\frac{a(Ab-aB)\tan^2(c+dx)}{bd\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{\left(-2a^2B+aAb-b^2B\right)\tan(c+dx)}{b^2d\left(a^2+b^2\right)}+\frac{a^2\left(a^2Ab-2a^3B-4ab^2B+3Ab^3\right)\log(a+b\tan}{b^3d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] -(((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2) + ((a^2*A - A*b^2 + 2*a*b*B)
*Log[Cos[c + d*x]])/((a^2 + b^2)^2*d) + (a^2*(a^2*A*b + 3*A*b^3 - 2*a^3*B -
 4*a*b^2*B)*Log[a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)^2*d) - ((a*A*b - 2*a^
2*B - b^2*B)*Tan[c + d*x])/(b^2*(a^2 + b^2)*d) + (a*(A*b - a*B)*Tan[c + d*x
]^2)/(b*(a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
```

```
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \frac{a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{\tan(c+dx)\left(-2a(Ab-aB)+b(Ab-aB)\tan(c+dx)-\left(aAb\cdots\right.\right.}{a+b\tan(c+dx)}}{b\left(a^2+b^2\right)\cdots}$$

$$= -\frac{\left(aAb-2a^2B-b^2B\right)\tan(c+dx)}{b^2\left(a^2+b^2\right)d} + \frac{a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \int \frac{a(a\cdots}{\cdots}$$

$$= -\frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} - \frac{\left(aAb-2a^2B-b^2B\right)\tan(c+dx)}{b^2\left(a^2+b^2\right)d} + \frac{a(Ab-aB)\cdots}{b\left(a^2+b^2\right)d(a\cdots}$$

$$= -\frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} + \frac{\left(a^2A-Ab^2+2abB\right)\log(\cos(c+dx))}{\left(a^2+b^2\right)^2d} - \frac{\left(aAb-2a\cdots\right.}{\cdots}$$

$$= -\frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} + \frac{\left(a^2A-Ab^2+2abB\right)\log(\cos(c+dx))}{\left(a^2+b^2\right)^2d} + \frac{a^2\left(a^2Ab\cdots\right.}{\cdots}$$

<u>Mathematica</u> [C] time = 3.7792, size = 444, normalized size = 2.13

$$\frac{2ia^2\left(-a^2Ab+2a^3B+4ab^2B-3Ab^3\right)\tan^{-1}(\tan(c+dx))(a+b\tan(c+dx))+a\left(2(a+ib)^2(c+dx)\left(ia^2b(A+4iB)-2\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (a*(2*(a + I*b)^2*(2*a*b^2*(A + I*B) + I*a^2*b*(A + (4*I)*B) - (2*I)*a^3*B
+ b^3*B)*(c + d*x) + 2*(a^2 + b^2)^2*(-(A*b) + 2*a*B)*Log[Cos[c + d*x]] + a
^2*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b^2*B)*Log[(a*Cos[c + d*x] + b*Sin[c
+ d*x])^2]) + b*(2*(a^3*b^2*B*(3 - (4*I)*c - (4*I)*d*x) - b^5*B*(c + d*x) +
 I*a^4*A*b*(I + c + d*x) - (2*I)*a^5*B*(I + c + d*x) + a*b^4*(B - 2*A*(c +
d*x)) + a^2*b^3*(B*(c + d*x) + I*A*(I + 3*c + 3*d*x))) + 2*(a^2 + b^2)^2*(-
(A*b) + 2*a*B)*Log[Cos[c + d*x]] + a^2*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b
^2*B)*Log[(a*Cos[c + d*x] + b*Sin[c + d*x])^2])*Tan[c + d*x] + 2*b^2*(a^2 +
 b^2)^2*B*Tan[c + d*x]^2 + (2*I)*a^2*(-(a^2*A*b) - 3*A*b^3 + 2*a^3*B + 4*a*
b^2*B)*ArcTan[Tan[c + d*x]]*(a + b*Tan[c + d*x]))/(2*b^3*(a^2 + b^2)^2*d*(a
 + b*Tan[c + d*x]))
```

Maple [A] time = 0.044, size = 364, normalized size = 1.8

$$\frac{B\tan(dx+c)}{b^2d}-\frac{\ln\left(1+(\tan(dx+c))^2\right)a^2A}{2d\left(a^2+b^2\right)^2}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab^2}{2d\left(a^2+b^2\right)^2}-\frac{\ln\left(1+(\tan(dx+c))^2\right)Bab}{d\left(a^2+b^2\right)^2}-2\frac{A\arctan}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/d*B/b^2*tan(d*x+c)-1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*a^2*A+1/2/d/(a^2+
b^2)^2*ln(1+tan(d*x+c)^2)*A*b^2-1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*B*a*b-2/
d/(a^2+b^2)^2*A*arctan(tan(d*x+c))*a*b+1/d/(a^2+b^2)^2*B*arctan(tan(d*x+c))
*a^2-1/d/(a^2+b^2)^2*B*arctan(tan(d*x+c))*b^2+1/d/b^2*a^4/(a^2+b^2)^2*ln(a+
b*tan(d*x+c))*A+3/d*a^2/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A-2/d/b^3*a^5/(a^2+b
^2)^2*ln(a+b*tan(d*x+c))*B-4/d/b*a^3/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*B+1/d/b
^2*a^3/(a^2+b^2)/(a+b*tan(d*x+c))*A-1/d/b^3*a^4/(a^2+b^2)/(a+b*tan(d*x+c))*
B
```

Maxima [A] time = 1.49544, size = 297, normalized size = 1.43

$$\frac{\frac{2\left(Ba^2-2\,Aab-Bb^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(2\,Ba^5-Aa^4b+4\,Ba^3b^2-3\,Aa^2b^3\right)\log(b\tan(dx+c)+a)}{a^4b^3+2\,a^2b^5+b^7}-\frac{\left(Aa^2+2\,Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(Ba^4-Aa^3b\right)}{a^3b^3+ab^5+\left(a^2b^4+b^6\right)\tan(dx}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] 1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - 2*(2*B
*a^5 - A*a^4*b + 4*B*a^3*b^2 - 3*A*a^2*b^3)*log(b*tan(d*x + c) + a)/(a^4*b^
3 + 2*a^2*b^5 + b^7) - (A*a^2 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)/(a
^4 + 2*a^2*b^2 + b^4) - 2*(B*a^4 - A*a^3*b)/(a^3*b^3 + a*b^5 + (a^2*b^4 + b
^6)*tan(d*x + c)) + 2*B*tan(d*x + c)/b^2)/d
```

Fricas [B] time = 2.37061, size = 936, normalized size = 4.5

$$-\frac{2\,Ba^4b^2-2\,Aa^3b^3-2\left(Ba^3b^3-2\,Aa^2b^4-Bab^5\right)dx-2\left(Ba^4b^2+2\,Ba^2b^4+Bb^6\right)\tan(dx+c)^2+\left(2\,Ba^6-Aa^5b+4\,Ba^4b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] -1/2*(2*B*a^4*b^2 - 2*A*a^3*b^3 - 2*(B*a^3*b^3 - 2*A*a^2*b^4 - B*a*b^5)*d*x
 - 2*(B*a^4*b^2 + 2*B*a^2*b^4 + B*b^6)*tan(d*x + c)^2 + (2*B*a^6 - A*a^5*b
+ 4*B*a^4*b^2 - 3*A*a^3*b^3 + (2*B*a^5*b - A*a^4*b^2 + 4*B*a^3*b^3 - 3*A*a^
2*b^4)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(t
an(d*x + c)^2 + 1)) - (2*B*a^6 - A*a^5*b + 4*B*a^4*b^2 - 2*A*a^3*b^3 + 2*B*
a^2*b^4 - A*a*b^5 + (2*B*a^5*b - A*a^4*b^2 + 4*B*a^3*b^3 - 2*A*a^2*b^4 + 2*
B*a*b^5 - A*b^6)*tan(d*x + c))*log(1/(tan(d*x + c)^2 + 1)) - 2*(2*B*a^5*b -
 A*a^4*b^2 + 2*B*a^3*b^3 + B*a*b^5 + (B*a^2*b^4 - 2*A*a*b^5 - B*b^6)*d*x)*t
an(d*x + c))/((a^4*b^4 + 2*a^2*b^6 + b^8)*d*tan(d*x + c) + (a^5*b^3 + 2*a^3
*b^5 + a*b^7)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.83639, size = 392, normalized size = 1.88

$$\frac{\frac{2\left(Ba^2-2Aab-Bb^2\right)(dx+c)}{a^4+2a^2b^2+b^4}-\frac{\left(Aa^2+2Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2a^2b^2+b^4}-\frac{2\left(2Ba^5-Aa^4b+4Ba^3b^2-3Aa^2b^3\right)\log(|b\tan(dx+c)+a|)}{a^4b^3+2a^2b^5+b^7}+\frac{2B\tan(dx+c)}{b^2}+\frac{2\left(2Ba\right.}{}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - (A*a^2
 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) - 2*(2*
```

```
B*a^5 - A*a^4*b + 4*B*a^3*b^2 - 3*A*a^2*b^3)*log(abs(b*tan(d*x + c) + a))/(
a^4*b^3 + 2*a^2*b^5 + b^7) + 2*B*tan(d*x + c)/b^2 + 2*(2*B*a^5*b*tan(d*x +
c) - A*a^4*b^2*tan(d*x + c) + 4*B*a^3*b^3*tan(d*x + c) - 3*A*a^2*b^4*tan(d*
x + c) + B*a^6 + 3*B*a^4*b^2 - 2*A*a^3*b^3)/((a^4*b^3 + 2*a^2*b^5 + b^7)*(b
*tan(d*x + c) + a)))/d
```

3.276 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=157

$$-\frac{a^2(Ab-aB)}{b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)\log(a+b\tan(c+dx))}{b^2d\left(a^2+b^2\right)^2}-\frac{\left(a^2(-B)+2aAb+b^2B\right)\log(\cos}{d\left(a^2+b^2\right)^2}$$

```
[Out] -(((a^2*A - A*b^2 + 2*a*b*B)*x)/(a^2 + b^2)^2) - ((2*a*A*b - a^2*B + b^2*B)
*Log[Cos[c + d*x]])/((a^2 + b^2)^2*d) - (a*(2*A*b^3 - a*(a^2 + 3*b^2)*B)*Lo
g[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)^2*d) - (a^2*(A*b - a*B))/(b^2*(a^2
+ b^2)*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.273318, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3604, 3626, 3617, 31, 3475}

$$-\frac{a^2(Ab-aB)}{b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)\log(a+b\tan(c+dx))}{b^2d\left(a^2+b^2\right)^2}-\frac{\left(a^2(-B)+2aAb+b^2B\right)\log(\cos}{d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```



```
[Out] -(((a^2*A - A*b^2 + 2*a*b*B)*x)/(a^2 + b^2)^2) - ((2*a*A*b - a^2*B + b^2*B)
*Log[Cos[c + d*x]])/((a^2 + b^2)^2*d) - (a*(2*A*b^3 - a*(a^2 + 3*b^2)*B)*Lo
g[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)^2*d) - (a^2*(A*b - a*B))/(b^2*(a^2
+ b^2)*d*(a + b*Tan[c + d*x]))
```


Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = -\frac{a^2(Ab-aB)}{b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{-a(Ab-aB)+b(Ab-aB)\tan(c+dx)+\left(a^2+b^2\right)B\tan^2(c}{a+b\tan(c+dx)}}{b\left(a^2+b^2\right)}$$

$$= -\frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} - \frac{a^2(Ab-aB)}{b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\left(2aAb-a^2B+\right.}{\left(a\right.}$$

$$= -\frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} - \frac{\left(2aAb-a^2B+b^2B\right)\log(\cos(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{a}{b^2\left(a^2+b^2\right)}$$

$$= -\frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} - \frac{\left(2aAb-a^2B+b^2B\right)\log(\cos(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{a\left(2Ab^3-\right.}{}$$

Mathematica [C] time = 1.99352, size = 323, normalized size = 2.06

$$\frac{-2ia\left(aB\left(a^2+3b^2\right)-2Ab^3\right)\tan^{-1}(\tan(c+dx))(a+b\tan(c+dx))+a\left(a\left(aB\left(a^2+3b^2\right)-2Ab^3\right)\log\left((a\cos(c+dx)+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (a*(2*(a + I*b)^2*(-(A*b^2) + a*(I*a + 2*b)*B)*(c + d*x) - 2*(a^2 + b^2)^2*
B*Log[Cos[c + d*x]] + a*(-2*A*b^3 + a*(a^2 + 3*b^2)*B)*Log[(a*Cos[c + d*x]
+ b*Sin[c + d*x])^2]) + b*(2*(a + I*b)*((-I)*A*b^3*(c + d*x) + I*a^3*B*(I +
 c + d*x) - a*b^2*((-2*I)*B*(c + d*x) + A*(I + c + d*x)) + a^2*b*(A + B*(I
+ c + d*x))) - 2*(a^2 + b^2)^2*B*Log[Cos[c + d*x]] + a*(-2*A*b^3 + a*(a^2 +
 3*b^2)*B)*Log[(a*Cos[c + d*x] + b*Sin[c + d*x])^2])*Tan[c + d*x] - (2*I)*a
*(-2*A*b^3 + a*(a^2 + 3*b^2)*B)*ArcTan[Tan[c + d*x]]*(a + b*Tan[c + d*x]))/
(2*b^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Maple [A] time = 0.042, size = 313, normalized size = 2.

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Aab}{d\left(a^2+b^2\right)^2}-\frac{\ln\left(1+(\tan(dx+c))^2\right)a^2B}{2d\left(a^2+b^2\right)^2}+\frac{\ln\left(1+(\tan(dx+c))^2\right)b^2B}{2d\left(a^2+b^2\right)^2}-\frac{A\arctan(\tan(dx+c))a^2}{d\left(a^2+b^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*A*a*b-1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^
2)*a^2*B+1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*b^2*B-1/d/(a^2+b^2)^2*A*arcta
n(tan(d*x+c))*a^2+1/d/(a^2+b^2)^2*A*arctan(tan(d*x+c))*b^2-2/d/(a^2+b^2)^2*
B*arctan(tan(d*x+c))*a*b-1/d*a^2/b/(a^2+b^2)/(a+b*tan(d*x+c))*A+1/d*a^3/b^2
/(a^2+b^2)/(a+b*tan(d*x+c))*B-2/d*a/(a^2+b^2)^2*b*ln(a+b*tan(d*x+c))*A+1/d*
a^4/(a^2+b^2)^2/b^2*ln(a+b*tan(d*x+c))*B+3/d*a^2/(a^2+b^2)^2*ln(a+b*tan(d*x
+c))*B
```

Maxima [A] time = 1.5503, size = 266, normalized size = 1.69

$$-\frac{\frac{2\left(Aa^2+2Bab-Ab^2\right)(dx+c)}{a^4+2a^2b^2+b^4}-\frac{2\left(Ba^4+3Ba^2b^2-2Aab^3\right)\log(b\tan(dx+c)+a)}{a^4b^2+2a^2b^4+b^6}+\frac{\left(Ba^2-2Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2a^2b^2+b^4}-\frac{2\left(Ba^3-Aa^2b\right)}{a^3b^2+ab^4+\left(a^2b^3+b^5\right)\tan(dx+c)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(A*a^2 + 2*B*a*b - A*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - 2*(B*
a^4 + 3*B*a^2*b^2 - 2*A*a*b^3)*log(b*tan(d*x + c) + a)/(a^4*b^2 + 2*a^2*b^4
 + b^6) + (B*a^2 - 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^
2 + b^4) - 2*(B*a^3 - A*a^2*b)/(a^3*b^2 + a*b^4 + (a^2*b^3 + b^5)*tan(d*x +
 c)))/d
```

Fricas [B] time = 2.09051, size = 682, normalized size = 4.34

$$\frac{2\,Ba^3b^2 - 2\,Aa^2b^3 - 2\left(Aa^3b^2 + 2\,Ba^2b^3 - Aab^4\right)dx + \left(Ba^5 + 3\,Ba^3b^2 - 2\,Aa^2b^3 + \left(Ba^4b + 3\,Ba^2b^3 - 2\,Aab^4\right)\tan\left(dx + c\right.\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] 1/2*(2*B*a^3*b^2 - 2*A*a^2*b^3 - 2*(A*a^3*b^2 + 2*B*a^2*b^3 - A*a*b^4)*d*x
+ (B*a^5 + 3*B*a^3*b^2 - 2*A*a^2*b^3 + (B*a^4*b + 3*B*a^2*b^3 - 2*A*a*b^4)*
tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x
+ c)^2 + 1)) - (B*a^5 + 2*B*a^3*b^2 + B*a*b^4 + (B*a^4*b + 2*B*a^2*b^3 + B*
b^5)*tan(d*x + c))*log(1/(tan(d*x + c)^2 + 1)) - 2*(B*a^4*b - A*a^3*b^2 + (
A*a^2*b^3 + 2*B*a*b^4 - A*b^5)*d*x)*tan(d*x + c))/((a^4*b^3 + 2*a^2*b^5 + b
^7)*d*tan(d*x + c) + (a^5*b^2 + 2*a^3*b^4 + a*b^6)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.44776, size = 329, normalized size = 2.1

$$-\frac{\frac{2\left(Aa^2+2\,Bab-Ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}+\frac{\left(Ba^2-2\,Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(Ba^4+3\,Ba^2b^2-2\,Aab^3\right)\log(|b\tan(dx+c)+a|)}{a^4b^2+2\,a^2b^4+b^6}+\frac{2\left(Ba^4\tan(dx+c)+3\,Ba^2b^2\tan(\cdots\right.}{\left(a^4b+2\,a^2\cdots\right.}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(A*a^2 + 2*B*a*b - A*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) + (B*a^
2 - 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) - 2*(B
*a^4 + 3*B*a^2*b^2 - 2*A*a*b^3)*log(abs(b*tan(d*x + c) + a))/(a^4*b^2 + 2*a
^2*b^4 + b^6) + 2*(B*a^4*tan(d*x + c) + 3*B*a^2*b^2*tan(d*x + c) - 2*A*a*b^
3*tan(d*x + c) + A*a^4 + 2*B*a^3*b - A*a^2*b^2)/((a^4*b + 2*a^2*b^3 + b^5)*
(b*tan(d*x + c) + a)))/d
```

3.277 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=115

$$\frac{a(Ab-aB)}{bd\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{\left(a^2A+2abB-Ab^2\right)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{x\left(a^2(-B)+2aAb+b^2B\right)}{\left(a^2+b^2\right)^2}$$

```
[Out] ((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2 - ((a^2*A - A*b^2 + 2*a*b*B)*Lo
g[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2)^2*d) + (a*(A*b - a*B))/(b*
(a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.159216, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {3591, 3531, 3530}

$$\frac{a(Ab-aB)}{bd\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{\left(a^2A+2abB-Ab^2\right)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{x\left(a^2(-B)+2aAb+b^2B\right)}{\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] ((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2 - ((a^2*A - A*b^2 + 2*a*b*B)*Lo
g[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2)^2*d) + (a*(A*b - a*B))/(b*
(a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
```

```
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{Ab-aB+(aA+bB)\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} + \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{\left(a^2A-Ab^2+2ab\right.}{\left(a^2\right.}$$

$$= \frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} - \frac{\left(a^2A-Ab^2+2abB\right)\log(a\cos(c+dx)+b\sin(c+dx}{\left(a^2+b^2\right)^2 d}$$

Mathematica [C] time = 1.96514, size = 140, normalized size = 1.22

$$\frac{\frac{2\left(\left(a^2(-A)-2abB+Ab^2\right)\log(a+b\tan(c+dx))-\frac{a\left(a^2+b^2\right)(aB-Ab)}{b(a+b\tan(c+dx))}\right)}{\left(a^2+b^2\right)^2} + \frac{(A+iB)\log(-\tan(c+dx)+i)}{(a+ib)^2} + \frac{(A-iB)\log(\tan(c+dx)+i)}{(a-ib)^2}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (((A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b)^2 + ((A - I*B)*Log[I + Tan[c +
 d*x]])/(a - I*b)^2 + (2*((-(a^2*A) + A*b^2 - 2*a*b*B)*Log[a + b*Tan[c + d*
x]] - (a*(a^2 + b^2)*(-(A*b) + a*B))/(b*(a + b*Tan[c + d*x]))))/(a^2 + b^2)
^2)/(2*d)
```

Maple [B] time = 0.04, size = 305, normalized size = 2.7

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)a^2A}{2d\left(a^2+b^2\right)^2}-\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab^2}{2d\left(a^2+b^2\right)^2}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Bab}{d\left(a^2+b^2\right)^2}+2\frac{A\arctan(\tan(dx+c))ab}{d\left(a^2+b^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*a^2*A-1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c
)^2)*A*b^2+1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*B*a*b+2/d/(a^2+b^2)^2*A*arcta
n(tan(d*x+c))*a*b-1/d/(a^2+b^2)^2*B*arctan(tan(d*x+c))*a^2+1/d/(a^2+b^2)^2*
B*arctan(tan(d*x+c))*b^2+1/d*a/(a^2+b^2)/(a+b*tan(d*x+c))*A-1/d*a^2/(a^2+b^
2)/b/(a+b*tan(d*x+c))*B-1/d*a^2/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A+1/d/(a^2+b
^2)^2*ln(a+b*tan(d*x+c))*A*b^2-2/d/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*B*a*b
```

Maxima [A] time = 1.47768, size = 250, normalized size = 2.17

$$-\frac{\frac{2\left(Ba^2-2Aab-Bb^2\right)(dx+c)}{a^4+2a^2b^2+b^4}+\frac{2\left(Aa^2+2Bab-Ab^2\right)\log(b\tan(dx+c)+a)}{a^4+2a^2b^2+b^4}-\frac{\left(Aa^2+2Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2a^2b^2+b^4}+\frac{2\left(Ba^2-Aab\right)}{a^3b+ab^3+\left(a^2b^2+b^4\right)\tan(dx+c)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="maxi
ma")
```

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

Fricas [A] time = 1.74224, size = 490, normalized size = 4.26

$$-\frac{2Ba^2b-2Aab^2+2\left(Ba^3-2Aa^2b-Bab^2\right)dx+\left(Aa^3+2Ba^2b-Aab^2+\left(Aa^2b+2Bab^2-Ab^3\right)\tan(dx+c)\right)\log\left(\frac{b^2\tan\ldots}{\ldots}\right.}{2\left(\left(a^4b+2a^2b^3+b^5\right)d\tan(dx+c)+\left(a^5+2a^3\ldots\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fric
as")
```

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

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.236, size = 325, normalized size = 2.83

$$-\frac{\frac{2\left(Ba^{2}-2\,Aab-Bb^{2}\right)(dx+c)}{a^{4}+2\,a^{2}b^{2}+b^{4}}-\frac{\left(Aa^{2}+2\,Bab-Ab^{2}\right)\log\left(\tan(dx+c)^{2}+1\right)}{a^{4}+2\,a^{2}b^{2}+b^{4}}+\frac{2\left(Aa^{2}b+2\,Bab^{2}-Ab^{3}\right)\log(|b\tan(dx+c)+a|)}{a^{4}b+2\,a^{2}b^{3}+b^{5}}-\frac{2\left(Aa^{2}b^{2}\tan(dx+c)+2\,Bab^{3}\tan(d\cdots\right.}{\left(a^{4}b+2\,a^{2}b^{3}\cdots\right.}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - (A*a^
2 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) + 2*(A
*a^2*b + 2*B*a*b^2 - A*b^3)*log(abs(b*tan(d*x + c) + a))/(a^4*b + 2*a^2*b^3
 + b^5) - 2*(A*a^2*b^2*tan(d*x + c) + 2*B*a*b^3*tan(d*x + c) - A*b^4*tan(d*
x + c) - B*a^4 + 2*A*a^3*b + B*a^2*b^2)/((a^4*b + 2*a^2*b^3 + b^5)*(b*tan(d
*x + c) + a)))/d
```

3.278 $\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=111

$$-\frac{Ab-aB}{d\left(a^2+b^2\right)(a+b\tan(c+dx))}+\frac{\left(a^2(-B)+2aAb+b^2B\right)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{x\left(a^2A+2abB-Ab^2\right)}{\left(a^2+b^2\right)^2}$$

```
[Out] ((a^2*A - A*b^2 + 2*a*b*B)*x)/(a^2 + b^2)^2 + ((2*a*A*b - a^2*B + b^2*B)*Lo
g[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2)^2*d) - (A*b - a*B)/((a^2 +
 b^2)*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.136639, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3529, 3531, 3530}

$$-\frac{Ab-aB}{d\left(a^2+b^2\right)(a+b\tan(c+dx))}+\frac{\left(a^2(-B)+2aAb+b^2B\right)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)^2}+\frac{x\left(a^2A+2abB-Ab^2\right)}{\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] ((a^2*A - A*b^2 + 2*a*b*B)*x)/(a^2 + b^2)^2 + ((2*a*A*b - a^2*B + b^2*B)*Lo
g[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2)^2*d) - (A*b - a*B)/((a^2 +
 b^2)*d*(a + b*Tan[c + d*x]))
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
```

```
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^2}\,dx = -\frac{Ab-aB}{\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{aA+bB-(Ab-aB)\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2+b^2}$$

$$= \frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} - \frac{Ab-aB}{\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\left(2aAb-a^2B+b^2B\right)\int \frac{b-a\tan(c+}{a+b\tan(c+}}{\left(a^2+b^2\right)^2}$$

$$= \frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} + \frac{\left(2aAb-a^2B+b^2B\right)\log(a\cos(c+dx)+b\sin(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{}{\left(a^2+b\right.}$$

Mathematica [C] time = 1.84137, size = 190, normalized size = 1.71

$$\frac{\frac{B((-b-ia)\log(-\tan(c+dx)+i)+i(a+ib)\log(\tan(c+dx)+i)+2b\log(a+b\tan(c+dx)))}{a^2+b^2} - (Ab-aB)\left(\frac{2b\left(\frac{a^2+b^2}{a+b\tan(c+dx)}-2a\log(a+b\tan(c+dx))\right)}{\left(a^2+b^2\right)^2} + \frac{i\log(-\tan}{(a+i}\right.}{2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] ((B*(((-I)*a - b)*Log[I - Tan[c + d*x]] + I*(a + I*b)*Log[I + Tan[c + d*x]]
 + 2*b*Log[a + b*Tan[c + d*x]]))/(a^2 + b^2) - (A*b - a*B)*((I*Log[I - Tan[
c + d*x]])/(a + I*b)^2 - (I*Log[I + Tan[c + d*x]])/(a - I*b)^2 + (2*b*(-2*a
*Log[a + b*Tan[c + d*x]] + (a^2 + b^2)/(a + b*Tan[c + d*x])))/(a^2 + b^2)^2
))/(2*b*d)
```

Maple [B] time = 0.04, size = 301, normalized size = 2.7

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)Aab}{d\left(a^2+b^2\right)^2}+\frac{\ln\left(1+(\tan(dx+c))^2\right)a^2B}{2d\left(a^2+b^2\right)^2}-\frac{\ln\left(1+(\tan(dx+c))^2\right)b^2B}{2d\left(a^2+b^2\right)^2}+\frac{A\arctan(\tan(dx+c))a^2}{d\left(a^2+b^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*A*a*b+1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)
^2)*a^2*B-1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*b^2*B+1/d/(a^2+b^2)^2*A*arct
an(tan(d*x+c))*a^2-1/d/(a^2+b^2)^2*A*arctan(tan(d*x+c))*b^2+2/d/(a^2+b^2)^2
*B*arctan(tan(d*x+c))*a*b-1/d/(a^2+b^2)/(a+b*tan(d*x+c))*A*b+1/d/(a^2+b^2)/
(a+b*tan(d*x+c))*a*B+2/d*a/(a^2+b^2)^2*b*ln(a+b*tan(d*x+c))*A-1/d*a^2/(a^2+
b^2)^2*ln(a+b*tan(d*x+c))*B+1/d/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*b^2*B
```

Maxima [A] time = 1.52135, size = 239, normalized size = 2.15

$$\frac{\frac{2\left(Aa^2+2\,Bab-Ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(Ba^2-2\,Aab-Bb^2\right)\log(b\tan(dx+c)+a)}{a^4+2\,a^2b^2+b^4}+\frac{\left(Ba^2-2\,Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}+\frac{2\,(Ba-Ab)}{a^3+ab^2+\left(a^2b+b^3\right)\tan(dx+c)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="maxima")
```

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

Fricas [A] time = 1.70246, size = 489, normalized size = 4.41

$$\frac{2\,Bab^2-2\,Ab^3+2\left(Aa^3+2\,Ba^2b-Aab^2\right)dx-\left(Ba^3-2\,Aa^2b-Bab^2+\left(Ba^2b-2\,Aab^2-Bb^3\right)\tan(dx+c)\right)\log\left(\frac{b^2\tan(d}{}\right.}{2\left(\left(a^4b+2\,a^2b^3+b^5\right)d\tan(dx+c)+\left(a^5+2\,a^3b^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*B*a*b^2 - 2*A*b^3 + 2*(A*a^3 + 2*B*a^2*b - A*a*b^2)*d*x - (B*a^3 - 2
*A*a^2*b - B*a*b^2 + (B*a^2*b - 2*A*a*b^2 - B*b^3)*tan(d*x + c))*log((b^2*t
an(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) - 2*(B*a^2*
b - A*a*b^2 - (A*a^2*b + 2*B*a*b^2 - A*b^3)*d*x)*tan(d*x + c))/((a^4*b + 2*
a^2*b^3 + b^5)*d*tan(d*x + c) + (a^5 + 2*a^3*b^2 + a*b^4)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.27155, size = 316, normalized size = 2.85

$$\frac{\frac{2\left(Aa^2+2\,Bab-Ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}+\frac{\left(Ba^2-2\,Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(Ba^2b-2\,Aab^2-Bb^3\right)\log(|b\tan(dx+c)+a|)}{a^4b+2\,a^2b^3+b^5}+\frac{2\left(Ba^2b\tan(dx+c)-2\,Aab^2\tan(dx+c)\right.}{\left(a^4+2\,a^2b^2+b^4\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(A*a^2 + 2*B*a*b - A*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) + (B*a^2
 - 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) - 2*(B*
a^2*b - 2*A*a*b^2 - B*b^3)*log(abs(b*tan(d*x + c) + a))/(a^4*b + 2*a^2*b^3
+ b^5) + 2*(B*a^2*b*tan(d*x + c) - 2*A*a*b^2*tan(d*x + c) - B*b^3*tan(d*x +
 c) + 2*B*a^3 - 3*A*a^2*b - A*b^3)/((a^4 + 2*a^2*b^2 + b^4)*(b*tan(d*x + c)
 + a)))/d
```

3.279 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=137

$$\frac{b(Ab-aB)}{ad\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{b\left(3a^2Ab-2a^3B+Ab^3\right)\log(a\cos(c+dx)+b\sin(c+dx))}{a^2d\left(a^2+b^2\right)^2}-\frac{x\left(a^2(-B)+2aAb+b^2B\right)}{\left(a^2+b^2\right)^2}$$

```
[Out] -(((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2) + (A*Log[Sin[c + d*x]])/(a^2
*d) - (b*(3*a^2*A*b + A*b^3 - 2*a^3*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]]
)/(a^2*(a^2 + b^2)^2*d) + (b*(A*b - a*B))/(a*(a^2 + b^2)*d*(a + b*Tan[c + d
*x]))
```

Rubi [A] time = 0.31891, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3609, 3651, 3530, 3475}

$$\frac{b(Ab-aB)}{ad\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{b\left(3a^2Ab-2a^3B+Ab^3\right)\log(a\cos(c+dx)+b\sin(c+dx))}{a^2d\left(a^2+b^2\right)^2}-\frac{x\left(a^2(-B)+2aAb+b^2B\right)}{\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] -(((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2) + (A*Log[Sin[c + d*x]])/(a^2
*d) - (b*(3*a^2*A*b + A*b^3 - 2*a^3*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]]
)/(a^2*(a^2 + b^2)^2*d) + (b*(A*b - a*B))/(a*(a^2 + b^2)*d*(a + b*Tan[c + d
*x]))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
```

```
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{\cot(c+dx)\left(A\left(a^2+b^2\right)-a(Ab-aB)\tan(c+dx)+b(Ab-aB)}{a+b\tan(c+dx)}}{a\left(a^2+b^2\right)}$$

$$= -\frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} + \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{A\int \cot(c+dx)}{a^2}$$

$$= -\frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} + \frac{A\log(\sin(c+dx))}{a^2d} - \frac{b\left(3a^2Ab+Ab^3-2a^3B\right)\log(}{a^2\left(a^2+\right.}$$

Mathematica [C] time = 0.788527, size = 183, normalized size = 1.34

$$\frac{\frac{b\left(-3a^2Ab+2a^3B-Ab^3\right)\log(a+b\tan(c+dx))}{a\left(a^2+b^2\right)} + \frac{A\left(a^2+b^2\right)\log(\tan(c+dx))}{a} + \frac{b(Ab-aB)}{a+b\tan(c+dx)} - \frac{a(a-ib)(A+iB)\log(-\tan(c+dx)+i)}{2(a+ib)} - \frac{a(a+ib)(A-iB)\log(\tan}{2(a-ib)}}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (-(a*(a - I*b)*(A + I*B)*Log[I - Tan[c + d*x]])/(2*(a + I*b)) + (A*(a^2 + b
^2)*Log[Tan[c + d*x]])/a - (a*(a + I*b)*(A - I*B)*Log[I + Tan[c + d*x]])/(2
*(a - I*b)) + (b*(-3*a^2*A*b - A*b^3 + 2*a^3*B)*Log[a + b*Tan[c + d*x]])/(a
*(a^2 + b^2)) + (b*(A*b - a*B))/(a + b*Tan[c + d*x]))/(a*(a^2 + b^2)*d)
```

Maple [B] time = 0.126, size = 325, normalized size = 2.4

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)a^2A}{2d\left(a^2+b^2\right)^2}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab^2}{2d\left(a^2+b^2\right)^2}-\frac{\ln\left(1+(\tan(dx+c))^2\right)Bab}{d\left(a^2+b^2\right)^2}-2\frac{A\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*a^2*A+1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+
c)^2)*A*b^2-1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*B*a*b-2/d/(a^2+b^2)^2*A*arct
an(tan(d*x+c))*a*b+1/d/(a^2+b^2)^2*B*arctan(tan(d*x+c))*a^2-1/d/(a^2+b^2)^2
*B*arctan(tan(d*x+c))*b^2+1/d/a^2*A*ln(tan(d*x+c))-3/d/(a^2+b^2)^2*ln(a+b*t
an(d*x+c))*A*b^2-1/d*b^4/a^2/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A+2/d/(a^2+b^2)
^2*ln(a+b*tan(d*x+c))*B*a*b+1/d*b^2/a/(a^2+b^2)/(a+b*tan(d*x+c))*A-1/d*b/(a
^2+b^2)/(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.49221, size = 281, normalized size = 2.05

$$\frac{\frac{2\left(Ba^2-2Aab-Bb^2\right)(dx+c)}{a^4+2a^2b^2+b^4}+\frac{2\left(2Ba^3b-3Aa^2b^2-Ab^4\right)\log(b\tan(dx+c)+a)}{a^6+2a^4b^2+a^2b^4}-\frac{\left(Aa^2+2Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2a^2b^2+b^4}-\frac{2\left(Bab-Ab^2\right)}{a^4+a^2b^2+\left(a^3b+ab^3\right)\tan(dx+c)}+2}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="maxi
ma")
```

```
[Out] 1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) + 2*(2*B
*a^3*b - 3*A*a^2*b^2 - A*b^4)*log(b*tan(d*x + c) + a)/(a^6 + 2*a^4*b^2 + a^
```

```
2*b^4) - (A*a^2 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2
 + b^4) - 2*(B*a*b - A*b^2)/(a^4 + a^2*b^2 + (a^3*b + a*b^3)*tan(d*x + c))
+ 2*A*log(tan(d*x + c))/a^2)/d
```

Fricas [B] time = 2.07281, size = 701, normalized size = 5.12

$$-\frac{2\,Ba^2b^3 - 2\,Aab^4 - 2\left(Ba^5 - 2\,Aa^4b - Ba^3b^2\right)dx - \left(Aa^5 + 2\,Aa^3b^2 + Aab^4 + \left(Aa^4b + 2\,Aa^2b^3 + Ab^5\right)\tan\left(dx + c\right)\right)\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fric
as")
```

```
[Out] -1/2*(2*B*a^2*b^3 - 2*A*a*b^4 - 2*(B*a^5 - 2*A*a^4*b - B*a^3*b^2)*d*x - (A*
a^5 + 2*A*a^3*b^2 + A*a*b^4 + (A*a^4*b + 2*A*a^2*b^3 + A*b^5)*tan(d*x + c))
*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1)) - (2*B*a^4*b - 3*A*a^3*b^2 - A*a*
b^4 + (2*B*a^3*b^2 - 3*A*a^2*b^3 - A*b^5)*tan(d*x + c))*log((b^2*tan(d*x +
c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) - 2*(B*a^3*b^2 - A*a
^2*b^3 + (B*a^4*b - 2*A*a^3*b^2 - B*a^2*b^3)*d*x)*tan(d*x + c))/((a^6*b + 2
*a^4*b^3 + a^2*b^5)*d*tan(d*x + c) + (a^7 + 2*a^5*b^2 + a^3*b^4)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.26438, size = 377, normalized size = 2.75

$$\frac{\frac{2\left(Ba^2 - 2\,Aab - Bb^2\right)(dx+c)}{a^4 + 2\,a^2b^2 + b^4} - \frac{\left(Aa^2 + 2\,Bab - Ab^2\right)\log\left(\tan(dx+c)^2 + 1\right)}{a^4 + 2\,a^2b^2 + b^4} + \frac{2\left(2\,Ba^3b^2 - 3\,Aa^2b^3 - Ab^5\right)\log(|b\tan(dx+c) + a|)}{a^6b + 2\,a^4b^3 + a^2b^5} + \frac{2\,A\log(|\tan(dx+c)|)}{a^2} - \frac{2\left(2\,Ba^3\right.}{}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - (A*a^2
 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) + 2*(2*
B*a^3*b^2 - 3*A*a^2*b^3 - A*b^5)*log(abs(b*tan(d*x + c) + a))/(a^6*b + 2*a^
4*b^3 + a^2*b^5) + 2*A*log(abs(tan(d*x + c)))/a^2 - 2*(2*B*a^3*b^2*tan(d*x
+ c) - 3*A*a^2*b^3*tan(d*x + c) - A*b^5*tan(d*x + c) + 3*B*a^4*b - 4*A*a^3*
b^2 + B*a^2*b^3 - 2*A*a*b^4)/((a^6 + 2*a^4*b^2 + a^2*b^4)*(b*tan(d*x + c) +
 a)))/d
```

3.280 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=192

$$-\frac{b\left(a^2A-abB+2Ab^2\right)}{a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))}+\frac{b^2\left(4a^2Ab-3a^3B-ab^2B+2Ab^3\right)\log(a\cos(c+dx)+b\sin(c+dx))}{a^3d\left(a^2+b^2\right)^2}-\frac{x\left(a^2A+2\right.}{\left(a^2-\right.}$$

```
[Out] -(((a^2*A - A*b^2 + 2*a*b*B)*x)/(a^2 + b^2)^2) - ((2*A*b - a*B)*Log[Sin[c +
 d*x]])/(a^3*d) + (b^2*(4*a^2*A*b + 2*A*b^3 - 3*a^3*B - a*b^2*B)*Log[a*Cos[
c + d*x] + b*Sin[c + d*x]])/(a^3*(a^2 + b^2)^2*d) - (b*(a^2*A + 2*A*b^2 - a
*b*B))/(a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])) - (A*Cot[c + d*x])/(a*d*(a
+ b*Tan[c + d*x]))
```

Rubi [A] time = 0.541117, antiderivative size = 192, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$-\frac{b\left(a^2A-abB+2Ab^2\right)}{a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))}+\frac{b^2\left(4a^2Ab-3a^3B-ab^2B+2Ab^3\right)\log(a\cos(c+dx)+b\sin(c+dx))}{a^3d\left(a^2+b^2\right)^2}-\frac{x\left(a^2A+2\right.}{\left(a^2-\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] -(((a^2*A - A*b^2 + 2*a*b*B)*x)/(a^2 + b^2)^2) - ((2*A*b - a*B)*Log[Sin[c +
 d*x]])/(a^3*d) + (b^2*(4*a^2*A*b + 2*A*b^3 - 3*a^3*B - a*b^2*B)*Log[a*Cos[
c + d*x] + b*Sin[c + d*x]])/(a^3*(a^2 + b^2)^2*d) - (b*(a^2*A + 2*A*b^2 - a
*b*B))/(a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])) - (A*Cot[c + d*x])/(a*d*(a
+ b*Tan[c + d*x]))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
```

```
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) && !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] && !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = -\frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))} - \frac{\int \frac{\cot(c+dx)\left(2Ab-aB+aA\tan(c+dx)+2Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^2}dx}{a}$$

$$= -\frac{b\left(a^2A+2Ab^2-abB\right)}{a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))} - \int \frac{\cot(c+dx)\left(\left(a^2+b^2\right.\right.}{}$$

$$= -\frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} - \frac{b\left(a^2A+2Ab^2-abB\right)}{a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{A\cot(c+}{ad(a+b\tan(c}$$

$$= -\frac{\left(a^2A-Ab^2+2abB\right)x}{\left(a^2+b^2\right)^2} - \frac{(2Ab-aB)\log(\sin(c+dx))}{a^3d} + \frac{b^2\left(4a^2Ab+2Ab^3\right.}{}$$

Mathematica [C] time = 3.27862, size = 193, normalized size = 1.01

$$\frac{\frac{2b^2(aB-Ab)}{a^2\left(a^2+b^2\right)(a+b\tan(c+dx))} - \frac{2b^2\left(-4a^2Ab+3a^3B+ab^2B-2Ab^3\right)\log(a+b\tan(c+dx))}{a^3\left(a^2+b^2\right)^2} + \frac{2(aB-2Ab)\log(\tan(c+dx))}{a^3} - \frac{2A\cot(c+dx)}{a^2} + \frac{i(A+iB)\log(-\tan(c}{(a+ib)^2}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] ((-2*A*Cot[c + d*x])/a^2 + (I*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b)^2
+ (2*(-2*A*b + a*B)*Log[Tan[c + d*x]])/a^3 - ((I*A + B)*Log[I + Tan[c + d*x
]])/(a - I*b)^2 - (2*b^2*(-4*a^2*A*b - 2*A*b^3 + 3*a^3*B + a*b^2*B)*Log[a +
 b*Tan[c + d*x]])/(a^3*(a^2 + b^2)^2) + (2*b^2*(-(A*b) + a*B))/(a^2*(a^2 +
b^2)*(a + b*Tan[c + d*x])))/(2*d)
```

Maple [B] time = 0.124, size = 399, normalized size = 2.1

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Aab}{d\left(a^2+b^2\right)^2} - \frac{\ln\left(1+(\tan(dx+c))^2\right)a^2B}{2d\left(a^2+b^2\right)^2} + \frac{\ln\left(1+(\tan(dx+c))^2\right)b^2B}{2d\left(a^2+b^2\right)^2} - \frac{A\arctan(\tan(dx+c))a^2}{d\left(a^2+b^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*A*a*b-1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^
2)*a^2*B+1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*b^2*B-1/d/(a^2+b^2)^2*A*arcta
n(tan(d*x+c))*a^2+1/d/(a^2+b^2)^2*A*arctan(tan(d*x+c))*b^2-2/d/(a^2+b^2)^2*
B*arctan(tan(d*x+c))*a*b-1/d/a^2*A/tan(d*x+c)-2/d/a^3*ln(tan(d*x+c))*A*b+1/
d/a^2*B*ln(tan(d*x+c))+4/d*b^3/a/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A+2/d*b^5/a
^3/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A-3/d/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*b^2*
B-1/d*b^4/a^2/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*B-1/d*b^3/a^2/(a^2+b^2)/(a+b*t
an(d*x+c))*A+1/d*b^2/a/(a^2+b^2)/(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.6046, size = 354, normalized size = 1.84

$$-\frac{\frac{2\left(Aa^2+2\,Bab-Ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}+\frac{2\left(3\,Ba^3b^2-4\,Aa^2b^3+Bab^4-2\,Ab^5\right)\log(b\tan(dx+c)+a)}{a^7+2\,a^5b^2+a^3b^4}+\frac{\left(Ba^2-2\,Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}+\frac{2\left(Aa^3+Aab^2+\left(Aa^2b-Bab\right.\right.}{\left(a^4b+a^2b^3\right)\tan(dx+c)^2+}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(A*a^2 + 2*B*a*b - A*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) + 2*(3*
B*a^3*b^2 - 4*A*a^2*b^3 + B*a*b^4 - 2*A*b^5)*log(b*tan(d*x + c) + a)/(a^7 +
 2*a^5*b^2 + a^3*b^4) + (B*a^2 - 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1)/(
a^4 + 2*a^2*b^2 + b^4) + 2*(A*a^3 + A*a*b^2 + (A*a^2*b - B*a*b^2 + 2*A*b^3)
*tan(d*x + c))/((a^4*b + a^2*b^3)*tan(d*x + c)^2 + (a^5 + a^3*b^2)*tan(d*x
+ c)) - 2*(B*a - 2*A*b)*log(tan(d*x + c))/a^3)/d
```

Fricas [B] time = 2.39417, size = 1017, normalized size = 5.3

$$-\frac{2\,Aa^6+4\,Aa^4b^2+2\,Aa^2b^4+2\left(Ba^3b^3-Aa^2b^4+\left(Aa^5b+2\,Ba^4b^2-Aa^3b^3\right)dx\right)\tan\left(dx+c\right)^2-\left(\left(Ba^5b-2\,Aa^4b^2+2\,B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] -1/2*(2*A*a^6 + 4*A*a^4*b^2 + 2*A*a^2*b^4 + 2*(B*a^3*b^3 - A*a^2*b^4 + (A*a
^5*b + 2*B*a^4*b^2 - A*a^3*b^3)*d*x)*tan(d*x + c)^2 - ((B*a^5*b - 2*A*a^4*b
```

```
^2 + 2*B*a^3*b^3 - 4*A*a^2*b^4 + B*a*b^5 - 2*A*b^6)*tan(d*x + c)^2 + (B*a^6
 - 2*A*a^5*b + 2*B*a^4*b^2 - 4*A*a^3*b^3 + B*a^2*b^4 - 2*A*a*b^5)*tan(d*x +
 c))*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1)) + ((3*B*a^3*b^3 - 4*A*a^2*b^4
 + B*a*b^5 - 2*A*b^6)*tan(d*x + c)^2 + (3*B*a^4*b^2 - 4*A*a^3*b^3 + B*a^2*b
^4 - 2*A*a*b^5)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c)
+ a^2)/(tan(d*x + c)^2 + 1)) + 2*(A*a^5*b + 2*A*a^3*b^3 - B*a^2*b^4 + 2*A*a
*b^5 + (A*a^6 + 2*B*a^5*b - A*a^4*b^2)*d*x)*tan(d*x + c))/((a^7*b + 2*a^5*b
^3 + a^3*b^5)*d*tan(d*x + c)^2 + (a^8 + 2*a^6*b^2 + a^4*b^4)*d*tan(d*x + c)
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.28134, size = 489, normalized size = 2.55

$$-\frac{\frac{2\left(Aa^2+2\,Bab-Ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}+\frac{\left(Ba^2-2\,Aab-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}+\frac{2\left(3\,Ba^3b^3-4\,Aa^2b^4+Bab^5-2\,Ab^6\right)\log(|b\tan(dx+c)+a|)}{a^7b+2\,a^5b^3+a^3b^5}+\frac{Ba^4b\tan(dx+c)^2-2\,Aa\cdots}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(A*a^2 + 2*B*a*b - A*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) + (B*a^
2 - 2*A*a*b - B*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) + 2*(3
*B*a^3*b^3 - 4*A*a^2*b^4 + B*a*b^5 - 2*A*b^6)*log(abs(b*tan(d*x + c) + a))/
(a^7*b + 2*a^5*b^3 + a^3*b^5) + (B*a^4*b*tan(d*x + c)^2 - 2*A*a^3*b^2*tan(d
*x + c)^2 - B*a^2*b^3*tan(d*x + c)^2 + B*a^5*tan(d*x + c) - 3*B*a^3*b^2*tan
(d*x + c) + 6*A*a^2*b^3*tan(d*x + c) - 2*B*a*b^4*tan(d*x + c) + 4*A*b^5*tan
(d*x + c) + 2*A*a^5 + 4*A*a^3*b^2 + 2*A*a*b^4)/((a^6 + 2*a^4*b^2 + a^2*b^4)
*(b*tan(d*x + c)^2 + a*tan(d*x + c))) - 2*(B*a - 2*A*b)*log(abs(tan(d*x + c
)))/a^3)/d
```

3.281 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=250

$$\frac{b\left(2a^2Ab+a^3(-B)-2ab^2B+3Ab^3\right)}{a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{\left(a^2A+2abB-3Ab^2\right)\log(\sin(c+dx))}{a^4d}-\frac{b^3\left(5a^2Ab-4a^3B-2ab^2B+3Ab^3\right)\log}{a^4d\left(a^2+b^2\right.}$$

```
[Out] ((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2 - ((a^2*A - 3*A*b^2 + 2*a*b*B)*
Log[Sin[c + d*x]])/(a^4*d) - (b^3*(5*a^2*A*b + 3*A*b^3 - 4*a^3*B - 2*a*b^2*
B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^4*(a^2 + b^2)^2*d) + (b*(2*a^2*
A*b + 3*A*b^3 - a^3*B - 2*a*b^2*B))/(a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
) + ((3*A*b - 2*a*B)*Cot[c + d*x])/(2*a^2*d*(a + b*Tan[c + d*x])) - (A*Cot[
c + d*x]^2)/(2*a*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.859716, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$\frac{b\left(2a^2Ab+a^3(-B)-2ab^2B+3Ab^3\right)}{a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))}-\frac{\left(a^2A+2abB-3Ab^2\right)\log(\sin(c+dx))}{a^4d}-\frac{b^3\left(5a^2Ab-4a^3B-2ab^2B+3Ab^3\right)\log}{a^4d\left(a^2+b^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] ((2*a*A*b - a^2*B + b^2*B)*x)/(a^2 + b^2)^2 - ((a^2*A - 3*A*b^2 + 2*a*b*B)*
Log[Sin[c + d*x]])/(a^4*d) - (b^3*(5*a^2*A*b + 3*A*b^3 - 4*a^3*B - 2*a*b^2*
B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^4*(a^2 + b^2)^2*d) + (b*(2*a^2*
A*b + 3*A*b^3 - a^3*B - 2*a*b^2*B))/(a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
) + ((3*A*b - 2*a*B)*Cot[c + d*x])/(2*a^2*d*(a + b*Tan[c + d*x])) - (A*Cot[
c + d*x]^2)/(2*a*d*(a + b*Tan[c + d*x]))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
```

```
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = -\frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))} - \frac{\int \frac{\cot^2(c+dx)\left(3Ab-2aB+2aA\tan(c+dx)+3Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^2}dx}{2a}$$

$$= \frac{(3Ab-2aB)\cot(c+dx)}{2a^2d(a+b\tan(c+dx))} - \frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))} + \frac{\int \frac{\cot(c+dx)\left(-2\left(a^2A-3Ab^2+2ab\right.\right.}{}}{}$$

$$= \frac{b\left(2a^2Ab+3Ab^3-a^3B-2ab^2B\right)}{a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{(3Ab-2aB)\cot(c+dx)}{2a^2d(a+b\tan(c+dx))} - \frac{A\cot^2(c+}{2ad(a+b\tan(}$$

$$= \frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} + \frac{b\left(2a^2Ab+3Ab^3-a^3B-2ab^2B\right)}{a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{(3Ab-2aB)\cot(}{2a^2d(a+b\tan(c}$$

$$= \frac{\left(2aAb-a^2B+b^2B\right)x}{\left(a^2+b^2\right)^2} - \frac{\left(a^2A-3Ab^2+2abB\right)\log(\sin(c+dx))}{a^4d} - \frac{b^3\left(5a^2Ab+\right.}{}$$

Mathematica [C] time = 4.33774, size = 220, normalized size = 0.88

$$\frac{\frac{2b^3(Ab-aB)}{a^3\left(a^2+b^2\right)(a+b\tan(c+dx))} + \frac{2b^3\left(-5a^2Ab+4a^3B+2ab^2B-3Ab^3\right)\log(a+b\tan(c+dx))}{a^4\left(a^2+b^2\right)^2} - \frac{2\left(a^2A+2abB-3Ab^2\right)\log(\tan(c+dx))}{a^4} - \frac{2(aB-2Ab)\cot(c+dx)}{a^3} - \frac{A\,\mathrm{co}}{}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] ((-2*(-2*A*b + a*B)*Cot[c + d*x])/a^3 - (A*Cot[c + d*x]^2)/a^2 + ((A + I*B)
*Log[I - Tan[c + d*x]])/(a + I*b)^2 - (2*(a^2*A - 3*A*b^2 + 2*a*b*B)*Log[Ta
n[c + d*x]])/a^4 + ((A - I*B)*Log[I + Tan[c + d*x]])/(a - I*b)^2 + (2*b^3*(
-5*a^2*A*b - 3*A*b^3 + 4*a^3*B + 2*a*b^2*B)*Log[a + b*Tan[c + d*x]])/(a^4*(
a^2 + b^2)^2) + (2*b^3*(A*b - a*B))/(a^3*(a^2 + b^2)*(a + b*Tan[c + d*x])))
/(2*d)
```

Maple [A] time = 0.15, size = 457, normalized size = 1.8

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)a^2A}{2d\left(a^2+b^2\right)^2} - \frac{\ln\left(1+(\tan(dx+c))^2\right)Ab^2}{2d\left(a^2+b^2\right)^2} + \frac{\ln\left(1+(\tan(dx+c))^2\right)Bab}{d\left(a^2+b^2\right)^2} + 2\frac{A\arctan(\tan(dx+c))\,ab}{d\left(a^2+b^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*a^2*A-1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c
)^2)*A*b^2+1/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*B*a*b+2/d/(a^2+b^2)^2*A*arcta
n(tan(d*x+c))*a*b-1/d/(a^2+b^2)^2*B*arctan(tan(d*x+c))*a^2+1/d/(a^2+b^2)^2*
B*arctan(tan(d*x+c))*b^2-1/2/d/a^2*A/tan(d*x+c)^2+2/d/a^3/tan(d*x+c)*A*b-1/
d/a^2/tan(d*x+c)*B-1/d/a^2*A*ln(tan(d*x+c))+3/d/a^4*ln(tan(d*x+c))*A*b^2-2/
d/a^3*ln(tan(d*x+c))*B*b-5/d*b^4/a^2/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A-3/d*b
^6/a^4/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*A+4/d*b^3/a/(a^2+b^2)^2*ln(a+b*tan(d*
x+c))*B+2/d*b^5/a^3/(a^2+b^2)^2*ln(a+b*tan(d*x+c))*B+1/d*b^4/a^3/(a^2+b^2)/
(a+b*tan(d*x+c))*A-1/d*b^3/a^2/(a^2+b^2)/(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.57438, size = 439, normalized size = 1.76

$$-\frac{\frac{2\left(Ba^2-2\,Aab-Bb^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(4\,Ba^3b^3-5\,Aa^2b^4+2\,Bab^5-3\,Ab^6\right)\log(b\tan(dx+c)+a)}{a^8+2\,a^6b^2+a^4b^4}-\frac{\left(Aa^2+2\,Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}+\frac{Aa^4+Aa^2b^2+2\left(Ba^3b-\right.}{}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - 2*(4*
B*a^3*b^3 - 5*A*a^2*b^4 + 2*B*a*b^5 - 3*A*b^6)*log(b*tan(d*x + c) + a)/(a^8
 + 2*a^6*b^2 + a^4*b^4) - (A*a^2 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)
/(a^4 + 2*a^2*b^2 + b^4) + (A*a^4 + A*a^2*b^2 + 2*(B*a^3*b - 2*A*a^2*b^2 +
2*B*a*b^3 - 3*A*b^4)*tan(d*x + c)^2 + (2*B*a^4 - 3*A*a^3*b + 2*B*a^2*b^2 -
3*A*a*b^3)*tan(d*x + c))/((a^5*b + a^3*b^3)*tan(d*x + c)^3 + (a^6 + a^4*b^2
)*tan(d*x + c)^2) + 2*(A*a^2 + 2*B*a*b - 3*A*b^2)*log(tan(d*x + c))/a^4)/d
```

Fricas [B] time = 2.51781, size = 1283, normalized size = 5.13

$$-\frac{Aa^7+2\,Aa^5b^2+Aa^3b^4+\left(Aa^6b+2\,Aa^4b^3-2\,Ba^3b^4+3\,Aa^2b^5+2\left(Ba^6b-2\,Aa^5b^2-Ba^4b^3\right)dx\right)\tan\left(dx+c\right)^3+\left(A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] -1/2*(A*a^7 + 2*A*a^5*b^2 + A*a^3*b^4 + (A*a^6*b + 2*A*a^4*b^3 - 2*B*a^3*b^
4 + 3*A*a^2*b^5 + 2*(B*a^6*b - 2*A*a^5*b^2 - B*a^4*b^3)*d*x)*tan(d*x + c)^3
 + (A*a^7 + 2*B*a^6*b - 2*A*a^5*b^2 + 4*B*a^4*b^3 - 7*A*a^3*b^4 + 4*B*a^2*b
^5 - 6*A*a*b^6 + 2*(B*a^7 - 2*A*a^6*b - B*a^5*b^2)*d*x)*tan(d*x + c)^2 + ((
A*a^6*b + 2*B*a^5*b^2 - A*a^4*b^3 + 4*B*a^3*b^4 - 5*A*a^2*b^5 + 2*B*a*b^6 -
 3*A*b^7)*tan(d*x + c)^3 + (A*a^7 + 2*B*a^6*b - A*a^5*b^2 + 4*B*a^4*b^3 - 5
*A*a^3*b^4 + 2*B*a^2*b^5 - 3*A*a*b^6)*tan(d*x + c)^2)*log(tan(d*x + c)^2/(t
an(d*x + c)^2 + 1)) - ((4*B*a^3*b^4 - 5*A*a^2*b^5 + 2*B*a*b^6 - 3*A*b^7)*ta
n(d*x + c)^3 + (4*B*a^4*b^3 - 5*A*a^3*b^4 + 2*B*a^2*b^5 - 3*A*a*b^6)*tan(d*
x + c)^2)*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)
^2 + 1)) + (2*B*a^7 - 3*A*a^6*b + 4*B*a^5*b^2 - 6*A*a^4*b^3 + 2*B*a^3*b^4 -
 3*A*a^2*b^5)*tan(d*x + c))/((a^8*b + 2*a^6*b^3 + a^4*b^5)*d*tan(d*x + c)^3
 + (a^9 + 2*a^7*b^2 + a^5*b^4)*d*tan(d*x + c)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.33389, size = 543, normalized size = 2.17

$$-\frac{\frac{2\left(Ba^2-2\,Aab-Bb^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}-\frac{\left(Aa^2+2\,Bab-Ab^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(4\,Ba^3b^4-5\,Aa^2b^5+2\,Bab^6-3\,Ab^7\right)\log(|b\tan(dx+c)+a|)}{a^8b+2\,a^6b^3+a^4b^5}+\frac{2\left(4\,Ba^3b^4\tan(dx+c)-5 \cdots\right.}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(B*a^2 - 2*A*a*b - B*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - (A*a^
2 + 2*B*a*b - A*b^2)*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) - 2*(4
```

```
*B*a^3*b^4 - 5*A*a^2*b^5 + 2*B*a*b^6 - 3*A*b^7)*log(abs(b*tan(d*x + c) + a)
)/(a^8*b + 2*a^6*b^3 + a^4*b^5) + 2*(4*B*a^3*b^4*tan(d*x + c) - 5*A*a^2*b^5
*tan(d*x + c) + 2*B*a*b^6*tan(d*x + c) - 3*A*b^7*tan(d*x + c) + 5*B*a^4*b^3
 - 6*A*a^3*b^4 + 3*B*a^2*b^5 - 4*A*a*b^6)/((a^8 + 2*a^6*b^2 + a^4*b^4)*(b*t
an(d*x + c) + a)) + 2*(A*a^2 + 2*B*a*b - 3*A*b^2)*log(abs(tan(d*x + c)))/a^
4 - (3*A*a^2*tan(d*x + c)^2 + 6*B*a*b*tan(d*x + c)^2 - 9*A*b^2*tan(d*x + c)
^2 - 2*B*a^2*tan(d*x + c) + 4*A*a*b*tan(d*x + c) - A*a^2)/(a^4*tan(d*x + c)
^2))/d
```

3.282 $\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=331

$$\frac{a(Ab-aB)\tan^3(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a\left(a^2Ab-3a^3B-7ab^2B+5Ab^3\right)\tan^2(c+dx)}{2b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{\left(a^3Ab-6a^2b^2B-3a^4B+3aAb^3-\right.}{b^3d\left(a^2+b^2\right)^2}$$

```
[Out] ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3 + ((3*a^2*A*b - A
*b^3 - a^3*B + 3*a*b^2*B)*Log[Cos[c + d*x]])/((a^2 + b^2)^3*d) + (a^2*(a^4*
A*b + 3*a^2*A*b^3 + 6*A*b^5 - 3*a^5*B - 9*a^3*b^2*B - 10*a*b^4*B)*Log[a + b
*Tan[c + d*x]])/(b^4*(a^2 + b^2)^3*d) - ((a^3*A*b + 3*a*A*b^3 - 3*a^4*B - 6
*a^2*b^2*B - b^4*B)*Tan[c + d*x])/(b^3*(a^2 + b^2)^2*d) + (a*(A*b - a*B)*Ta
n[c + d*x]^3)/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (a*(a^2*A*b + 5*
A*b^3 - 3*a^3*B - 7*a*b^2*B)*Tan[c + d*x]^2)/(2*b^2*(a^2 + b^2)^2*d*(a + b*
Tan[c + d*x]))
```

Rubi [A] time = 0.798083, antiderivative size = 331, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3605, 3645, 3647, 3626, 3617, 31, 3475}

$$\frac{a(Ab-aB)\tan^3(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a\left(a^2Ab-3a^3B-7ab^2B+5Ab^3\right)\tan^2(c+dx)}{2b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{\left(a^3Ab-6a^2b^2B-3a^4B+3aAb^3-\right.}{b^3d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3 + ((3*a^2*A*b - A
*b^3 - a^3*B + 3*a*b^2*B)*Log[Cos[c + d*x]])/((a^2 + b^2)^3*d) + (a^2*(a^4*
A*b + 3*a^2*A*b^3 + 6*A*b^5 - 3*a^5*B - 9*a^3*b^2*B - 10*a*b^4*B)*Log[a + b
*Tan[c + d*x]])/(b^4*(a^2 + b^2)^3*d) - ((a^3*A*b + 3*a*A*b^3 - 3*a^4*B - 6
*a^2*b^2*B - b^4*B)*Tan[c + d*x])/(b^3*(a^2 + b^2)^2*d) + (a*(A*b - a*B)*Ta
n[c + d*x]^3)/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (a*(a^2*A*b + 5*
A*b^3 - 3*a^3*B - 7*a*b^2*B)*Tan[c + d*x]^2)/(2*b^2*(a^2 + b^2)^2*d*(a + b*
Tan[c + d*x]))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{a(Ab-aB)\tan^3(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\tan^2(c+dx)\left(-3a(Ab-aB)+2b(Ab-aB)\tan(c+dx)-(a}{(a+b\tan(c+dx))^2}}{2b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\tan^3(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{a\left(a^2Ab+5Ab^3-3a^3B-7ab^2B\right)\tan^2(c+}{2b^2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))}$$

$$= -\frac{\left(a^3Ab+3aAb^3-3a^4B-6a^2b^2B-b^4B\right)\tan(c+dx)}{b^3\left(a^2+b^2\right)^2d} + \frac{a(Ab-aB)\tan^3(}{2b\left(a^2+b^2\right)d(a+b\,\mathrm{ta}}$$

$$= \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} - \frac{\left(a^3Ab+3aAb^3-3a^4B-6a^2b^2B-b^4B\right)\mathrm{tan}}{b^3\left(a^2+b^2\right)^2d}$$

$$= \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} + \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\log(\cos(c+}{\left(a^2+b^2\right)^3d}$$

$$= \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} + \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\log(\cos(c+}{\left(a^2+b^2\right)^3d}$$

Mathematica [C] time = 6.67341, size = 1146, normalized size = 3.46

$$\frac{(aB-Ab)\sec^2(c+dx)(a\cos(c+dx)+b\sin(c+dx))(A+B\tan(c+dx))a^4}{2(a-ib)^2(a+ib)^2b^2d(A\cos(c+dx)+B\sin(c+dx))(a+b\tan(c+dx))^3}+\frac{\sec^2(c+dx)(a\cos(c+dx)+b\sin(c+dx$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] (a^4*(-(A*b) + a*B)*Sec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c + d*x])*(A + B
*Tan[c + d*x]))/(2*(a - I*b)^2*(a + I*b)^2*b^2*d*(A*Cos[c + d*x] + B*Sin[c
+ d*x])*(a + b*Tan[c + d*x])^3) + ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*
(c + d*x)*Sec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c + d*x])^3*(A + B*Tan[c +
 d*x]))/((a - I*b)^3*(a + I*b)^3*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b
*Tan[c + d*x])^3) + ((I*a^11*A*b^4 + a^10*A*b^5 + (5*I)*a^9*A*b^6 + 5*a^8*A
*b^7 + (13*I)*a^7*A*b^8 + 13*a^6*A*b^9 + (15*I)*a^5*A*b^10 + 15*a^4*A*b^11
+ (6*I)*a^3*A*b^12 + 6*a^2*A*b^13 - (3*I)*a^12*b^3*B - 3*a^11*b^4*B - (15*I
)*a^10*b^5*B - 15*a^9*b^6*B - (31*I)*a^8*b^7*B - 31*a^7*b^8*B - (29*I)*a^6*
b^9*B - 29*a^5*b^10*B - (10*I)*a^4*b^11*B - 10*a^3*b^12*B)*(c + d*x)*Sec[c
+ d*x]^2*(a*Cos[c + d*x] + b*Sin[c + d*x])^3*(A + B*Tan[c + d*x]))/((a - I*
b)^6*(a + I*b)^5*b^7*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c + d*x
])^3) - (I*(a^6*A*b + 3*a^4*A*b^3 + 6*a^2*A*b^5 - 3*a^7*B - 9*a^5*b^2*B - 1
0*a^3*b^4*B)*ArcTan[Tan[c + d*x]]*Sec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c
+ d*x])^3*(A + B*Tan[c + d*x]))/(b^4*(a^2 + b^2)^3*d*(A*Cos[c + d*x] + B*Si
n[c + d*x])*(a + b*Tan[c + d*x])^3) + ((-(A*b) + 3*a*B)*Log[Cos[c + d*x]]*S
ec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c + d*x])^3*(A + B*Tan[c + d*x]))/(b^
4*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c + d*x])^3) + ((a^6*A*b +
 3*a^4*A*b^3 + 6*a^2*A*b^5 - 3*a^7*B - 9*a^5*b^2*B - 10*a^3*b^4*B)*Log[(a*C
os[c + d*x] + b*Sin[c + d*x])^2]*Sec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c +
 d*x])^3*(A + B*Tan[c + d*x]))/(2*b^4*(a^2 + b^2)^3*d*(A*Cos[c + d*x] + B*S
in[c + d*x])*(a + b*Tan[c + d*x])^3) + (Sec[c + d*x]^2*(a*Cos[c + d*x] + b*
Sin[c + d*x])^2*(-(a^4*A*b*Sin[c + d*x]) - 4*a^2*A*b^3*Sin[c + d*x] + 2*a^5
*B*Sin[c + d*x] + 5*a^3*b^2*B*Sin[c + d*x])*(A + B*Tan[c + d*x]))/((a - I*b
)^2*(a + I*b)^2*b^3*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c + d*x]
)^3) + (B*Sec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c + d*x])^3*Tan[c + d*x]*(
A + B*Tan[c + d*x]))/(b^3*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c
+ d*x])^3)
```

Maple [A] time = 0.05, size = 619, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] 1/d*B/b^3*tan(d*x+c)-3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^2*b+1/2/d/(a^
2+b^2)^3*ln(1+tan(d*x+c)^2)*A*b^3+1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^
3-3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a*b^2+1/d/(a^2+b^2)^3*A*arctan(tan
(d*x+c))*a^3-3/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a*b^2+3/d/(a^2+b^2)^3*B*a
rctan(tan(d*x+c))*a^2*b-1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*b^3+1/d/b^3*a^
6/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A+3/d/b*a^4/(a^2+b^2)^3*ln(a+b*tan(d*x+c))
*A+6/d*b*a^2/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A-3/d/b^4*a^7/(a^2+b^2)^3*ln(a+
b*tan(d*x+c))*B-9/d/b^2*a^5/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*B-10/d*a^3/(a^2+
b^2)^3*ln(a+b*tan(d*x+c))*B-1/2/d/b^3*a^4/(a^2+b^2)/(a+b*tan(d*x+c))^2*A+1/
2/d/b^4*a^5/(a^2+b^2)/(a+b*tan(d*x+c))^2*B+2/d/b^3*a^5/(a^2+b^2)^2/(a+b*tan
(d*x+c))*A+4/d/b*a^3/(a^2+b^2)^2/(a+b*tan(d*x+c))*A-3/d/b^4*a^6/(a^2+b^2)^2
/(a+b*tan(d*x+c))*B-5/d/b^2*a^4/(a^2+b^2)^2/(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.556, size = 525, normalized size = 1.59

$$\frac{\frac{2\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6} - \frac{2\left(3\,Ba^7-Aa^6b+9\,Ba^5b^2-3\,Aa^4b^3+10\,Ba^3b^4-6\,Aa^2b^5\right)\log(b\tan(dx+c)+a)}{a^6b^4+3\,a^4b^6+3\,a^2b^8+b^{10}} + \frac{\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log\left(\tan(dx+c\right.}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] 1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) - 2*(3*B*a^7 - A*a^6*b + 9*B*a^5*b^2 - 3*A*a^4*b^3 + 10*B
*a^3*b^4 - 6*A*a^2*b^5)*log(b*tan(d*x + c) + a)/(a^6*b^4 + 3*a^4*b^6 + 3*a^
2*b^8 + b^10) + (B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(tan(d*x + c)^2
+ 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) - (5*B*a^7 - 3*A*a^6*b + 9*B*a^5*b
^2 - 7*A*a^4*b^3 + 2*(3*B*a^6*b - 2*A*a^5*b^2 + 5*B*a^4*b^3 - 4*A*a^3*b^4)*
tan(d*x + c))/(a^6*b^4 + 2*a^4*b^6 + a^2*b^8 + (a^4*b^6 + 2*a^2*b^8 + b^10)
*tan(d*x + c)^2 + 2*(a^5*b^5 + 2*a^3*b^7 + a*b^9)*tan(d*x + c)) + 2*B*tan(d
*x + c)/b^3)/d
```

Fricas [B] time = 2.91801, size = 1895, normalized size = 5.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] -1/2*(3*B*a^7*b^2 - A*a^6*b^3 + 9*B*a^5*b^4 - 7*A*a^4*b^5 - 2*(B*a^6*b^3 +
3*B*a^4*b^5 + 3*B*a^2*b^7 + B*b^9)*tan(d*x + c)^3 - 2*(A*a^5*b^4 + 3*B*a^4*
b^5 - 3*A*a^3*b^6 - B*a^2*b^7)*d*x - (9*B*a^7*b^2 - 3*A*a^6*b^3 + 23*B*a^5*
b^4 - 9*A*a^4*b^5 + 12*B*a^3*b^6 + 4*B*a*b^8 + 2*(A*a^3*b^6 + 3*B*a^2*b^7 -
 3*A*a*b^8 - B*b^9)*d*x)*tan(d*x + c)^2 + (3*B*a^9 - A*a^8*b + 9*B*a^7*b^2
- 3*A*a^6*b^3 + 10*B*a^5*b^4 - 6*A*a^4*b^5 + (3*B*a^7*b^2 - A*a^6*b^3 + 9*B
*a^5*b^4 - 3*A*a^4*b^5 + 10*B*a^3*b^6 - 6*A*a^2*b^7)*tan(d*x + c)^2 + 2*(3*
B*a^8*b - A*a^7*b^2 + 9*B*a^6*b^3 - 3*A*a^5*b^4 + 10*B*a^4*b^5 - 6*A*a^3*b^
6)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d
*x + c)^2 + 1)) - (3*B*a^9 - A*a^8*b + 9*B*a^7*b^2 - 3*A*a^6*b^3 + 9*B*a^5*
b^4 - 3*A*a^4*b^5 + 3*B*a^3*b^6 - A*a^2*b^7 + (3*B*a^7*b^2 - A*a^6*b^3 + 9*
B*a^5*b^4 - 3*A*a^4*b^5 + 9*B*a^3*b^6 - 3*A*a^2*b^7 + 3*B*a*b^8 - A*b^9)*ta
n(d*x + c)^2 + 2*(3*B*a^8*b - A*a^7*b^2 + 9*B*a^6*b^3 - 3*A*a^5*b^4 + 9*B*a
^4*b^5 - 3*A*a^3*b^6 + 3*B*a^2*b^7 - A*a*b^8)*tan(d*x + c))*log(1/(tan(d*x
+ c)^2 + 1)) - 2*(3*B*a^8*b - A*a^7*b^2 + 6*B*a^6*b^3 - 3*A*a^5*b^4 - 2*B*a
^4*b^5 + 4*A*a^3*b^6 + B*a^2*b^7 + 2*(A*a^4*b^5 + 3*B*a^3*b^6 - 3*A*a^2*b^7
 - B*a*b^8)*d*x)*tan(d*x + c))/((a^6*b^6 + 3*a^4*b^8 + 3*a^2*b^10 + b^12)*d
*tan(d*x + c)^2 + 2*(a^7*b^5 + 3*a^5*b^7 + 3*a^3*b^9 + a*b^11)*d*tan(d*x +
c) + (a^8*b^4 + 3*a^6*b^6 + 3*a^4*b^8 + a^2*b^10)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 2.45969, size = 682, normalized size = 2.06

$$\frac{2\left(Aa^3+3Ba^2b-3Aab^2-Bb^3\right)(dx+c)}{a^6+3a^4b^2+3a^2b^4+b^6}+\frac{\left(Ba^3-3Aa^2b-3Bab^2+Ab^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3a^4b^2+3a^2b^4+b^6}-\frac{2\left(3Ba^7-Aa^6b+9Ba^5b^2-3Aa^4b^3+10Ba^3b^4-6Aa^2b^5\right)\log(|b\tan(}{a^6b^4+3a^4b^6+3a^2b^8+b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) + (B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(tan(d*x + c
)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) - 2*(3*B*a^7 - A*a^6*b + 9*B*a
^5*b^2 - 3*A*a^4*b^3 + 10*B*a^3*b^4 - 6*A*a^2*b^5)*log(abs(b*tan(d*x + c) +
 a))/(a^6*b^4 + 3*a^4*b^6 + 3*a^2*b^8 + b^10) + 2*B*tan(d*x + c)/b^3 + (9*B
*a^7*b^2*tan(d*x + c)^2 - 3*A*a^6*b^3*tan(d*x + c)^2 + 27*B*a^5*b^4*tan(d*x
 + c)^2 - 9*A*a^4*b^5*tan(d*x + c)^2 + 30*B*a^3*b^6*tan(d*x + c)^2 - 18*A*a
^2*b^7*tan(d*x + c)^2 + 12*B*a^8*b*tan(d*x + c) - 2*A*a^7*b^2*tan(d*x + c)
+ 38*B*a^6*b^3*tan(d*x + c) - 6*A*a^5*b^4*tan(d*x + c) + 50*B*a^4*b^5*tan(d
*x + c) - 28*A*a^3*b^6*tan(d*x + c) + 4*B*a^9 + 13*B*a^7*b^2 + A*a^6*b^3 +
21*B*a^5*b^4 - 11*A*a^4*b^5)/((a^6*b^4 + 3*a^4*b^6 + 3*a^2*b^8 + b^10)*(b*t
an(d*x + c) + a)^2))/d
```

3.283 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=250

$$\frac{a(Ab-aB)\tan^2(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}-\frac{a^2\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{a\left(a^2Ab^3+3a^3b^2B+a^5B+6ab^4B-3Ab^5\right)\log}{b^3d\left(a^2+b^2\right)^3}$$

```
[Out] -(((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3) + ((a^3*A - 3*
a*A*b^2 + 3*a^2*b*B - b^3*B)*Log[Cos[c + d*x]])/((a^2 + b^2)^3*d) + (a*(a^2
*A*b^3 - 3*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*B)*Log[a + b*Tan[c + d*x]]
)/(b^3*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Tan[c + d*x]^2)/(2*b*(a^2 + b^2)*d
*(a + b*Tan[c + d*x])^2) - (a^2*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(b^3*(a^2 +
b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.492649, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3605, 3635, 3626, 3617, 31, 3475}

$$\frac{a(Ab-aB)\tan^2(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}-\frac{a^2\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{a\left(a^2Ab^3+3a^3b^2B+a^5B+6ab^4B-3Ab^5\right)\log}{b^3d\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] -(((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3) + ((a^3*A - 3*
a*A*b^2 + 3*a^2*b*B - b^3*B)*Log[Cos[c + d*x]])/((a^2 + b^2)^3*d) + (a*(a^2
*A*b^3 - 3*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*B)*Log[a + b*Tan[c + d*x]]
)/(b^3*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Tan[c + d*x]^2)/(2*b*(a^2 + b^2)*d
*(a + b*Tan[c + d*x])^2) - (a^2*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(b^3*(a^2 +
b^2)^2*d*(a + b*Tan[c + d*x]))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
```

```
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{a(Ab-aB)\tan^2(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\tan(c+dx)\left(-2a(Ab-aB)+2b(Ab-aB)\tan(c+dx)+2}{(a+b\tan(c+dx))^2}}{2b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\tan^2(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{a^2\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{b^3\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))} + \frac{\int -}{}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{a(Ab-aB)\tan^2(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{}{b^3(}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)\log(\cos(c}{\left(a^2+b^2\right)^3 d}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)\log(\cos(c}{\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 4.49186, size = 462, normalized size = 1.85

$$\frac{\sec^2(c+dx)(A+B\tan(c+dx))(a\cos(c+dx)+b\sin(c+dx))\left(2ia(c+dx)\left(a^2Ab^3+3a^3b^2B+a^5B+6ab^4B-3Ab^5\right)(a}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] (Sec[c + d*x]^2*(a*Cos[c + d*x] + b*Sin[c + d*x])*(a^3*b^2*(a^2 + b^2)*(A*b
 - a*B) - 2*a*b*(a^2 + b^2)*(-3*A*b^3 + a*(a^2 + 4*b^2)*B)*Sin[c + d*x]*(a*
Cos[c + d*x] + b*Sin[c + d*x]) + 2*b^3*(-3*a^2*A*b + A*b^3 + a^3*B - 3*a*b^
2*B)*(c + d*x)*(a*Cos[c + d*x] + b*Sin[c + d*x])^2 + (2*I)*a*(a^2*A*b^3 - 3
*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*B)*(c + d*x)*(a*Cos[c + d*x] + b*Sin
[c + d*x])^2 - (2*I)*a*(a^2*A*b^3 - 3*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4
*B)*ArcTan[Tan[c + d*x]]*(a*Cos[c + d*x] + b*Sin[c + d*x])^2 - 2*(a^2 + b^2
)^3*B*Log[Cos[c + d*x]]*(a*Cos[c + d*x] + b*Sin[c + d*x])^2 + a*(a^2*A*b^3
- 3*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*B)*Log[(a*Cos[c + d*x] + b*Sin[c
+ d*x])^2]*(a*Cos[c + d*x] + b*Sin[c + d*x])^2)*(A + B*Tan[c + d*x]))/(2*b^
3*(a^2 + b^2)^3*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c + d*x])^3)
```

Maple [B] time = 0.054, size = 566, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^3+3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+
c)^2)*A*a*b^2-3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^2*b+1/2/d/(a^2+b^2)^
3*ln(1+tan(d*x+c)^2)*B*b^3-3/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a^2*b+1/d/(
a^2+b^2)^3*A*arctan(tan(d*x+c))*b^3+1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a^
3-3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a*b^2+1/d*a^3/(a^2+b^2)^3*ln(a+b*tan
(d*x+c))*A-3/d*a/(a^2+b^2)^3*b^2*ln(a+b*tan(d*x+c))*A+1/d*a^6/(a^2+b^2)^3/b
^3*ln(a+b*tan(d*x+c))*B+3/d*a^4/(a^2+b^2)^3/b*ln(a+b*tan(d*x+c))*B+6/d*a^2/
(a^2+b^2)^3*b*ln(a+b*tan(d*x+c))*B-1/d*a^4/b^2/(a^2+b^2)^2/(a+b*tan(d*x+c))
*A-3/d*a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))*A+2/d*a^5/b^3/(a^2+b^2)^2/(a+b*tan(
d*x+c))*B+4/d*a^3/b/(a^2+b^2)^2/(a+b*tan(d*x+c))*B+1/2/d*a^3/b^2/(a^2+b^2)/
(a+b*tan(d*x+c))^2*A-1/2/d*a^4/b^3/(a^2+b^2)/(a+b*tan(d*x+c))^2*B
```

Maxima [A] time = 1.62286, size = 494, normalized size = 1.98

$$\frac{\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{2\left(Ba^6+3\,Ba^4b^2+Aa^3b^3+6\,Ba^2b^4-3\,Aab^5\right)\log(b\tan(dx+c)+a)}{a^6b^3+3\,a^4b^5+3\,a^2b^7+b^9}-\frac{\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\cdots}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] 1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) + 2*(B*a^6 + 3*B*a^4*b^2 + A*a^3*b^3 + 6*B*a^2*b^4 - 3*A*
a*b^5)*log(b*tan(d*x + c) + a)/(a^6*b^3 + 3*a^4*b^5 + 3*a^2*b^7 + b^9) - (A
*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x + c)^2 + 1)/(a^6 + 3*a^4*
b^2 + 3*a^2*b^4 + b^6) + (3*B*a^6 - A*a^5*b + 7*B*a^4*b^2 - 5*A*a^3*b^3 + 2
*(2*B*a^5*b - A*a^4*b^2 + 4*B*a^3*b^3 - 3*A*a^2*b^4)*tan(d*x + c))/(a^6*b^3
 + 2*a^4*b^5 + a^2*b^7 + (a^4*b^5 + 2*a^2*b^7 + b^9)*tan(d*x + c)^2 + 2*(a^
5*b^4 + 2*a^3*b^6 + a*b^8)*tan(d*x + c)))/d
```

Fricas [B] time = 2.54733, size = 1432, normalized size = 5.73

$$\frac{Ba^6b^2 + Aa^5b^3 + 7\,Ba^4b^4 - 5\,Aa^3b^5 + 2\left(Ba^5b^3 - 3\,Aa^4b^4 - 3\,Ba^3b^5 + Aa^2b^6\right)dx - \left(3\,Ba^6b^2 - Aa^5b^3 + 9\,Ba^4b^4 - 7\,Aa^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] 1/2*(B*a^6*b^2 + A*a^5*b^3 + 7*B*a^4*b^4 - 5*A*a^3*b^5 + 2*(B*a^5*b^3 - 3*A
*a^4*b^4 - 3*B*a^3*b^5 + A*a^2*b^6)*d*x - (3*B*a^6*b^2 - A*a^5*b^3 + 9*B*a^
4*b^4 - 7*A*a^3*b^5 - 2*(B*a^3*b^5 - 3*A*a^2*b^6 - 3*B*a*b^7 + A*b^8)*d*x)*
tan(d*x + c)^2 + (B*a^8 + 3*B*a^6*b^2 + A*a^5*b^3 + 6*B*a^4*b^4 - 3*A*a^3*b
^5 + (B*a^6*b^2 + 3*B*a^4*b^4 + A*a^3*b^5 + 6*B*a^2*b^6 - 3*A*a*b^7)*tan(d*
x + c)^2 + 2*(B*a^7*b + 3*B*a^5*b^3 + A*a^4*b^4 + 6*B*a^3*b^5 - 3*A*a^2*b^6
)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*
x + c)^2 + 1)) - (B*a^8 + 3*B*a^6*b^2 + 3*B*a^4*b^4 + B*a^2*b^6 + (B*a^6*b^
2 + 3*B*a^4*b^4 + 3*B*a^2*b^6 + B*b^8)*tan(d*x + c)^2 + 2*(B*a^7*b + 3*B*a^
5*b^3 + 3*B*a^3*b^5 + B*a*b^7)*tan(d*x + c))*log(1/(tan(d*x + c)^2 + 1)) -
2*(B*a^7*b + 3*B*a^5*b^3 - 3*A*a^4*b^4 - 4*B*a^3*b^5 + 3*A*a^2*b^6 - 2*(B*a
^4*b^4 - 3*A*a^3*b^5 - 3*B*a^2*b^6 + A*a*b^7)*d*x)*tan(d*x + c))/((a^6*b^5
+ 3*a^4*b^7 + 3*a^2*b^9 + b^11)*d*tan(d*x + c)^2 + 2*(a^7*b^4 + 3*a^5*b^6 +
 3*a^3*b^8 + a*b^10)*d*tan(d*x + c) + (a^8*b^3 + 3*a^6*b^5 + 3*a^4*b^7 + a^
2*b^9)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.74616, size = 618, normalized size = 2.47

$$\frac{\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{2\left(Ba^6+3\,Ba^4b^2+Aa^3b^3+6\,Ba^2b^4-3\,Aab^5\right)\log(|b\tan(dx+c)+a|)}{a^6b^3+3\,a^4b^5+3\,a^2b^7+b^9}-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) - (A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x + c
)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + 2*(B*a^6 + 3*B*a^4*b^2 + A*a
^3*b^3 + 6*B*a^2*b^4 - 3*A*a*b^5)*log(abs(b*tan(d*x + c) + a))/(a^6*b^3 + 3
*a^4*b^5 + 3*a^2*b^7 + b^9) - (3*B*a^6*b*tan(d*x + c)^2 + 9*B*a^4*b^3*tan(d
*x + c)^2 + 3*A*a^3*b^4*tan(d*x + c)^2 + 18*B*a^2*b^5*tan(d*x + c)^2 - 9*A*
a*b^6*tan(d*x + c)^2 + 2*B*a^7*tan(d*x + c) + 2*A*a^6*b*tan(d*x + c) + 6*B*
a^5*b^2*tan(d*x + c) + 14*A*a^4*b^3*tan(d*x + c) + 28*B*a^3*b^4*tan(d*x + c
) - 12*A*a^2*b^5*tan(d*x + c) + A*a^7 - B*a^6*b + 9*A*a^5*b^2 + 11*B*a^4*b^
3 - 4*A*a^3*b^4)/((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*(b*tan(d*x + c) +
 a)^2))/d
```

3.284 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=189

$$-\frac{a^2(Ab-aB)}{2b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{\left(3a^2Ab+a^3(-B)+3ab^2B-Ab^3\right)\log(a\cos}{d\left(a^2+b^2\right)^3}$$

```
[Out] -(((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3) - ((3*a^2*A*b
- A*b^3 - a^3*B + 3*a*b^2*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 +
b^2)^3*d) - (a^2*(A*b - a*B))/(2*b^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2)
+ (a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(b^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x
]))
```

Rubi [A] time = 0.371693, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {3604, 3628, 3531, 3530}

$$-\frac{a^2(Ab-aB)}{2b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{\left(3a^2Ab+a^3(-B)+3ab^2B-Ab^3\right)\log(a\cos}{d\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] -(((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3) - ((3*a^2*A*b
- A*b^3 - a^3*B + 3*a*b^2*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 +
b^2)^3*d) - (a^2*(A*b - a*B))/(2*b^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2)
+ (a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(b^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x
]))
```


Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
```

```
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = -\frac{a^2(Ab-aB)}{2b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{-a(Ab-aB)+b(Ab-aB)\tan(c+dx)+\left(a^2+b^2\right)B\tan}{(a+b\tan(c+dx))^2}}{b\left(a^2+b^2\right)}$$

$$= -\frac{a^2(Ab-aB)}{2b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{b^2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))} + \frac{\int}{}$$

$$= -\frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} - \frac{a^2(Ab-aB)}{2b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{}{b^2\left(\right.}$$

$$= -\frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} - \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\log(a\cos(c}{\left(a^2+b^2\right)^3d}$$

Mathematica [C] time = 4.60584, size = 288, normalized size = 1.52

$$\frac{(Ab-aB)\left(\frac{b\left(\frac{(a^2+b^2)(5a^2+4ab\tan(c+dx)+b^2)}{(a+b\tan(c+dx))^2}+(2b^2-6a^2)\log(a+b\tan(c+dx))\right)}{(a^2+b^2)^3}+\frac{i\log(-\tan(c+dx)+i)}{(a+ib)^3}-\frac{\log(\tan(c+dx)+i)}{(b+ia)^3}\right)+B\left(\frac{2b\left(\frac{a^2+b^2}{a+b\tan(c+dx)}-2a\right.}{(a^2+}\right.}{2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] (-((A*b + a*B)/(b*(a + b*Tan[c + d*x])^2)) - (2*B*Tan[c + d*x])/(a + b*Tan[
c + d*x])^2 + B*((I*Log[I - Tan[c + d*x]])/(a + I*b)^2 - (I*Log[I + Tan[c +
 d*x]])/(a - I*b)^2 + (2*b*(-2*a*Log[a + b*Tan[c + d*x]] + (a^2 + b^2)/(a +
 b*Tan[c + d*x])))/(a^2 + b^2)^2) + (A*b - a*B)*((I*Log[I - Tan[c + d*x]])/
(a + I*b)^3 - Log[I + Tan[c + d*x]]/(I*a + b)^3 + (b*((-6*a^2 + 2*b^2)*Log[
a + b*Tan[c + d*x]] + ((a^2 + b^2)*(5*a^2 + b^2 + 4*a*b*Tan[c + d*x]))/(a +
 b*Tan[c + d*x])^2))/(a^2 + b^2)^3))/(2*b*d)
```

Maple [B] time = 0.051, size = 495, normalized size = 2.6

$$\frac{3\ln\left(1+(\tan(dx+c))^2\right)Aa^2b}{2d\left(a^2+b^2\right)^3}-\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab^3}{2d\left(a^2+b^2\right)^3}-\frac{\ln\left(1+(\tan(dx+c))^2\right)Ba^3}{2d\left(a^2+b^2\right)^3}+\frac{3\ln\left(1+(\tan(dx+c))\right.}{2d\left(a^2+b^2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] 3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^2*b-1/2/d/(a^2+b^2)^3*ln(1+tan(d*x
+c)^2)*A*b^3-1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^3+3/2/d/(a^2+b^2)^3*l
n(1+tan(d*x+c)^2)*B*a*b^2-1/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a^3+3/d/(a^2
+b^2)^3*A*arctan(tan(d*x+c))*a*b^2-3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a^2
*b+1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*b^3-1/2/d*a^2/b/(a^2+b^2)/(a+b*tan(
d*x+c))^2*A+1/2/d*a^3/b^2/(a^2+b^2)/(a+b*tan(d*x+c))^2*B-3/d*b*a^2/(a^2+b^2
)^3*ln(a+b*tan(d*x+c))*A+1/d/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A*b^3+1/d*a^3/(
a^2+b^2)^3*ln(a+b*tan(d*x+c))*B-3/d/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*B*a*b^2+
2/d*a/(a^2+b^2)^2*b/(a+b*tan(d*x+c))*A-1/d/b^2*a^4/(a^2+b^2)^2/(a+b*tan(d*x
+c))*B-3/d*a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.56641, size = 450, normalized size = 2.38

$$-\frac{\frac{2\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log(b\tan(dx+c)+a)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{Ba^5 \cdots}{a^6b^2+2\,a^4b^4 \cdots}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) - 2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(b*tan(d*
x + c) + a)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + (B*a^3 - 3*A*a^2*b - 3*B*
a*b^2 + A*b^3)*log(tan(d*x + c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)
+ (B*a^5 + A*a^4*b + 5*B*a^3*b^2 - 3*A*a^2*b^3 + 2*(B*a^4*b + 3*B*a^2*b^3 -
 2*A*a*b^4)*tan(d*x + c))/(a^6*b^2 + 2*a^4*b^4 + a^2*b^6 + (a^4*b^4 + 2*a^2
*b^6 + b^8)*tan(d*x + c)^2 + 2*(a^5*b^3 + 2*a^3*b^5 + a*b^7)*tan(d*x + c)))
/d
```

Fricas [B] time = 1.88033, size = 1038, normalized size = 5.49

$$\frac{Ba^5-3\,Aa^4b-5\,Ba^3b^2+3\,Aa^2b^3-2\left(Aa^5+3\,Ba^4b-3\,Aa^3b^2-Ba^2b^3\right)dx+\left(Ba^5+Aa^4b+7\,Ba^3b^2-5\,Aa^2b^3-2\left(Aa^3 \cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] 1/2*(B*a^5 - 3*A*a^4*b - 5*B*a^3*b^2 + 3*A*a^2*b^3 - 2*(A*a^5 + 3*B*a^4*b -
 3*A*a^3*b^2 - B*a^2*b^3)*d*x + (B*a^5 + A*a^4*b + 7*B*a^3*b^2 - 5*A*a^2*b^
3 - 2*(A*a^3*b^2 + 3*B*a^2*b^3 - 3*A*a*b^4 - B*b^5)*d*x)*tan(d*x + c)^2 + (
B*a^5 - 3*A*a^4*b - 3*B*a^3*b^2 + A*a^2*b^3 + (B*a^3*b^2 - 3*A*a^2*b^3 - 3*
B*a*b^4 + A*b^5)*tan(d*x + c)^2 + 2*(B*a^4*b - 3*A*a^3*b^2 - 3*B*a^2*b^3 +
A*a*b^4)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/
(tan(d*x + c)^2 + 1)) + 2*(A*a^5 + 3*B*a^4*b - 3*A*a^3*b^2 - 3*B*a^2*b^3 +
2*A*a*b^4 - 2*(A*a^4*b + 3*B*a^3*b^2 - 3*A*a^2*b^3 - B*a*b^4)*d*x)*tan(d*x
+ c))/((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d*tan(d*x + c)^2 + 2*(a^7*b
+ 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d*tan(d*x + c) + (a^8 + 3*a^6*b^2 + 3*a^4*
```

```
b^4 + a^2*b^6)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.42936, size = 554, normalized size = 2.93

$$-\frac{\frac{2\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{2\left(Ba^3b-3\,Aa^2b^2-3\,Bab^3+Ab^4\right)\log(|b\tan(dx+c)+a|)}{a^6b+3\,a^4b^3+3\,a^2b^5+b^7}+\frac{3\,Ba^3b^4}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) + (B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(tan(d*x +
c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) - 2*(B*a^3*b - 3*A*a^2*b^2 -
3*B*a*b^3 + A*b^4)*log(abs(b*tan(d*x + c) + a))/(a^6*b + 3*a^4*b^3 + 3*a^2*
b^5 + b^7) + (3*B*a^3*b^4*tan(d*x + c)^2 - 9*A*a^2*b^5*tan(d*x + c)^2 - 9*B
*a*b^6*tan(d*x + c)^2 + 3*A*b^7*tan(d*x + c)^2 + 2*B*a^6*b*tan(d*x + c) + 1
4*B*a^4*b^3*tan(d*x + c) - 22*A*a^3*b^4*tan(d*x + c) - 12*B*a^2*b^5*tan(d*x
 + c) + 2*A*a*b^6*tan(d*x + c) + B*a^7 + A*a^6*b + 9*B*a^5*b^2 - 11*A*a^4*b
^3 - 4*B*a^3*b^4)/((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*(b*tan(d*x + c)
+ a)^2))/d
```

3.285 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=179

$$\frac{a(Ab-aB)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a^2A+2abB-Ab^2}{d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{\left(a^3A+3a^2bB-3aAb^2-b^3B\right)\log(a\cos(c+dx)+}{d\left(a^2+b^2\right)^3}$$

```
[Out] ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3 - ((a^3*A - 3*a*A
*b^2 + 3*a^2*b*B - b^3*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2
)^3*d) + (a*(A*b - a*B))/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (a^2*
A - A*b^2 + 2*a*b*B)/((a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.274716, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3591, 3529, 3531, 3530}

$$\frac{a(Ab-aB)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a^2A+2abB-Ab^2}{d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{\left(a^3A+3a^2bB-3aAb^2-b^3B\right)\log(a\cos(c+dx)+}{d\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3 - ((a^3*A - 3*a*A
*b^2 + 3*a^2*b*B - b^3*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2
)^3*d) + (a*(A*b - a*B))/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (a^2*
A - A*b^2 + 2*a*b*B)/((a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{a(Ab-aB)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{Ab-aB+(aA+bB)\tan(c+dx)}{(a+b\tan(c+dx))^2}\,dx}{a^2+b^2}$$

$$= \frac{a(Ab-aB)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{a^2A-Ab^2+2abB}{\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))} + \int \frac{2aAb- \cdots}{\cdots}$$

$$= \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{a(Ab-aB)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\cdots}{\left(a^2+\cdots\right.}$$

$$= \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} - \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)\log(a\cos(c\cdots}{\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 3.56999, size = 188, normalized size = 1.05

$$\frac{\frac{a(Ab-aB)}{b\left(a^2+b^2\right)(a+b\tan(c+dx))^2} + \frac{2\left(a^2A+2abB-Ab^2\right)}{\left(a^2+b^2\right)^2(a+b\tan(c+dx))} - \frac{2\left(a^3A+3a^2bB-3aAb^2-b^3B\right)\log(a+b\tan(c+dx))}{\left(a^2+b^2\right)^3} + \frac{(A+iB)\log(-\tan(c+dx)+i)}{(a+ib)^3} + \frac{(A-iB)\log(\cdots}{(a-i\cdots}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] (((A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b)^3 + ((A - I*B)*Log[I + Tan[c +
 d*x]])/(a - I*b)^3 - (2*(a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*Log[a + b*
Tan[c + d*x]])/(a^2 + b^2)^3 + (a*(A*b - a*B))/(b*(a^2 + b^2)*(a + b*Tan[c
+ d*x])^2) + (2*(a^2*A - A*b^2 + 2*a*b*B))/((a^2 + b^2)^2*(a + b*Tan[c + d*
x])))/(2*d)
```

Maple [B] time = 0.045, size = 488, normalized size = 2.7

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Aa^3}{2d\left(a^2+b^2\right)^3}-\frac{3\ln\left(1+(\tan(dx+c))^2\right)Aab^2}{2d\left(a^2+b^2\right)^3}+\frac{3\ln\left(1+(\tan(dx+c))^2\right)Ba^2b}{2d\left(a^2+b^2\right)^3}-\frac{\ln\left(1+(\tan(dx+c))^2\right.}{2d\left(a^2+b^2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^3-3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c
)^2)*A*a*b^2+3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^2*b-1/2/d/(a^2+b^2)^3
*ln(1+tan(d*x+c)^2)*B*b^3+3/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a^2*b-1/d/(a
^2+b^2)^3*A*arctan(tan(d*x+c))*b^3-1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a^3
+3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a*b^2+1/2/d*a/(a^2+b^2)/(a+b*tan(d*x+
c))^2*A-1/2/d*a^2/(a^2+b^2)/b/(a+b*tan(d*x+c))^2*B+1/d*a^2/(a^2+b^2)^2/(a+b
*tan(d*x+c))*A-1/d/(a^2+b^2)^2/(a+b*tan(d*x+c))*A*b^2+2/d/(a^2+b^2)^2/(a+b*
tan(d*x+c))*B*a*b-1/d*a^3/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A+3/d*a/(a^2+b^2)^
3*b^2*ln(a+b*tan(d*x+c))*A-3/d*a^2/(a^2+b^2)^3*b*ln(a+b*tan(d*x+c))*B+1/d/(
a^2+b^2)^3*ln(a+b*tan(d*x+c))*B*b^3
```

Maxima [A] time = 1.55077, size = 446, normalized size = 2.49

$$-\frac{\frac{2\left(Ba^3-3Aa^2b-3Bab^2+Ab^3\right)(dx+c)}{a^6+3a^4b^2+3a^2b^4+b^6}+\frac{2\left(Aa^3+3Ba^2b-3Aab^2-Bb^3\right)\log(b\tan(dx+c)+a)}{a^6+3a^4b^2+3a^2b^4+b^6}-\frac{\left(Aa^3+3Ba^2b-3Aab^2-Bb^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3a^4b^2+3a^2b^4+b^6}+\frac{Ba^4}{a^6b+2a^4b^3+}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="maxi
ma")
```

```
[Out] -1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) + 2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(b*tan(d*
x + c) + a)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) - (A*a^3 + 3*B*a^2*b - 3*A*
a*b^2 - B*b^3)*log(tan(d*x + c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)
+ (B*a^4 - 3*A*a^3*b - 3*B*a^2*b^2 + A*a*b^3 - 2*(A*a^2*b^2 + 2*B*a*b^3 - A
*b^4)*tan(d*x + c))/(a^6*b + 2*a^4*b^3 + a^2*b^5 + (a^4*b^3 + 2*a^2*b^5 + b
^7)*tan(d*x + c)^2 + 2*(a^5*b^2 + 2*a^3*b^4 + a*b^6)*tan(d*x + c)))/d
```

Fricas [B] time = 1.90427, size = 1058, normalized size = 5.91

$$-\frac{3\,Ba^4b - 5\,Aa^3b^2 - 3\,Ba^2b^3 + Aab^4 + 2\left(Ba^5 - 3\,Aa^4b - 3\,Ba^3b^2 + Aa^2b^3\right)dx - \left(Ba^4b - 3\,Aa^3b^2 - 5\,Ba^2b^3 + 3\,Aab^4 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fric
as")
```

```
[Out] -1/2*(3*B*a^4*b - 5*A*a^3*b^2 - 3*B*a^2*b^3 + A*a*b^4 + 2*(B*a^5 - 3*A*a^4*
b - 3*B*a^3*b^2 + A*a^2*b^3)*d*x - (B*a^4*b - 3*A*a^3*b^2 - 5*B*a^2*b^3 + 3
*A*a*b^4 - 2*(B*a^3*b^2 - 3*A*a^2*b^3 - 3*B*a*b^4 + A*b^5)*d*x)*tan(d*x + c
)^2 + (A*a^5 + 3*B*a^4*b - 3*A*a^3*b^2 - B*a^2*b^3 + (A*a^3*b^2 + 3*B*a^2*b
^3 - 3*A*a*b^4 - B*b^5)*tan(d*x + c)^2 + 2*(A*a^4*b + 3*B*a^3*b^2 - 3*A*a^2
*b^3 - B*a*b^4)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c)
+ a^2)/(tan(d*x + c)^2 + 1)) - 2*(B*a^5 - 2*A*a^4*b - 3*B*a^3*b^2 + 3*A*a^2
*b^3 + 2*B*a*b^4 - A*b^5 - 2*(B*a^4*b - 3*A*a^3*b^2 - 3*B*a^2*b^3 + A*a*b^4
)*d*x)*tan(d*x + c))/((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d*tan(d*x + c
)^2 + 2*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d*tan(d*x + c) + (a^8 + 3*a
^6*b^2 + 3*a^4*b^4 + a^2*b^6)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.24453, size = 554, normalized size = 3.09

$$-\frac{\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{2\left(Aa^3b+3\,Ba^2b^2-3\,Aab^3-Bb^4\right)\log(|b\tan(dx+c)+a|)}{a^6b+3\,a^4b^3+3\,a^2b^5+b^7}-\frac{3\,Aa^3b^3\,\mathrm{t}}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) - (A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x +
c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + 2*(A*a^3*b + 3*B*a^2*b^2 -
3*A*a*b^3 - B*b^4)*log(abs(b*tan(d*x + c) + a))/(a^6*b + 3*a^4*b^3 + 3*a^2*
b^5 + b^7) - (3*A*a^3*b^3*tan(d*x + c)^2 + 9*B*a^2*b^4*tan(d*x + c)^2 - 9*A
*a*b^5*tan(d*x + c)^2 - 3*B*b^6*tan(d*x + c)^2 + 8*A*a^4*b^2*tan(d*x + c) +
 22*B*a^3*b^3*tan(d*x + c) - 18*A*a^2*b^4*tan(d*x + c) - 2*B*a*b^5*tan(d*x
+ c) - 2*A*b^6*tan(d*x + c) - B*a^6 + 6*A*a^5*b + 11*B*a^4*b^2 - 7*A*a^3*b^
3 - A*a*b^5)/((a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*(b*tan(d*x + c) + a)^2)
)/d
```

3.286 $\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=175

$$-\frac{Ab-aB}{2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}-\frac{a^2(-B)+2aAb+b^2B}{d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{\left(3a^2Ab+a^3(-B)+3ab^2B-Ab^3\right)\log(a\cos(c+}{d\left(a^2+b^2\right)^3}$$

```
[Out] ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3 + ((3*a^2*A*b - A
*b^3 - a^3*B + 3*a*b^2*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2
)^3*d) - (A*b - a*B)/(2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (2*a*A*b -
a^2*B + b^2*B)/((a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.266202, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3529, 3531, 3530}

$$-\frac{Ab-aB}{2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}-\frac{a^2(-B)+2aAb+b^2B}{d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{\left(3a^2Ab+a^3(-B)+3ab^2B-Ab^3\right)\log(a\cos(c+}{d\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3 + ((3*a^2*A*b - A
*b^3 - a^3*B + 3*a*b^2*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^2
)^3*d) - (A*b - a*B)/(2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (2*a*A*b -
a^2*B + b^2*B)/((a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```


Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
```

```
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^3}\,dx &= -\frac{Ab-aB}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2}+\frac{\int \frac{aA+bB-(Ab-aB)\tan(c+dx)}{(a+b\tan(c+dx))^2}\,dx}{a^2+b^2}\\
&= -\frac{Ab-aB}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2}-\frac{2aAb-a^2B+b^2B}{\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}+\frac{\int \frac{a^2A-Ab^2+2abB-\left(2aAb\right.}{a+b\tan}}{\left(a^2+\right.}\\
&= \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3}-\frac{Ab-aB}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2}-\frac{2aAb-a^2B+}{\left(a^2+b^2\right)^2 d(a+b\tan}\\
&= \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3}+\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\log(a\cos(c+dx)+b\sin(}{\left(a^2+b^2\right)^3 d}
\end{aligned}
$$

Mathematica [C] time = 3.70861, size = 243, normalized size = 1.39

$$
-\frac{(Ab-aB)\left(\frac{b\left(\frac{\left(a^2+b^2\right)\left(5a^2+4ab\tan(c+dx)+b^2\right)}{(a+b\tan(c+dx))^2}+\left(2b^2-6a^2\right)\log(a+b\tan(c+dx))\right)}{\left(a^2+b^2\right)^3}+\frac{i\log(-\tan(c+dx)+i)}{(a+ib)^3}-\frac{\log(\tan(c+dx)+i)}{(b+ia)^3}\right)+B\left(\frac{2b\left(\frac{a^2+b^2}{a+b\tan(c+dx)}-2a\,\mathrm{l}\right.}{\left(a^2+\right.}\right.}{2bd}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] -(B*((I*Log[I - Tan[c + d*x]])/(a + I*b)^2 - (I*Log[I + Tan[c + d*x]])/(a -
 I*b)^2 + (2*b*(-2*a*Log[a + b*Tan[c + d*x]] + (a^2 + b^2)/(a + b*Tan[c + d
*x])))/(a^2 + b^2)^2) + (A*b - a*B)*((I*Log[I - Tan[c + d*x]])/(a + I*b)^3
- Log[I + Tan[c + d*x]]/(I*a + b)^3 + (b*((-6*a^2 + 2*b^2)*Log[a + b*Tan[c
```

```
+ d*x]] + ((a^2 + b^2)*(5*a^2 + b^2 + 4*a*b*Tan[c + d*x]))/(a + b*Tan[c + d
*x])^2))/(a^2 + b^2)^3))/(2*b*d)
```

Maple [B] time = 0.046, size = 483, normalized size = 2.8

$$-\frac{3\ln\left(1+(\tan(dx+c))^2\right)Aa^2b}{2d\left(a^2+b^2\right)^3}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Ab^3}{2d\left(a^2+b^2\right)^3}+\frac{\ln\left(1+(\tan(dx+c))^2\right)Ba^3}{2d\left(a^2+b^2\right)^3}-\frac{3\ln\left(1+(\tan(dx+c\right.}{2d\left(a^2+b^2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^2*b+1/2/d/(a^2+b^2)^3*ln(1+tan(d*
x+c)^2)*A*b^3+1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^3-3/2/d/(a^2+b^2)^3*
ln(1+tan(d*x+c)^2)*B*a*b^2+1/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a^3-3/d/(a^
2+b^2)^3*A*arctan(tan(d*x+c))*a*b^2+3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a^
2*b-1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*b^3+3/d*b*a^2/(a^2+b^2)^3*ln(a+b*t
an(d*x+c))*A-1/d/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A*b^3-1/d*a^3/(a^2+b^2)^3*l
n(a+b*tan(d*x+c))*B+3/d/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*B*a*b^2-1/2/d/(a^2+b
^2)/(a+b*tan(d*x+c))^2*A*b+1/2/d/(a^2+b^2)/(a+b*tan(d*x+c))^2*a*B-2/d*a/(a^
2+b^2)^2*b/(a+b*tan(d*x+c))*A+1/d*a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))*B-1/d/(a
^2+b^2)^2/(a+b*tan(d*x+c))*b^2*B
```

Maxima [A] time = 1.61633, size = 433, normalized size = 2.47

$$\frac{\frac{2\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log(b\tan(dx+c)+a)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{3\,I}{a^6+2\,a^4b^2+a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) - 2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(b*tan(d*x
 + c) + a)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + (B*a^3 - 3*A*a^2*b - 3*B*a
*b^2 + A*b^3)*log(tan(d*x + c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) +
 (3*B*a^3 - 5*A*a^2*b - B*a*b^2 - A*b^3 + 2*(B*a^2*b - 2*A*a*b^2 - B*b^3)*t
an(d*x + c))/(a^6 + 2*a^4*b^2 + a^2*b^4 + (a^4*b^2 + 2*a^2*b^4 + b^6)*tan(d
```

```
*x + c)^2 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*tan(d*x + c)))/d
```

Fricas [B] time = 1.86545, size = 1038, normalized size = 5.93

$$5\,Ba^3b^2 - 7\,Aa^2b^3 - Bab^4 - Ab^5 + 2\left(Aa^5 + 3\,Ba^4b - 3\,Aa^3b^2 - Ba^2b^3\right)dx - \left(3\,Ba^3b^2 - 5\,Aa^2b^3 - 3\,Bab^4 + Ab^5 - 2\left(Aa^3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(5*B*a^3*b^2 - 7*A*a^2*b^3 - B*a*b^4 - A*b^5 + 2*(A*a^5 + 3*B*a^4*b - 3
*A*a^3*b^2 - B*a^2*b^3)*d*x - (3*B*a^3*b^2 - 5*A*a^2*b^3 - 3*B*a*b^4 + A*b^
5 - 2*(A*a^3*b^2 + 3*B*a^2*b^3 - 3*A*a*b^4 - B*b^5)*d*x)*tan(d*x + c)^2 - (
B*a^5 - 3*A*a^4*b - 3*B*a^3*b^2 + A*a^2*b^3 + (B*a^3*b^2 - 3*A*a^2*b^3 - 3*
B*a*b^4 + A*b^5)*tan(d*x + c)^2 + 2*(B*a^4*b - 3*A*a^3*b^2 - 3*B*a^2*b^3 +
A*a*b^4)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/
(tan(d*x + c)^2 + 1)) - 2*(2*B*a^4*b - 3*A*a^3*b^2 - 3*B*a^2*b^3 + 3*A*a*b^
4 + B*b^5 - 2*(A*a^4*b + 3*B*a^3*b^2 - 3*A*a^2*b^3 - B*a*b^4)*d*x)*tan(d*x
+ c))/((a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d*tan(d*x + c)^2 + 2*(a^7*b
+ 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d*tan(d*x + c) + (a^8 + 3*a^6*b^2 + 3*a^4*
b^4 + a^2*b^6)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.26612, size = 552, normalized size = 3.15

$$\frac{2\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6} + \frac{\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6} - \frac{2\left(Ba^3b-3\,Aa^2b^2-3\,Bab^3+Ab^4\right)\log(|b\tan(dx+c)+a|)}{a^6b+3\,a^4b^3+3\,a^2b^5+b^7} + \frac{3\,Ba^3b^2\tan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) + (B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(tan(d*x + c
)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) - 2*(B*a^3*b - 3*A*a^2*b^2 - 3
*B*a*b^3 + A*b^4)*log(abs(b*tan(d*x + c) + a))/(a^6*b + 3*a^4*b^3 + 3*a^2*b
^5 + b^7) + (3*B*a^3*b^2*tan(d*x + c)^2 - 9*A*a^2*b^3*tan(d*x + c)^2 - 9*B*
a*b^4*tan(d*x + c)^2 + 3*A*b^5*tan(d*x + c)^2 + 8*B*a^4*b*tan(d*x + c) - 22
*A*a^3*b^2*tan(d*x + c) - 18*B*a^2*b^3*tan(d*x + c) + 2*A*a*b^4*tan(d*x + c
) - 2*B*b^5*tan(d*x + c) + 6*B*a^5 - 14*A*a^4*b - 7*B*a^3*b^2 - 3*A*a^2*b^3
 - B*a*b^4 - A*b^5)/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*(b*tan(d*x + c) +
a)^2))/d
```

3.287 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=215

$$\frac{b(Ab-aB)}{2ad\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{b\left(3a^2Ab-2a^3B+Ab^3\right)}{a^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{b\left(3a^2Ab^3+6a^4Ab+a^3b^2B-3a^5B+Ab^5\right)\log}{a^3d\left(a^2+b^2\right)^3}$$

```
[Out] -(((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3) + (A*Log[Sin[c
 + d*x]])/(a^3*d) - (b*(6*a^4*A*b + 3*a^2*A*b^3 + A*b^5 - 3*a^5*B + a^3*b^2
*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^3*(a^2 + b^2)^3*d) + (b*(A*b -
 a*B))/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b*(3*a^2*A*b + A*b^3 -
 2*a^3*B))/(a^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.62136, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {3609, 3649, 3651, 3530, 3475}

$$\frac{b(Ab-aB)}{2ad\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{b\left(3a^2Ab-2a^3B+Ab^3\right)}{a^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{b\left(3a^2Ab^3+6a^4Ab+a^3b^2B-3a^5B+Ab^5\right)\log}{a^3d\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] -(((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3) + (A*Log[Sin[c
 + d*x]])/(a^3*d) - (b*(6*a^4*A*b + 3*a^2*A*b^3 + A*b^5 - 3*a^5*B + a^3*b^2
*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^3*(a^2 + b^2)^3*d) + (b*(A*b -
 a*B))/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b*(3*a^2*A*b + A*b^3 -
 2*a^3*B))/(a^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
```

```
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}dx = \frac{b(Ab-aB)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\cot(c+dx)\left(2A\left(a^2+b^2\right)-2a(Ab-aB)\tan(c+dx)+2b(Ab-}{(a+b\tan(c+dx))^2}}{2a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(3a^2Ab+Ab^3-2a^3B\right)}{a^2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))} + \int \frac{\cot(c}{}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{b(Ab-aB)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b}{a^2\left(a^2\right.}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{A\log(\sin(c+dx))}{a^3d} - \frac{b\left(6a^4Ab+3a^2Ab^3+\right.}{}$$

Mathematica [C] time = 3.34972, size = 254, normalized size = 1.18

$$\frac{\frac{4ab(Ab-aB)}{\left(a^2+b^2\right)(a+b\tan(c+dx))} - \frac{2b\left(3a^2Ab^3+6a^4Ab+a^3b^2B-3a^5B+Ab^5\right)\log(a+b\tan(c+dx))}{a^2\left(a^2+b^2\right)^2} + \frac{2Ab^2}{a^2+ab\tan(c+dx)} + \frac{2A\left(a^2+b^2\right)\log(\tan(c+dx))}{a^2} + \frac{b(Ab-aB)}{(a+b\tan(c+dx}}{2ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] (-((a*(a - I*b)*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b)^2) + (2*A*(a^2 +
 b^2)*Log[Tan[c + d*x]])/a^2 - (a*(a + I*b)*(A - I*B)*Log[I + Tan[c + d*x]]
)/(a - I*b)^2 - (2*b*(6*a^4*A*b + 3*a^2*A*b^3 + A*b^5 - 3*a^5*B + a^3*b^2*B
)*Log[a + b*Tan[c + d*x]])/(a^2*(a^2 + b^2)^2) + (b*(A*b - a*B))/(a + b*Tan
[c + d*x])^2 + (4*a*b*(A*b - a*B))/((a^2 + b^2)*(a + b*Tan[c + d*x])) + (2*
A*b^2)/(a^2 + a*b*Tan[c + d*x]))/(2*a*(a^2 + b^2)*d)
```

Maple [B] time = 0.181, size = 540, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] -1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^3+3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+
c)^2)*A*a*b^2-3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^2*b+1/2/d/(a^2+b^2)^
3*ln(1+tan(d*x+c)^2)*B*b^3-3/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a^2*b+1/d/(
a^2+b^2)^3*A*arctan(tan(d*x+c))*b^3+1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a^
3-3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a*b^2+1/d/a^3*A*ln(tan(d*x+c))+3/d/(
a^2+b^2)^2/(a+b*tan(d*x+c))*A*b^2+1/d*b^4/a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))*
A-2/d/(a^2+b^2)^2/(a+b*tan(d*x+c))*B*a*b-6/d*a/(a^2+b^2)^3*b^2*ln(a+b*tan(d
*x+c))*A-3/d*b^4/a/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A-1/d*b^6/a^3/(a^2+b^2)^3
*ln(a+b*tan(d*x+c))*A+3/d*a^2/(a^2+b^2)^3*b*ln(a+b*tan(d*x+c))*B-1/d/(a^2+b
^2)^3*ln(a+b*tan(d*x+c))*B*b^3+1/2/d*b^2/a/(a^2+b^2)/(a+b*tan(d*x+c))^2*A-1
/2/d*b/(a^2+b^2)/(a+b*tan(d*x+c))^2*B
```

Maxima [A] time = 1.59958, size = 502, normalized size = 2.33

$$\frac{\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{2\left(3\,Ba^5b-6\,Aa^4b^2-Ba^3b^3-3\,Aa^2b^4-Ab^6\right)\log(b\tan(dx+c)+a)}{a^9+3\,a^7b^2+3\,a^5b^4+a^3b^6}-\frac{\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="maxi
ma")
```

```
[Out] 1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) + 2*(3*B*a^5*b - 6*A*a^4*b^2 - B*a^3*b^3 - 3*A*a^2*b^4 -
A*b^6)*log(b*tan(d*x + c) + a)/(a^9 + 3*a^7*b^2 + 3*a^5*b^4 + a^3*b^6) - (A
*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x + c)^2 + 1)/(a^6 + 3*a^4*
b^2 + 3*a^2*b^4 + b^6) - (5*B*a^4*b - 7*A*a^3*b^2 + B*a^2*b^3 - 3*A*a*b^4 +
 2*(2*B*a^3*b^2 - 3*A*a^2*b^3 - A*b^5)*tan(d*x + c))/(a^8 + 2*a^6*b^2 + a^4
*b^4 + (a^6*b^2 + 2*a^4*b^4 + a^2*b^6)*tan(d*x + c)^2 + 2*(a^7*b + 2*a^5*b^
3 + a^3*b^5)*tan(d*x + c)) + 2*A*log(tan(d*x + c))/a^3)/d
```

Fricas [B] time = 2.56288, size = 1451, normalized size = 6.75

$$-\frac{7\,Ba^5b^3-9\,Aa^4b^4+Ba^3b^5-3\,Aa^2b^6-2\left(Ba^8-3\,Aa^7b-3\,Ba^6b^2+Aa^5b^3\right)dx-\left(5\,Ba^5b^3-7\,Aa^4b^4-Ba^3b^5-Aa^2b^6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fric
as")
```

```
[Out] -1/2*(7*B*a^5*b^3 - 9*A*a^4*b^4 + B*a^3*b^5 - 3*A*a^2*b^6 - 2*(B*a^8 - 3*A*
a^7*b - 3*B*a^6*b^2 + A*a^5*b^3)*d*x - (5*B*a^5*b^3 - 7*A*a^4*b^4 - B*a^3*b
^5 - A*a^2*b^6 + 2*(B*a^6*b^2 - 3*A*a^5*b^3 - 3*B*a^4*b^4 + A*a^3*b^5)*d*x)
*tan(d*x + c)^2 - (A*a^8 + 3*A*a^6*b^2 + 3*A*a^4*b^4 + A*a^2*b^6 + (A*a^6*b
^2 + 3*A*a^4*b^4 + 3*A*a^2*b^6 + A*b^8)*tan(d*x + c)^2 + 2*(A*a^7*b + 3*A*a
^5*b^3 + 3*A*a^3*b^5 + A*a*b^7)*tan(d*x + c))*log(tan(d*x + c)^2/(tan(d*x +
 c)^2 + 1)) - (3*B*a^7*b - 6*A*a^6*b^2 - B*a^5*b^3 - 3*A*a^4*b^4 - A*a^2*b^
6 + (3*B*a^5*b^3 - 6*A*a^4*b^4 - B*a^3*b^5 - 3*A*a^2*b^6 - A*b^8)*tan(d*x +
 c)^2 + 2*(3*B*a^6*b^2 - 6*A*a^5*b^3 - B*a^4*b^4 - 3*A*a^3*b^5 - A*a*b^7)*t
an(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x +
 c)^2 + 1)) - 2*(3*B*a^6*b^2 - 4*A*a^5*b^3 - 3*B*a^4*b^4 + 3*A*a^3*b^5 + A*
a*b^7 + 2*(B*a^7*b - 3*A*a^6*b^2 - 3*B*a^5*b^3 + A*a^4*b^4)*d*x)*tan(d*x +
c))/((a^9*b^2 + 3*a^7*b^4 + 3*a^5*b^6 + a^3*b^8)*d*tan(d*x + c)^2 + 2*(a^10
*b + 3*a^8*b^3 + 3*a^6*b^5 + a^4*b^7)*d*tan(d*x + c) + (a^11 + 3*a^9*b^2 +
3*a^7*b^4 + a^5*b^6)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.3471, size = 647, normalized size = 3.01

$$\frac{\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{2\left(3\,Ba^5b^2-6\,Aa^4b^3-Ba^3b^4-3\,Aa^2b^5-Ab^7\right)\log\left(|b\tan(dx+c)+a|\right)}{a^9b+3\,a^7b^3+3\,a^5b^5+a^3b^7}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6) - (A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x + c
)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + 2*(3*B*a^5*b^2 - 6*A*a^4*b^3
 - B*a^3*b^4 - 3*A*a^2*b^5 - A*b^7)*log(abs(b*tan(d*x + c) + a))/(a^9*b + 3
*a^7*b^3 + 3*a^5*b^5 + a^3*b^7) + 2*A*log(abs(tan(d*x + c)))/a^3 - (9*B*a^5
*b^3*tan(d*x + c)^2 - 18*A*a^4*b^4*tan(d*x + c)^2 - 3*B*a^3*b^5*tan(d*x + c
)^2 - 9*A*a^2*b^6*tan(d*x + c)^2 - 3*A*b^8*tan(d*x + c)^2 + 22*B*a^6*b^2*ta
n(d*x + c) - 42*A*a^5*b^3*tan(d*x + c) - 2*B*a^4*b^4*tan(d*x + c) - 26*A*a^
3*b^5*tan(d*x + c) - 8*A*a*b^7*tan(d*x + c) + 14*B*a^7*b - 25*A*a^6*b^2 + 3
*B*a^5*b^3 - 19*A*a^4*b^4 + B*a^3*b^5 - 6*A*a^2*b^6)/((a^9 + 3*a^7*b^2 + 3*
a^5*b^4 + a^3*b^6)*(b*tan(d*x + c) + a)^2))/d
```

3.288 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=287

$$-\frac{b\left(6a^2Ab^2+a^4A-3a^3bB-ab^3B+3Ab^4\right)}{a^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{b\left(2a^2A-abB+3Ab^2\right)}{2a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{b^2\left(9a^2Ab^3+10a^4Ab-3a^3b^2B-6a\right.}{}$$

```
[Out] -(((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3) - ((3*A*b - a*
B)*Log[Sin[c + d*x]])/(a^4*d) + (b^2*(10*a^4*A*b + 9*a^2*A*b^3 + 3*A*b^5 -
6*a^5*B - 3*a^3*b^2*B - a*b^4*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^4
*(a^2 + b^2)^3*d) - (b*(2*a^2*A + 3*A*b^2 - a*b*B))/(2*a^2*(a^2 + b^2)*d*(a
 + b*Tan[c + d*x])^2) - (A*Cot[c + d*x])/(a*d*(a + b*Tan[c + d*x])^2) - (b*
(a^4*A + 6*a^2*A*b^2 + 3*A*b^4 - 3*a^3*b*B - a*b^3*B))/(a^3*(a^2 + b^2)^2*d
*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.882367, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$-\frac{b\left(6a^2Ab^2+a^4A-3a^3bB-ab^3B+3Ab^4\right)}{a^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}-\frac{b\left(2a^2A-abB+3Ab^2\right)}{2a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{b^2\left(9a^2Ab^3+10a^4Ab-3a^3b^2B-6a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] -(((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*x)/(a^2 + b^2)^3) - ((3*A*b - a*
B)*Log[Sin[c + d*x]])/(a^4*d) + (b^2*(10*a^4*A*b + 9*a^2*A*b^3 + 3*A*b^5 -
6*a^5*B - 3*a^3*b^2*B - a*b^4*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^4
*(a^2 + b^2)^3*d) - (b*(2*a^2*A + 3*A*b^2 - a*b*B))/(2*a^2*(a^2 + b^2)*d*(a
 + b*Tan[c + d*x])^2) - (A*Cot[c + d*x])/(a*d*(a + b*Tan[c + d*x])^2) - (b*
(a^4*A + 6*a^2*A*b^2 + 3*A*b^4 - 3*a^3*b*B - a*b^3*B))/(a^3*(a^2 + b^2)^2*d
*(a + b*Tan[c + d*x]))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
```

```
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = -\frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^2} - \frac{\int \frac{\cot(c+dx)\left(3Ab-aB+aA\tan(c+dx)+3Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^3}\,dx}{a}$$

$$= -\frac{b\left(2a^2A+3Ab^2-abB\right)}{2a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^2} - \frac{\int \frac{\cot(c+dx)\left(2\left(a^2\right.\right.}{}}{}$$

$$= -\frac{b\left(2a^2A+3Ab^2-abB\right)}{2a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^2} - \frac{b\left(a^4A+6a^2A\right.}{a^3\left(a^2+b\right.}$$

$$= -\frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} - \frac{b\left(2a^2A+3Ab^2-abB\right)}{2a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{}{ad(a}$$

$$= -\frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)x}{\left(a^2+b^2\right)^3} - \frac{(3Ab-aB)\log(\sin(c+dx))}{a^4d} + \frac{b^2\left(10a^4Ab\right.}{}$$

Mathematica [C] time = 6.40057, size = 288, normalized size = 1.

$$-\frac{b^2\left(4a^2Ab-3a^3B-ab^2B+2Ab^3\right)}{a^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))} - \frac{b^2(Ab-aB)}{2a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^2} + \frac{b^2\left(9a^2Ab^3+10a^4Ab-3a^3b^2B-6a^5B-ab\right.}{a^4d\left(a^2+b^2\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] -((A*Cot[c + d*x])/(a^3*d)) + ((A + I*B)*Log[I - Tan[c + d*x]])/(2*(I*a - b
)^3*d) - ((3*A*b - a*B)*Log[Tan[c + d*x]])/(a^4*d) - ((I*A + B)*Log[I + Tan
[c + d*x]])/(2*(a - I*b)^3*d) + (b^2*(10*a^4*A*b + 9*a^2*A*b^3 + 3*A*b^5 -
6*a^5*B - 3*a^3*b^2*B - a*b^4*B)*Log[a + b*Tan[c + d*x]])/(a^4*(a^2 + b^2)^
3*d) - (b^2*(A*b - a*B))/(2*a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (b^
2*(4*a^2*A*b + 2*A*b^3 - 3*a^3*B - a*b^2*B))/(a^3*(a^2 + b^2)^2*d*(a + b*Ta
n[c + d*x]))
```

Maple [B] time = 0.145, size = 651, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] 3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^2*b-1/2/d/(a^2+b^2)^3*ln(1+tan(d*x
+c)^2)*A*b^3-1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^3+3/2/d/(a^2+b^2)^3*l
n(1+tan(d*x+c)^2)*B*a*b^2-1/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*a^3+3/d/(a^2
+b^2)^3*A*arctan(tan(d*x+c))*a*b^2-3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a^2
*b+1/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*b^3-1/d/a^3*A/tan(d*x+c)-3/d/a^4*ln
(tan(d*x+c))*A*b+1/d/a^3*B*ln(tan(d*x+c))-4/d*b^3/a/(a^2+b^2)^2/(a+b*tan(d*
x+c))*A-2/d*b^5/a^3/(a^2+b^2)^2/(a+b*tan(d*x+c))*A+3/d/(a^2+b^2)^2/(a+b*tan
(d*x+c))*b^2*B+1/d*b^4/a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))*B+10/d/(a^2+b^2)^3*
ln(a+b*tan(d*x+c))*A*b^3+9/d*b^5/a^2/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A+3/d*b
^7/a^4/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A-6/d/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*
B*a*b^2-3/d*b^4/a/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*B-1/d*b^6/a^3/(a^2+b^2)^3*
ln(a+b*tan(d*x+c))*B-1/2/d*b^3/a^2/(a^2+b^2)/(a+b*tan(d*x+c))^2*A+1/2/d*b^2
/a/(a^2+b^2)/(a+b*tan(d*x+c))^2*B
```

Maxima [A] time = 1.55867, size = 613, normalized size = 2.14

$$-\frac{\frac{2\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}+\frac{2\left(6\,Ba^5b^2-10\,Aa^4b^3+3\,Ba^3b^4-9\,Aa^2b^5+Bab^6-3\,Ab^7\right)\log(b\tan(dx+c)+a)}{a^{10}+3\,a^8b^2+3\,a^6b^4+a^4b^6}+\frac{\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)\log(\tan(}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) + 2*(6*B*a^5*b^2 - 10*A*a^4*b^3 + 3*B*a^3*b^4 - 9*A*a^2*
b^5 + B*a*b^6 - 3*A*b^7)*log(b*tan(d*x + c) + a)/(a^10 + 3*a^8*b^2 + 3*a^6*
b^4 + a^4*b^6) + (B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(tan(d*x + c)^2
 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + (2*A*a^6 + 4*A*a^4*b^2 + 2*A*a^
2*b^4 + 2*(A*a^4*b^2 - 3*B*a^3*b^3 + 6*A*a^2*b^4 - B*a*b^5 + 3*A*b^6)*tan(d
*x + c)^2 + (4*A*a^5*b - 7*B*a^4*b^2 + 17*A*a^3*b^3 - 3*B*a^2*b^4 + 9*A*a*b
^5)*tan(d*x + c))/((a^7*b^2 + 2*a^5*b^4 + a^3*b^6)*tan(d*x + c)^3 + 2*(a^8*
b + 2*a^6*b^3 + a^4*b^5)*tan(d*x + c)^2 + (a^9 + 2*a^7*b^2 + a^5*b^4)*tan(d
*x + c)) - 2*(B*a - 3*A*b)*log(tan(d*x + c))/a^4)/d
```

Fricas [B] time = 2.98528, size = 1982, normalized size = 6.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] -1/2*(2*A*a^9 + 6*A*a^7*b^2 + 6*A*a^5*b^4 + 2*A*a^3*b^6 + (7*B*a^5*b^4 - 9*
A*a^4*b^5 + B*a^3*b^6 - 3*A*a^2*b^7 + 2*(A*a^7*b^2 + 3*B*a^6*b^3 - 3*A*a^5*
b^4 - B*a^4*b^5)*d*x)*tan(d*x + c)^3 + 2*(A*a^7*b^2 + 4*B*a^6*b^3 - 2*A*a^5
*b^4 - 3*B*a^4*b^5 + 6*A*a^3*b^6 - B*a^2*b^7 + 3*A*a*b^8 + 2*(A*a^8*b + 3*B
*a^7*b^2 - 3*A*a^6*b^3 - B*a^5*b^4)*d*x)*tan(d*x + c)^2 - ((B*a^7*b^2 - 3*A
*a^6*b^3 + 3*B*a^5*b^4 - 9*A*a^4*b^5 + 3*B*a^3*b^6 - 9*A*a^2*b^7 + B*a*b^8
- 3*A*b^9)*tan(d*x + c)^3 + 2*(B*a^8*b - 3*A*a^7*b^2 + 3*B*a^6*b^3 - 9*A*a^
5*b^4 + 3*B*a^4*b^5 - 9*A*a^3*b^6 + B*a^2*b^7 - 3*A*a*b^8)*tan(d*x + c)^2 +
 (B*a^9 - 3*A*a^8*b + 3*B*a^7*b^2 - 9*A*a^6*b^3 + 3*B*a^5*b^4 - 9*A*a^4*b^5
 + B*a^3*b^6 - 3*A*a^2*b^7)*tan(d*x + c))*log(tan(d*x + c)^2/(tan(d*x + c)^
2 + 1)) + ((6*B*a^5*b^4 - 10*A*a^4*b^5 + 3*B*a^3*b^6 - 9*A*a^2*b^7 + B*a*b^
8 - 3*A*b^9)*tan(d*x + c)^3 + 2*(6*B*a^6*b^3 - 10*A*a^5*b^4 + 3*B*a^4*b^5 -
 9*A*a^3*b^6 + B*a^2*b^7 - 3*A*a*b^8)*tan(d*x + c)^2 + (6*B*a^7*b^2 - 10*A*
a^6*b^3 + 3*B*a^5*b^4 - 9*A*a^4*b^5 + B*a^3*b^6 - 3*A*a^2*b^7)*tan(d*x + c)
)*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1))
 + (4*A*a^8*b + 12*A*a^6*b^3 - 9*B*a^5*b^4 + 23*A*a^4*b^5 - 3*B*a^3*b^6 + 9
*A*a^2*b^7 + 2*(A*a^9 + 3*B*a^8*b - 3*A*a^7*b^2 - B*a^6*b^3)*d*x)*tan(d*x +
 c))/((a^10*b^2 + 3*a^8*b^4 + 3*a^6*b^6 + a^4*b^8)*d*tan(d*x + c)^3 + 2*(a^
11*b + 3*a^9*b^3 + 3*a^7*b^5 + a^5*b^7)*d*tan(d*x + c)^2 + (a^12 + 3*a^10*b
^2 + 3*a^8*b^4 + a^6*b^6)*d*tan(d*x + c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.31213, size = 756, normalized size = 2.63

$$-\frac{\frac{2\left(Aa^3+3Ba^2b-3Aab^2-Bb^3\right)(dx+c)}{a^6+3a^4b^2+3a^2b^4+b^6}+\frac{\left(Ba^3-3Aa^2b-3Bab^2+Ab^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^6+3a^4b^2+3a^2b^4+b^6}+\frac{2\left(6Ba^5b^3-10Aa^4b^4+3Ba^3b^5-9Aa^2b^6+Bab^7-3Ab^8\right)\log(|b\tan}{a^{10}b+3a^8b^3+3a^6b^5+a^4b^7}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] -1/2*(2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) + (B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*log(tan(d*x +
c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + 2*(6*B*a^5*b^3 - 10*A*a^4*b
^4 + 3*B*a^3*b^5 - 9*A*a^2*b^6 + B*a*b^7 - 3*A*b^8)*log(abs(b*tan(d*x + c)
+ a))/(a^10*b + 3*a^8*b^3 + 3*a^6*b^5 + a^4*b^7) - (18*B*a^5*b^4*tan(d*x +
c)^2 - 30*A*a^4*b^5*tan(d*x + c)^2 + 9*B*a^3*b^6*tan(d*x + c)^2 - 27*A*a^2*
b^7*tan(d*x + c)^2 + 3*B*a*b^8*tan(d*x + c)^2 - 9*A*b^9*tan(d*x + c)^2 + 42
*B*a^6*b^3*tan(d*x + c) - 68*A*a^5*b^4*tan(d*x + c) + 26*B*a^4*b^5*tan(d*x
+ c) - 66*A*a^3*b^6*tan(d*x + c) + 8*B*a^2*b^7*tan(d*x + c) - 22*A*a*b^8*ta
n(d*x + c) + 25*B*a^7*b^2 - 39*A*a^6*b^3 + 19*B*a^5*b^4 - 41*A*a^4*b^5 + 6*
B*a^3*b^6 - 14*A*a^2*b^7)/((a^10 + 3*a^8*b^2 + 3*a^6*b^4 + a^4*b^6)*(b*tan(
d*x + c) + a)^2) - 2*(B*a - 3*A*b)*log(abs(tan(d*x + c)))/a^4 + 2*(B*a*tan(
d*x + c) - 3*A*b*tan(d*x + c) + A*a)/(a^4*tan(d*x + c)))/d
```

3.289 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=352

$$\frac{b\left(11a^2Ab^3+3a^4Ab-6a^3b^2B+a^5(-B)-3ab^4B+6Ab^5\right)}{a^4d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{b\left(5a^2Ab-2a^3B-3ab^2B+6Ab^3\right)}{2a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}-\frac{\left(a^2A+3abB-6Ab^2\right)}{a^5d}$$

```
[Out] ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3 - ((a^2*A - 6*A*b
^2 + 3*a*b*B)*Log[Sin[c + d*x]])/(a^5*d) - (b^3*(15*a^4*A*b + 17*a^2*A*b^3
+ 6*A*b^5 - 10*a^5*B - 9*a^3*b^2*B - 3*a*b^4*B)*Log[a*Cos[c + d*x] + b*Sin[
c + d*x]])/(a^5*(a^2 + b^2)^3*d) + (b*(5*a^2*A*b + 6*A*b^3 - 2*a^3*B - 3*a*
b^2*B))/(2*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + ((2*A*b - a*B)*Cot[c
 + d*x])/(a^2*d*(a + b*Tan[c + d*x])^2) - (A*Cot[c + d*x]^2)/(2*a*d*(a + b*
Tan[c + d*x])^2) + (b*(3*a^4*A*b + 11*a^2*A*b^3 + 6*A*b^5 - a^5*B - 6*a^3*b
^2*B - 3*a*b^4*B))/(a^4*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.24866, antiderivative size = 352, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$\frac{b\left(11a^2Ab^3+3a^4Ab-6a^3b^2B+a^5(-B)-3ab^4B+6Ab^5\right)}{a^4d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{b\left(5a^2Ab-2a^3B-3ab^2B+6Ab^3\right)}{2a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^2}-\frac{\left(a^2A+3abB-6Ab^2\right)}{a^5d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*x)/(a^2 + b^2)^3 - ((a^2*A - 6*A*b
^2 + 3*a*b*B)*Log[Sin[c + d*x]])/(a^5*d) - (b^3*(15*a^4*A*b + 17*a^2*A*b^3
+ 6*A*b^5 - 10*a^5*B - 9*a^3*b^2*B - 3*a*b^4*B)*Log[a*Cos[c + d*x] + b*Sin[
c + d*x]])/(a^5*(a^2 + b^2)^3*d) + (b*(5*a^2*A*b + 6*A*b^3 - 2*a^3*B - 3*a*
b^2*B))/(2*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + ((2*A*b - a*B)*Cot[c
 + d*x])/(a^2*d*(a + b*Tan[c + d*x])^2) - (A*Cot[c + d*x]^2)/(2*a*d*(a + b*
Tan[c + d*x])^2) + (b*(3*a^4*A*b + 11*a^2*A*b^3 + 6*A*b^5 - a^5*B - 6*a^3*b
^2*B - 3*a*b^4*B))/(a^4*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
```

```
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = -\frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^2} - \frac{\int \frac{\cot^2(c+dx)\left(2(2Ab-aB)+2aA\tan(c+dx)+4Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^3}\,dx}{2a}$$

$$= \frac{(2Ab-aB)\cot(c+dx)}{a^2d(a+b\tan(c+dx))^2} - \frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^2} + \frac{\int \frac{\cot(c+dx)\left(-2\left(a^2A-6Ab^2+3ab \cdots\right.\right.}{\cdots}}{\cdots}$$

$$= \frac{b\left(5a^2Ab+6Ab^3-2a^3B-3ab^2B\right)}{2a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{(2Ab-aB)\cot(c+dx)}{a^2d(a+b\tan(c+dx))^2} - \frac{A\cot^2(c \cdots}{2ad(a+b\tan(\cdots}$$

$$= \frac{b\left(5a^2Ab+6Ab^3-2a^3B-3ab^2B\right)}{2a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{(2Ab-aB)\cot(c+dx)}{a^2d(a+b\tan(c+dx))^2} - \frac{A\cot^2(c \cdots}{2ad(a+b\tan(\cdots}$$

$$= \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} + \frac{b\left(5a^2Ab+6Ab^3-2a^3B-3ab^2B\right)}{2a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{(2Ab \cdots}{a^2d(a \cdots}$$

$$= \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)x}{\left(a^2+b^2\right)^3} - \frac{\left(a^2A-6Ab^2+3abB\right)\log(\sin(c+dx))}{a^5d} - \frac{b^3 \cdots}{\cdots}$$

Mathematica [C] time = 6.46483, size = 320, normalized size = 0.91

$$\frac{b^3\left(5a^2Ab-4a^3B-2ab^2B+3Ab^3\right)}{a^4d\left(a^2+b^2\right)^2(a+b\tan(c+dx))} + \frac{b^3(Ab-aB)}{2a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^2} - \frac{b^3\left(17a^2Ab^3+15a^4Ab-9a^3b^2B-10a^5B-3 \cdots\right.}{a^5d\left(a^2+b \cdots\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] ((3*A*b - a*B)*Cot[c + d*x])/(a^4*d) - (A*Cot[c + d*x]^2)/(2*a^3*d) + ((A +
 I*B)*Log[I - Tan[c + d*x]])/(2*(a + I*b)^3*d) - ((a^2*A - 6*A*b^2 + 3*a*b*
B)*Log[Tan[c + d*x]])/(a^5*d) + ((A - I*B)*Log[I + Tan[c + d*x]])/(2*(a - I
*b)^3*d) - (b^3*(15*a^4*A*b + 17*a^2*A*b^3 + 6*A*b^5 - 10*a^5*B - 9*a^3*b^2
*B - 3*a*b^4*B)*Log[a + b*Tan[c + d*x]])/(a^5*(a^2 + b^2)^3*d) + (b^3*(A*b
- a*B))/(2*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b^3*(5*a^2*A*b + 3*
A*b^3 - 4*a^3*B - 2*a*b^2*B))/(a^4*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Maple [B] time = 0.177, size = 713, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] 3/d/a^4/tan(d*x+c)*A*b+6/d/a^5*ln(tan(d*x+c))*A*b^2-3/d/a^4*ln(tan(d*x+c))*
B*b-1/2/d/a^3*A/tan(d*x+c)^2-1/d/a^3/tan(d*x+c)*B-1/d/a^3*A*ln(tan(d*x+c))+
5/d*b^4/a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))*A-1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c
)^2)*B*b^3-1/d/(a^2+b^2)^3*A*arctan(tan(d*x+c))*b^3-1/d/(a^2+b^2)^3*B*arcta
n(tan(d*x+c))*a^3+1/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a^3+10/d/(a^2+b^2)
^3*ln(a+b*tan(d*x+c))*B*b^3-3/2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*A*a*b^2+3/
2/d/(a^2+b^2)^3*ln(1+tan(d*x+c)^2)*B*a^2*b+3/d/(a^2+b^2)^3*A*arctan(tan(d*x
+c))*a^2*b+3/d/(a^2+b^2)^3*B*arctan(tan(d*x+c))*a*b^2-6/d*b^8/a^5/(a^2+b^2)
^3*ln(a+b*tan(d*x+c))*A+9/d*b^5/a^2/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*B+3/d*b^
7/a^4/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*B+1/2/d*b^4/a^3/(a^2+b^2)/(a+b*tan(d*x
+c))^2*A-1/2/d*b^3/a^2/(a^2+b^2)/(a+b*tan(d*x+c))^2*B+3/d*b^6/a^4/(a^2+b^2)
^2/(a+b*tan(d*x+c))*A-4/d*b^3/a/(a^2+b^2)^2/(a+b*tan(d*x+c))*B-2/d*b^5/a^3/
(a^2+b^2)^2/(a+b*tan(d*x+c))*B-15/d*b^4/a/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A-
17/d*b^6/a^3/(a^2+b^2)^3*ln(a+b*tan(d*x+c))*A
```

Maxima [A] time = 1.75714, size = 730, normalized size = 2.07

$$-\frac{\frac{2\left(Ba^3-3\,Aa^2b-3\,Bab^2+Ab^3\right)(dx+c)}{a^6+3\,a^4b^2+3\,a^2b^4+b^6}-\frac{2\left(10\,Ba^5b^3-15\,Aa^4b^4+9\,Ba^3b^5-17\,Aa^2b^6+3\,Bab^7-6\,Ab^8\right)\log(b\tan(dx+c)+a)}{a^{11}+3\,a^9b^2+3\,a^7b^4+a^5b^6}-\frac{\left(Aa^3+3\,Ba^2b-3\,Aab^2-Bb^3\right)\log(\mathrm{t}}{a^6+3\,a^4b^2+3\,a^2b^4+b^{}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] -1/2*(2*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) - 2*(10*B*a^5*b^3 - 15*A*a^4*b^4 + 9*B*a^3*b^5 - 17*A*a^
2*b^6 + 3*B*a*b^7 - 6*A*b^8)*log(b*tan(d*x + c) + a)/(a^11 + 3*a^9*b^2 + 3*
a^7*b^4 + a^5*b^6) - (A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x +
c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) + (A*a^7 + 2*A*a^5*b^2 + A*a^
3*b^4 + 2*(B*a^5*b^2 - 3*A*a^4*b^3 + 6*B*a^3*b^4 - 11*A*a^2*b^5 + 3*B*a*b^6
```

```
 - 6*A*b^7)*tan(d*x + c)^3 + (4*B*a^6*b - 11*A*a^5*b^2 + 17*B*a^4*b^3 - 33*
A*a^3*b^4 + 9*B*a^2*b^5 - 18*A*a*b^6)*tan(d*x + c)^2 + 2*(B*a^7 - 2*A*a^6*b
 + 2*B*a^5*b^2 - 4*A*a^4*b^3 + B*a^3*b^4 - 2*A*a^2*b^5)*tan(d*x + c))/((a^8
*b^2 + 2*a^6*b^4 + a^4*b^6)*tan(d*x + c)^4 + 2*(a^9*b + 2*a^7*b^3 + a^5*b^5
)*tan(d*x + c)^3 + (a^10 + 2*a^8*b^2 + a^6*b^4)*tan(d*x + c)^2) + 2*(A*a^2
+ 3*B*a*b - 6*A*b^2)*log(tan(d*x + c))/a^5)/d
```

<u>Fricas</u> [B] time = 3.23821, size = 2338, normalized size = 6.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] -1/2*(A*a^10 + 3*A*a^8*b^2 + 3*A*a^6*b^4 + A*a^4*b^6 + (A*a^8*b^2 + 3*A*a^6
*b^4 - 9*B*a^5*b^5 + 14*A*a^4*b^6 - 3*B*a^3*b^7 + 6*A*a^2*b^8 + 2*(B*a^8*b^
2 - 3*A*a^7*b^3 - 3*B*a^6*b^4 + A*a^5*b^5)*d*x)*tan(d*x + c)^4 + 2*(A*a^9*b
 + B*a^8*b^2 - 2*B*a^6*b^4 + 6*B*a^4*b^6 - 11*A*a^3*b^7 + 3*B*a^2*b^8 - 6*A
*a*b^9 + 2*(B*a^9*b - 3*A*a^8*b^2 - 3*B*a^7*b^3 + A*a^6*b^4)*d*x)*tan(d*x +
 c)^3 + (A*a^10 + 4*B*a^9*b - 8*A*a^8*b^2 + 12*B*a^7*b^3 - 30*A*a^6*b^4 + 2
3*B*a^5*b^5 - 45*A*a^4*b^6 + 9*B*a^3*b^7 - 18*A*a^2*b^8 + 2*(B*a^10 - 3*A*a
^9*b - 3*B*a^8*b^2 + A*a^7*b^3)*d*x)*tan(d*x + c)^2 + ((A*a^8*b^2 + 3*B*a^7
*b^3 - 3*A*a^6*b^4 + 9*B*a^5*b^5 - 15*A*a^4*b^6 + 9*B*a^3*b^7 - 17*A*a^2*b^
8 + 3*B*a*b^9 - 6*A*b^10)*tan(d*x + c)^4 + 2*(A*a^9*b + 3*B*a^8*b^2 - 3*A*a
^7*b^3 + 9*B*a^6*b^4 - 15*A*a^5*b^5 + 9*B*a^4*b^6 - 17*A*a^3*b^7 + 3*B*a^2*
b^8 - 6*A*a*b^9)*tan(d*x + c)^3 + (A*a^10 + 3*B*a^9*b - 3*A*a^8*b^2 + 9*B*a
^7*b^3 - 15*A*a^6*b^4 + 9*B*a^5*b^5 - 17*A*a^4*b^6 + 3*B*a^3*b^7 - 6*A*a^2*
b^8)*tan(d*x + c)^2)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1)) - ((10*B*a^5*
b^5 - 15*A*a^4*b^6 + 9*B*a^3*b^7 - 17*A*a^2*b^8 + 3*B*a*b^9 - 6*A*b^10)*tan
(d*x + c)^4 + 2*(10*B*a^6*b^4 - 15*A*a^5*b^5 + 9*B*a^4*b^6 - 17*A*a^3*b^7 +
 3*B*a^2*b^8 - 6*A*a*b^9)*tan(d*x + c)^3 + (10*B*a^7*b^3 - 15*A*a^6*b^4 + 9
*B*a^5*b^5 - 17*A*a^4*b^6 + 3*B*a^3*b^7 - 6*A*a^2*b^8)*tan(d*x + c)^2)*log(
(b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) + 2*(
B*a^10 - 2*A*a^9*b + 3*B*a^8*b^2 - 6*A*a^7*b^3 + 3*B*a^6*b^4 - 6*A*a^5*b^5
+ B*a^4*b^6 - 2*A*a^3*b^7)*tan(d*x + c))/((a^11*b^2 + 3*a^9*b^4 + 3*a^7*b^6
 + a^5*b^8)*d*tan(d*x + c)^4 + 2*(a^12*b + 3*a^10*b^3 + 3*a^8*b^5 + a^6*b^7
)*d*tan(d*x + c)^3 + (a^13 + 3*a^11*b^2 + 3*a^9*b^4 + a^7*b^6)*d*tan(d*x +
c)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.37698, size = 1096, normalized size = 3.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] -1/4*(4*(B*a^3 - 3*A*a^2*b - 3*B*a*b^2 + A*b^3)*(d*x + c)/(a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6) - 2*(A*a^3 + 3*B*a^2*b - 3*A*a*b^2 - B*b^3)*log(tan(d*x
+ c)^2 + 1)/(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6) - 4*(10*B*a^5*b^4 - 15*A*a^
4*b^5 + 9*B*a^3*b^6 - 17*A*a^2*b^7 + 3*B*a*b^8 - 6*A*b^9)*log(abs(b*tan(d*x
 + c) + a))/(a^11*b + 3*a^9*b^3 + 3*a^7*b^5 + a^5*b^7) - (3*A*a^7*b^2*tan(d
*x + c)^4 + 9*B*a^6*b^3*tan(d*x + c)^4 - 9*A*a^5*b^4*tan(d*x + c)^4 - 3*B*a
^4*b^5*tan(d*x + c)^4 + 6*A*a^8*b*tan(d*x + c)^3 + 14*B*a^7*b^2*tan(d*x + c
)^3 - 6*A*a^6*b^3*tan(d*x + c)^3 - 34*B*a^5*b^4*tan(d*x + c)^3 + 56*A*a^4*b
^5*tan(d*x + c)^3 - 36*B*a^3*b^6*tan(d*x + c)^3 + 68*A*a^2*b^7*tan(d*x + c)
^3 - 12*B*a*b^8*tan(d*x + c)^3 + 24*A*b^9*tan(d*x + c)^3 + 3*A*a^9*tan(d*x
+ c)^2 + B*a^8*b*tan(d*x + c)^2 + 13*A*a^7*b^2*tan(d*x + c)^2 - 45*B*a^6*b^
3*tan(d*x + c)^2 + 88*A*a^5*b^4*tan(d*x + c)^2 - 52*B*a^4*b^5*tan(d*x + c)^
2 + 102*A*a^3*b^6*tan(d*x + c)^2 - 18*B*a^2*b^7*tan(d*x + c)^2 + 36*A*a*b^8
*tan(d*x + c)^2 - 4*B*a^9*tan(d*x + c) + 8*A*a^8*b*tan(d*x + c) - 12*B*a^7*
b^2*tan(d*x + c) + 24*A*a^6*b^3*tan(d*x + c) - 12*B*a^5*b^4*tan(d*x + c) +
24*A*a^4*b^5*tan(d*x + c) - 4*B*a^3*b^6*tan(d*x + c) + 8*A*a^2*b^7*tan(d*x
+ c) - 2*A*a^9 - 6*A*a^7*b^2 - 6*A*a^5*b^4 - 2*A*a^3*b^6)/((a^10 + 3*a^8*b^
2 + 3*a^6*b^4 + a^4*b^6)*(b*tan(d*x + c)^2 + a*tan(d*x + c))^2) + 4*(A*a^2
+ 3*B*a*b - 6*A*b^2)*log(abs(tan(d*x + c)))/a^5)/d
```

3.290 $\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=351

$$\frac{a(Ab-aB)\tan^3(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)\tan^2(c+dx)}{2b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{a^2\left(a^2Ab^3+3a^3b^2B+a^5B+6ab^4B-3Ab^5\right)}{b^4d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}$$

```
[Out] ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4 + (
(4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*Log[Cos[c + d*x]])/((
a^2 + b^2)^4*d) + (a*(4*a^2*A*b^5 - 4*A*b^7 + a^7*B + 4*a^5*b^2*B + 5*a^3*b
^4*B + 10*a*b^6*B)*Log[a + b*Tan[c + d*x]])/(b^4*(a^2 + b^2)^4*d) + (a*(A*b
 - a*B)*Tan[c + d*x]^3)/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) + (a*(2*
A*b^3 - a*(a^2 + 3*b^2)*B)*Tan[c + d*x]^2)/(2*b^2*(a^2 + b^2)^2*d*(a + b*Ta
n[c + d*x])^2) + (a^2*(a^2*A*b^3 - 3*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*
B))/(b^4*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.823886, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3605, 3645, 3635, 3626, 3617, 31, 3475}

$$\frac{a(Ab-aB)\tan^3(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)\tan^2(c+dx)}{2b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{a^2\left(a^2Ab^3+3a^3b^2B+a^5B+6ab^4B-3Ab^5\right)}{b^4d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```


```
[Out] ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4 + (
(4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*Log[Cos[c + d*x]])/((
a^2 + b^2)^4*d) + (a*(4*a^2*A*b^5 - 4*A*b^7 + a^7*B + 4*a^5*b^2*B + 5*a^3*b
^4*B + 10*a*b^6*B)*Log[a + b*Tan[c + d*x]])/(b^4*(a^2 + b^2)^4*d) + (a*(A*b
 - a*B)*Tan[c + d*x]^3)/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) + (a*(2*
A*b^3 - a*(a^2 + 3*b^2)*B)*Tan[c + d*x]^2)/(2*b^2*(a^2 + b^2)^2*d*(a + b*Ta
n[c + d*x])^2) + (a^2*(a^2*A*b^3 - 3*A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*
B))/(b^4*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = \frac{a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{\int \frac{\tan^2(c+dx)\left(-3a(Ab-aB)+3b(Ab-aB)\tan(c+dx)+3(\right.}{(a+b\tan(c+dx))^3}}{3b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\tan^2(c+dx)}{2b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} +$$

$$= \frac{a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\tan^2(c+dx)}{2b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} +$$

$$= \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} + \frac{a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3}$$

$$= \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} + \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B\right.}{\left(a^2+b^2\right)^4}$$

$$= \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} + \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B\right.}{\left(a^2+b^2\right)^4}$$

Mathematica [C] time = 6.69205, size = 1812, normalized size = 5.16

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] (((4*I)*a^10*A*b^8 + 4*a^9*A*b^9 + (8*I)*a^8*A*b^10 + 8*a^7*A*b^11 - (8*I)*
a^4*A*b^14 - 8*a^3*A*b^15 - (4*I)*a^2*A*b^16 - 4*a*A*b^17 + I*a^15*b^3*B +
a^14*b^4*B + (7*I)*a^13*b^5*B + 7*a^12*b^6*B + (20*I)*a^11*b^7*B + 20*a^10*
b^8*B + (38*I)*a^9*b^9*B + 38*a^8*b^10*B + (49*I)*a^7*b^11*B + 49*a^6*b^12*
B + (35*I)*a^5*b^13*B + 35*a^4*b^14*B + (10*I)*a^3*b^15*B + 10*a^2*b^16*B)*
(c + d*x)*Sec[c + d*x]^3*(a*Cos[c + d*x] + b*Sin[c + d*x])^4*(A + B*Tan[c +
 d*x]))/((a - I*b)^8*(a + I*b)^7*b^7*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a
 + b*Tan[c + d*x])^4) - (I*(4*a^3*A*b^5 - 4*a*A*b^7 + a^8*B + 4*a^6*b^2*B +
 5*a^4*b^4*B + 10*a^2*b^6*B)*ArcTan[Tan[c + d*x]]*Sec[c + d*x]^3*(a*Cos[c +
 d*x] + b*Sin[c + d*x])^4*(A + B*Tan[c + d*x]))/(b^4*(a^2 + b^2)^4*d*(A*Cos
[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c + d*x])^4) - (B*Log[Cos[c + d*x]]*
Sec[c + d*x]^3*(a*Cos[c + d*x] + b*Sin[c + d*x])^4*(A + B*Tan[c + d*x]))/(b
^4*d*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + b*Tan[c + d*x])^4) + ((4*a^3*A*
b^5 - 4*a*A*b^7 + a^8*B + 4*a^6*b^2*B + 5*a^4*b^4*B + 10*a^2*b^6*B)*Log[(a*
Cos[c + d*x] + b*Sin[c + d*x])^2]*Sec[c + d*x]^3*(a*Cos[c + d*x] + b*Sin[c
+ d*x])^4*(A + B*Tan[c + d*x]))/(2*b^4*(a^2 + b^2)^4*d*(A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + b*Tan[c + d*x])^4) + (Sec[c + d*x]^3*(a*Cos[c + d*x] + b
*Sin[c + d*x])*(12*a^6*A*b^4*Cos[c + d*x] + 48*a^4*A*b^6*Cos[c + d*x] + 36*
a^2*A*b^8*Cos[c + d*x] - 12*a^9*b*B*Cos[c + d*x] - 60*a^7*b^3*B*Cos[c + d*x
] - 108*a^5*b^5*B*Cos[c + d*x] - 60*a^3*b^7*B*Cos[c + d*x] + 9*a^7*A*b^3*(c
 + d*x)*Cos[c + d*x] - 45*a^5*A*b^5*(c + d*x)*Cos[c + d*x] - 45*a^3*A*b^7*(
c + d*x)*Cos[c + d*x] + 9*a*A*b^9*(c + d*x)*Cos[c + d*x] + 36*a^6*b^4*B*(c
+ d*x)*Cos[c + d*x] - 36*a^2*b^8*B*(c + d*x)*Cos[c + d*x] + 8*a^6*A*b^4*Cos
[3*(c + d*x)] - 28*a^4*A*b^6*Cos[3*(c + d*x)] - 36*a^2*A*b^8*Cos[3*(c + d*x
)] + 6*a^9*b*B*Cos[3*(c + d*x)] + 28*a^7*b^3*B*Cos[3*(c + d*x)] + 82*a^5*b^
5*B*Cos[3*(c + d*x)] + 60*a^3*b^7*B*Cos[3*(c + d*x)] + 3*a^7*A*b^3*(c + d*x
)*Cos[3*(c + d*x)] - 27*a^5*A*b^5*(c + d*x)*Cos[3*(c + d*x)] + 57*a^3*A*b^7
*(c + d*x)*Cos[3*(c + d*x)] - 9*a*A*b^9*(c + d*x)*Cos[3*(c + d*x)] + 12*a^6
*b^4*B*(c + d*x)*Cos[3*(c + d*x)] - 48*a^4*b^6*B*(c + d*x)*Cos[3*(c + d*x)]
 + 36*a^2*b^8*B*(c + d*x)*Cos[3*(c + d*x)] + 30*a^5*A*b^5*Sin[c + d*x] + 84
*a^3*A*b^7*Sin[c + d*x] + 54*a*A*b^9*Sin[c + d*x] - 3*a^10*B*Sin[c + d*x] -
 33*a^8*b^2*B*Sin[c + d*x] - 123*a^6*b^4*B*Sin[c + d*x] - 183*a^4*b^6*B*Sin
[c + d*x] - 90*a^2*b^8*B*Sin[c + d*x] + 9*a^6*A*b^4*(c + d*x)*Sin[c + d*x]
- 45*a^4*A*b^6*(c + d*x)*Sin[c + d*x] - 45*a^2*A*b^8*(c + d*x)*Sin[c + d*x]
 + 9*A*b^10*(c + d*x)*Sin[c + d*x] + 36*a^5*b^5*B*(c + d*x)*Sin[c + d*x] -
36*a*b^9*B*(c + d*x)*Sin[c + d*x] - 4*a^7*A*b^3*Sin[3*(c + d*x)] + 18*a^5*A
*b^5*Sin[3*(c + d*x)] + 4*a^3*A*b^7*Sin[3*(c + d*x)] - 18*a*A*b^9*Sin[3*(c
+ d*x)] - 3*a^10*B*Sin[3*(c + d*x)] - 11*a^8*b^2*B*Sin[3*(c + d*x)] - 27*a^
6*b^4*B*Sin[3*(c + d*x)] + 11*a^4*b^6*B*Sin[3*(c + d*x)] + 30*a^2*b^8*B*Sin
[3*(c + d*x)] + 9*a^6*A*b^4*(c + d*x)*Sin[3*(c + d*x)] - 57*a^4*A*b^6*(c +
```

```
d*x)*Sin[3*(c + d*x)] + 27*a^2*A*b^8*(c + d*x)*Sin[3*(c + d*x)] - 3*A*b^10*
(c + d*x)*Sin[3*(c + d*x)] + 36*a^5*b^5*B*(c + d*x)*Sin[3*(c + d*x)] - 48*a
^3*b^7*B*(c + d*x)*Sin[3*(c + d*x)] + 12*a*b^9*B*(c + d*x)*Sin[3*(c + d*x)]
)*(A + B*Tan[c + d*x]))/(12*(a - I*b)^4*(a + I*b)^4*b^3*d*(A*Cos[c + d*x] +
 B*Sin[c + d*x])*(a + b*Tan[c + d*x])^4)
```

Maple [B] time = 0.059, size = 854, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/d*a^8/(a^2+b^2)^4/b^4*ln(a+b*tan(d*x+c))*B-6/d*a^2*b/(a^2+b^2)^3/(a+b*tan
(d*x+c))*A+3/d*a^7/b^4/(a^2+b^2)^3/(a+b*tan(d*x+c))*B+9/d*a^5/b^2/(a^2+b^2)
^3/(a+b*tan(d*x+c))*B-4/d*a/(a^2+b^2)^4*b^3*ln(a+b*tan(d*x+c))*A+4/d/(a^2+b
^2)^4*B*arctan(tan(d*x+c))*a^3*b+4/d*a^6/(a^2+b^2)^4/b^2*ln(a+b*tan(d*x+c))
*B-4/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a*b^3-2/d/(a^2+b^2)^4*ln(1+tan(d*x+
c)^2)*A*a^3*b+10/d*a^2/(a^2+b^2)^4*b^2*ln(a+b*tan(d*x+c))*B-3/d/(a^2+b^2)^4
*ln(1+tan(d*x+c)^2)*B*a^2*b^2-6/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a^2*b^2-
1/d*a^6/b^3/(a^2+b^2)^3/(a+b*tan(d*x+c))*A-3/d*a^4/b/(a^2+b^2)^3/(a+b*tan(d
*x+c))*A+2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a*b^3-3/2/d*a^6/b^4/(a^2+b^2)
^2/(a+b*tan(d*x+c))^2*B-5/2/d*a^4/b^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*B-1/3/
d*a^4/b^3/(a^2+b^2)/(a+b*tan(d*x+c))^3*A+1/3/d*a^5/b^4/(a^2+b^2)/(a+b*tan(d
*x+c))^3*B+4/d*a^3/(a^2+b^2)^4*b*ln(a+b*tan(d*x+c))*A+1/d*a^5/b^3/(a^2+b^2)
^2/(a+b*tan(d*x+c))^2*A+2/d*a^3/b/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*A+1/2/d/(a
^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a^4+1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*b
^4+1/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a^4+1/d/(a^2+b^2)^4*A*arctan(tan(d*
x+c))*b^4+5/d*a^4/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B+10/d*a^3/(a^2+b^2)^3/(a+
b*tan(d*x+c))*B
```

Maxima [A] time = 1.58703, size = 787, normalized size = 2.24

$$\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(Ba^8+4\,Ba^6b^2+5\,Ba^4b^4+4\,Aa^3b^5+10\,Ba^2b^6-4\,Aab^7\right)\log(b\tan(dx+c)+a)}{a^8b^4+4\,a^6b^6+6\,a^4b^8+4\,a^2b^{10}+b^{12}}+\frac{3\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3\right.}{a^8+4\,a^6b^2+6\,a^4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] 1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 6*(B*a^8 + 4*B*a^6*b^2 + 5*B*
a^4*b^4 + 4*A*a^3*b^5 + 10*B*a^2*b^6 - 4*A*a*b^7)*log(b*tan(d*x + c) + a)/(
a^8*b^4 + 4*a^6*b^6 + 6*a^4*b^8 + 4*a^2*b^10 + b^12) + 3*(B*a^4 - 4*A*a^3*b
 - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^
2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + (11*B*a^9 - 2*A*a^8*b + 34*B*a^7*b^2 - 4
*A*a^6*b^3 + 47*B*a^5*b^4 - 26*A*a^4*b^5 + 6*(3*B*a^7*b^2 - A*a^6*b^3 + 9*B
*a^5*b^4 - 3*A*a^4*b^5 + 10*B*a^3*b^6 - 6*A*a^2*b^7)*tan(d*x + c)^2 + 3*(9*
B*a^8*b - 2*A*a^7*b^2 + 28*B*a^6*b^3 - 6*A*a^5*b^4 + 35*B*a^4*b^5 - 20*A*a^
3*b^6)*tan(d*x + c))/(a^9*b^4 + 3*a^7*b^6 + 3*a^5*b^8 + a^3*b^10 + (a^6*b^7
 + 3*a^4*b^9 + 3*a^2*b^11 + b^13)*tan(d*x + c)^3 + 3*(a^7*b^6 + 3*a^5*b^8 +
 3*a^3*b^10 + a*b^12)*tan(d*x + c)^2 + 3*(a^8*b^5 + 3*a^6*b^7 + 3*a^4*b^9 +
 a^2*b^11)*tan(d*x + c)))/d
```

Fricas [B] time = 3.05606, size = 2438, normalized size = 6.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] 1/6*(3*B*a^9*b^2 + 6*B*a^7*b^4 + 18*A*a^6*b^5 + 47*B*a^5*b^6 - 26*A*a^4*b^7
 - (11*B*a^8*b^3 - 2*A*a^7*b^4 + 42*B*a^6*b^5 - 6*A*a^5*b^6 + 75*B*a^4*b^7
- 48*A*a^3*b^8 - 6*(A*a^4*b^7 + 4*B*a^3*b^8 - 6*A*a^2*b^9 - 4*B*a*b^10 + A*
b^11)*d*x)*tan(d*x + c)^3 + 6*(A*a^7*b^4 + 4*B*a^6*b^5 - 6*A*a^5*b^6 - 4*B*
a^4*b^7 + A*a^3*b^8)*d*x - 3*(5*B*a^9*b^2 + 18*B*a^7*b^4 + 2*A*a^6*b^5 + 37
*B*a^5*b^6 - 30*A*a^4*b^7 - 20*B*a^3*b^8 + 12*A*a^2*b^9 - 6*(A*a^5*b^6 + 4*
B*a^4*b^7 - 6*A*a^3*b^8 - 4*B*a^2*b^9 + A*a*b^10)*d*x)*tan(d*x + c)^2 + 3*(
B*a^11 + 4*B*a^9*b^2 + 5*B*a^7*b^4 + 4*A*a^6*b^5 + 10*B*a^5*b^6 - 4*A*a^4*b
^7 + (B*a^8*b^3 + 4*B*a^6*b^5 + 5*B*a^4*b^7 + 4*A*a^3*b^8 + 10*B*a^2*b^9 -
4*A*a*b^10)*tan(d*x + c)^3 + 3*(B*a^9*b^2 + 4*B*a^7*b^4 + 5*B*a^5*b^6 + 4*A
*a^4*b^7 + 10*B*a^3*b^8 - 4*A*a^2*b^9)*tan(d*x + c)^2 + 3*(B*a^10*b + 4*B*a
^8*b^3 + 5*B*a^6*b^5 + 4*A*a^5*b^6 + 10*B*a^4*b^7 - 4*A*a^3*b^8)*tan(d*x +
c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1
)) - 3*(B*a^11 + 4*B*a^9*b^2 + 6*B*a^7*b^4 + 4*B*a^5*b^6 + B*a^3*b^8 + (B*a
^8*b^3 + 4*B*a^6*b^5 + 6*B*a^4*b^7 + 4*B*a^2*b^9 + B*b^11)*tan(d*x + c)^3 +
 3*(B*a^9*b^2 + 4*B*a^7*b^4 + 6*B*a^5*b^6 + 4*B*a^3*b^8 + B*a*b^10)*tan(d*x
```

```
 + c)^2 + 3*(B*a^10*b + 4*B*a^8*b^3 + 6*B*a^6*b^5 + 4*B*a^4*b^7 + B*a^2*b^9
)*tan(d*x + c))*log(1/(tan(d*x + c)^2 + 1)) - 3*(2*B*a^10*b + 5*B*a^8*b^3 +
 2*A*a^7*b^4 + 12*B*a^6*b^5 - 22*A*a^5*b^6 - 35*B*a^4*b^7 + 20*A*a^3*b^8 -
6*(A*a^6*b^5 + 4*B*a^5*b^6 - 6*A*a^4*b^7 - 4*B*a^3*b^8 + A*a^2*b^9)*d*x)*ta
n(d*x + c))/((a^8*b^7 + 4*a^6*b^9 + 6*a^4*b^11 + 4*a^2*b^13 + b^15)*d*tan(d
*x + c)^3 + 3*(a^9*b^6 + 4*a^7*b^8 + 6*a^5*b^10 + 4*a^3*b^12 + a*b^14)*d*ta
n(d*x + c)^2 + 3*(a^10*b^5 + 4*a^8*b^7 + 6*a^6*b^9 + 4*a^4*b^11 + a^2*b^13)
*d*tan(d*x + c) + (a^11*b^4 + 4*a^9*b^6 + 6*a^7*b^8 + 4*a^5*b^10 + a^3*b^12
)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.34722, size = 971, normalized size = 2.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] 1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a^
2*b^2 + 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4
*b^4 + 4*a^2*b^6 + b^8) + 6*(B*a^8 + 4*B*a^6*b^2 + 5*B*a^4*b^4 + 4*A*a^3*b^
5 + 10*B*a^2*b^6 - 4*A*a*b^7)*log(abs(b*tan(d*x + c) + a))/(a^8*b^4 + 4*a^6
*b^6 + 6*a^4*b^8 + 4*a^2*b^10 + b^12) - (11*B*a^8*b^2*tan(d*x + c)^3 + 44*B
*a^6*b^4*tan(d*x + c)^3 + 55*B*a^4*b^6*tan(d*x + c)^3 + 44*A*a^3*b^7*tan(d*
x + c)^3 + 110*B*a^2*b^8*tan(d*x + c)^3 - 44*A*a*b^9*tan(d*x + c)^3 + 15*B*
a^9*b*tan(d*x + c)^2 + 6*A*a^8*b^2*tan(d*x + c)^2 + 60*B*a^7*b^3*tan(d*x +
c)^2 + 24*A*a^6*b^4*tan(d*x + c)^2 + 51*B*a^5*b^5*tan(d*x + c)^2 + 186*A*a^
```

```
4*b^6*tan(d*x + c)^2 + 270*B*a^3*b^7*tan(d*x + c)^2 - 96*A*a^2*b^8*tan(d*x
+ c)^2 + 6*B*a^10*tan(d*x + c) + 6*A*a^9*b*tan(d*x + c) + 21*B*a^8*b^2*tan(
d*x + c) + 24*A*a^7*b^3*tan(d*x + c) - 24*B*a^6*b^4*tan(d*x + c) + 210*A*a^
5*b^5*tan(d*x + c) + 225*B*a^4*b^6*tan(d*x + c) - 72*A*a^3*b^7*tan(d*x + c)
 + 2*A*a^10 - B*a^9*b + 6*A*a^8*b^2 - 26*B*a^7*b^3 + 74*A*a^6*b^4 + 63*B*a^
5*b^5 - 18*A*a^4*b^6)/((a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11)
*(b*tan(d*x + c) + a)^3))/d
```

3.291 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=298

$$\frac{a(Ab-aB)\tan^2(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a^2\left(a^2Ab+2a^3B+8ab^2B-5Ab^3\right)}{6b^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}-\frac{a\left(5a^2Ab^3+a^4Ab+7a^3b^2B+2a^5B+17ab^4B\right.}{3b^3d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}$$

```
[Out] -(((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4)
+ ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*Log[a*Cos[c + d*x]
 + b*Sin[c + d*x]])/((a^2 + b^2)^4*d) + (a*(A*b - a*B)*Tan[c + d*x]^2)/(3*b
*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) + (a^2*(a^2*A*b - 5*A*b^3 + 2*a^3*B
+ 8*a*b^2*B))/(6*b^3*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])^2) - (a*(a^4*A*b
+ 5*a^2*A*b^3 - 8*A*b^5 + 2*a^5*B + 7*a^3*b^2*B + 17*a*b^4*B))/(3*b^3*(a^2
+ b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.572276, antiderivative size = 298, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3605, 3635, 3628, 3531, 3530}

$$\frac{a(Ab-aB)\tan^2(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a^2\left(a^2Ab+2a^3B+8ab^2B-5Ab^3\right)}{6b^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}-\frac{a\left(5a^2Ab^3+a^4Ab+7a^3b^2B+2a^5B+17ab^4B\right.}{3b^3d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] -(((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4)
+ ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*Log[a*Cos[c + d*x]
 + b*Sin[c + d*x]])/((a^2 + b^2)^4*d) + (a*(A*b - a*B)*Tan[c + d*x]^2)/(3*b
*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) + (a^2*(a^2*A*b - 5*A*b^3 + 2*a^3*B
+ 8*a*b^2*B))/(6*b^3*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])^2) - (a*(a^4*A*b
+ 5*a^2*A*b^3 - 8*A*b^5 + 2*a^5*B + 7*a^3*b^2*B + 17*a*b^4*B))/(3*b^3*(a^2
+ b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
```

```
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = \frac{a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{\int \frac{\tan(c+dx)\left(-2a(Ab-aB)+3b(Ab-aB)\tan(c+dx)+\left(aA\right.\right.}{(a+b\tan(c+dx))^3}}{3b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a^2\left(a^2Ab-5Ab^3+2a^3B+8ab^2B\right)}{6b^3\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} + \int$$

$$= \frac{a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a^2\left(a^2Ab-5Ab^3+2a^3B+8ab^2B\right)}{6b^3\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} - a($$

$$= -\frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} + \frac{a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx)}$$

$$= -\frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} + \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB\right.}{(}$$

Mathematica [C] time = 6.30685, size = 465, normalized size = 1.56

$$-\frac{B\tan^2(c+dx)}{bd(a+b\tan(c+dx))^3} - \frac{-\frac{(-2aB-Ab)\tan(c+dx)}{2bd(a+b\tan(c+dx))^3} - \frac{-\frac{2a^2B+aAb-2b^2B}{3bd(a+b\tan(c+dx))^3} + \frac{\left(6aAb^3+6b^4B\right)\left(-\frac{b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^3(a+b\tan(c+dx))} - \frac{ab}{\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2} - \frac{}{3\left(a^2+b^2\right)(a}\right.}{}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] -((B*Tan[c + d*x]^2)/(b*d*(a + b*Tan[c + d*x])^3)) - (-((-(A*b) - 2*a*B)*Ta
n[c + d*x])/(2*b*d*(a + b*Tan[c + d*x])^3) - (-(a*A*b + 2*a^2*B - 2*b^2*B)/
(3*b*d*(a + b*Tan[c + d*x])^3) + (((6*a*A*b^3 + 6*b^4*B)*(((-I/2)*Log[I - T
an[c + d*x]])/(a + I*b)^4 + ((I/2)*Log[I + Tan[c + d*x]])/(a - I*b)^4 + (4*
a*(a - b)*b*(a + b)*Log[a + b*Tan[c + d*x]])/(a^2 + b^2)^4 - b/(3*(a^2 + b^
2)*(a + b*Tan[c + d*x])^3) - (a*b)/((a^2 + b^2)^2*(a + b*Tan[c + d*x])^2) -
 (b*(3*a^2 - b^2))/((a^2 + b^2)^3*(a + b*Tan[c + d*x]))))/b - 6*A*b^2*(-Log
[I - Tan[c + d*x]]/(2*(I*a - b)^3) + Log[I + Tan[c + d*x]]/(2*(I*a + b)^3)
+ (b*(3*a^2 - b^2)*Log[a + b*Tan[c + d*x]])/(a^2 + b^2)^3 - b/(2*(a^2 + b^2
)*(a + b*Tan[c + d*x])^2) - (2*a*b)/((a^2 + b^2)^2*(a + b*Tan[c + d*x]))))/
```

```
(3*b*d))/(2*b))/b
```

Maple [B] time = 0.059, size = 780, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

```
[Out] 3/d*a/(a^2+b^2)^3*b^2/(a+b*tan(d*x+c))*A-1/d*a^6/(a^2+b^2)^3/b^3/(a+b*tan(d
*x+c))*B-3/d*a^4/(a^2+b^2)^3/b/(a+b*tan(d*x+c))*B-6/d*a^2/(a^2+b^2)^3*b/(a+
b*tan(d*x+c))*B-1/3/d*a^4/b^3/(a^2+b^2)/(a+b*tan(d*x+c))^3*B+1/d/(a^2+b^2)^
4*ln(a+b*tan(d*x+c))*A*a^4-1/d*a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))*A+1/d/(a^2+
b^2)^4*ln(a+b*tan(d*x+c))*A*b^4-3/2/d*a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*A-
1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^4-1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c
)^2)*A*b^4+1/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a^4+1/d/(a^2+b^2)^4*B*arcta
n(tan(d*x+c))*b^4+4/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*a^3*b+3/d/(a^2+b^2)^
4*ln(1+tan(d*x+c)^2)*A*a^2*b^2-2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a^3*b+2
/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a*b^3-4/d/(a^2+b^2)^4*A*arctan(tan(d*x+
c))*a^3*b-4/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*a*b^3+1/d*a^5/b^3/(a^2+b^2)^
2/(a+b*tan(d*x+c))^2*B-6/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A*a^2*b^2-6/d/(a^
2+b^2)^4*B*arctan(tan(d*x+c))*a^2*b^2+4/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*
a*b^3-1/2/d*a^4/b^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*A+2/d*a^3/b/(a^2+b^2)^2/
(a+b*tan(d*x+c))^2*B+1/3/d*a^3/b^2/(a^2+b^2)/(a+b*tan(d*x+c))^3*A
```

Maxima [A] time = 1.6824, size = 743, normalized size = 2.49

$$\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)\log(b\tan(dx+c)+a)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{3\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)\log(\mathrm{ta}}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] 1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 6*(A*a^4 + 4*B*a^3*b - 6*A*a^
2*b^2 - 4*B*a*b^3 + A*b^4)*log(b*tan(d*x + c) + a)/(a^8 + 4*a^6*b^2 + 6*a^4
```

```
*b^4 + 4*a^2*b^6 + b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 +
A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b
^8) - (2*B*a^8 + A*a^7*b + 4*B*a^6*b^2 + 14*A*a^5*b^3 + 26*B*a^4*b^4 - 11*A
*a^3*b^5 + 6*(B*a^6*b^2 + 3*B*a^4*b^4 + A*a^3*b^5 + 6*B*a^2*b^6 - 3*A*a*b^7
)*tan(d*x + c)^2 + 3*(2*B*a^7*b + A*a^6*b^2 + 6*B*a^5*b^3 + 8*A*a^4*b^4 + 2
0*B*a^3*b^5 - 9*A*a^2*b^6)*tan(d*x + c))/(a^9*b^3 + 3*a^7*b^5 + 3*a^5*b^7 +
 a^3*b^9 + (a^6*b^6 + 3*a^4*b^8 + 3*a^2*b^10 + b^12)*tan(d*x + c)^3 + 3*(a^
7*b^5 + 3*a^5*b^7 + 3*a^3*b^9 + a*b^11)*tan(d*x + c)^2 + 3*(a^8*b^4 + 3*a^6
*b^6 + 3*a^4*b^8 + a^2*b^10)*tan(d*x + c)))/d
```

Fricas [B] time = 2.10378, size = 1777, normalized size = 5.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] 1/6*(3*A*a^7 + 18*B*a^6*b - 30*A*a^5*b^2 - 26*B*a^4*b^3 + 11*A*a^3*b^4 + (2
*B*a^7 + A*a^6*b + 6*B*a^5*b^2 + 18*A*a^4*b^3 + 48*B*a^3*b^4 - 27*A*a^2*b^5
 + 6*(B*a^4*b^3 - 4*A*a^3*b^4 - 6*B*a^2*b^5 + 4*A*a*b^6 + B*b^7)*d*x)*tan(d
*x + c)^3 + 6*(B*a^7 - 4*A*a^6*b - 6*B*a^5*b^2 + 4*A*a^4*b^3 + B*a^3*b^4)*d
*x + 3*(A*a^7 - 2*B*a^6*b + 16*A*a^5*b^2 + 30*B*a^4*b^3 - 23*A*a^3*b^4 - 12
*B*a^2*b^5 + 6*A*a*b^6 + 6*(B*a^5*b^2 - 4*A*a^4*b^3 - 6*B*a^3*b^4 + 4*A*a^2
*b^5 + B*a*b^6)*d*x)*tan(d*x + c)^2 + 3*(A*a^7 + 4*B*a^6*b - 6*A*a^5*b^2 -
4*B*a^4*b^3 + A*a^3*b^4 + (A*a^4*b^3 + 4*B*a^3*b^4 - 6*A*a^2*b^5 - 4*B*a*b^
6 + A*b^7)*tan(d*x + c)^3 + 3*(A*a^5*b^2 + 4*B*a^4*b^3 - 6*A*a^3*b^4 - 4*B*
a^2*b^5 + A*a*b^6)*tan(d*x + c)^2 + 3*(A*a^6*b + 4*B*a^5*b^2 - 6*A*a^4*b^3
- 4*B*a^3*b^4 + A*a^2*b^5)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*ta
n(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) - 3*(2*B*a^7 - 9*A*a^6*b - 22*B*a^5
*b^2 + 26*A*a^4*b^3 + 20*B*a^3*b^4 - 9*A*a^2*b^5 - 6*(B*a^6*b - 4*A*a^5*b^2
 - 6*B*a^4*b^3 + 4*A*a^3*b^4 + B*a^2*b^5)*d*x)*tan(d*x + c))/((a^8*b^3 + 4*
a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11)*d*tan(d*x + c)^3 + 3*(a^9*b^2 + 4*a
^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 + a*b^10)*d*tan(d*x + c)^2 + 3*(a^10*b + 4*a
^8*b^3 + 6*a^6*b^5 + 4*a^4*b^7 + a^2*b^9)*d*tan(d*x + c) + (a^11 + 4*a^9*b^
2 + 6*a^7*b^4 + 4*a^5*b^6 + a^3*b^8)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.79057, size = 905, normalized size = 3.04

$$\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{3\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)\log\left(\tan(dx+c)^2+1\right)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(Aa^4b+4\,Ba^3b^2-6\,Aa^2b^3-4\,Bab^4+Ab^5\right)\log(}{a^8b+4\,a^6b^3+6\,a^4b^5+4\,a^2b^7+b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] 1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a^
2*b^2 - 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4
*b^4 + 4*a^2*b^6 + b^8) + 6*(A*a^4*b + 4*B*a^3*b^2 - 6*A*a^2*b^3 - 4*B*a*b^
4 + A*b^5)*log(abs(b*tan(d*x + c) + a))/(a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*
a^2*b^7 + b^9) - (11*A*a^4*b^6*tan(d*x + c)^3 + 44*B*a^3*b^7*tan(d*x + c)^3
 - 66*A*a^2*b^8*tan(d*x + c)^3 - 44*B*a*b^9*tan(d*x + c)^3 + 11*A*b^10*tan(
d*x + c)^3 + 6*B*a^8*b^2*tan(d*x + c)^2 + 24*B*a^6*b^4*tan(d*x + c)^2 + 39*
A*a^5*b^5*tan(d*x + c)^2 + 186*B*a^4*b^6*tan(d*x + c)^2 - 210*A*a^3*b^7*tan
(d*x + c)^2 - 96*B*a^2*b^8*tan(d*x + c)^2 + 15*A*a*b^9*tan(d*x + c)^2 + 6*B
*a^9*b*tan(d*x + c) + 3*A*a^8*b^2*tan(d*x + c) + 24*B*a^7*b^3*tan(d*x + c)
+ 60*A*a^6*b^4*tan(d*x + c) + 210*B*a^5*b^5*tan(d*x + c) - 201*A*a^4*b^6*ta
n(d*x + c) - 72*B*a^3*b^7*tan(d*x + c) + 6*A*a^2*b^8*tan(d*x + c) + 2*B*a^1
0 + A*a^9*b + 6*B*a^8*b^2 + 26*A*a^7*b^3 + 74*B*a^6*b^4 - 63*A*a^5*b^5 - 18
*B*a^4*b^6)/((a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11)*(b*tan(d*
x + c) + a)^3))/d
```

3.292 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=261

$$-\frac{a^2(Ab-aB)}{3b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{2b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{3a^2Ab+a^3(-B)+3ab^2B-Ab^3}{d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}-\frac{\left(4a^3Ab\right.}{}$$

```
[Out] -(((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4)
- ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*Log[a*Cos[c + d*x]
 + b*Sin[c + d*x]])/((a^2 + b^2)^4*d) - (a^2*(A*b - a*B))/(3*b^2*(a^2 + b^2
)*d*(a + b*Tan[c + d*x])^3) + (a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(2*b^2*(a^2
 + b^2)^2*d*(a + b*Tan[c + d*x])^2) + (3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*
B)/((a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.482599, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3604, 3628, 3529, 3531, 3530}

$$-\frac{a^2(Ab-aB)}{3b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{2b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{3a^2Ab+a^3(-B)+3ab^2B-Ab^3}{d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}-\frac{\left(4a^3Ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] -(((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4)
- ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*Log[a*Cos[c + d*x]
 + b*Sin[c + d*x]])/((a^2 + b^2)^4*d) - (a^2*(A*b - a*B))/(3*b^2*(a^2 + b^2
)*d*(a + b*Tan[c + d*x])^3) + (a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(2*b^2*(a^2
 + b^2)^2*d*(a + b*Tan[c + d*x])^2) + (3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*
B)/((a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
```

```
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = -\frac{a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{\int \frac{-a(Ab-aB)+b(Ab-aB)\tan(c+dx)+\left(a^2+b^2\right)B\tan}{(a+b\tan(c+dx))^3}}{b\left(a^2+b^2\right)}$$

$$= -\frac{a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{2b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} +$$

$$= -\frac{a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{2b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} +$$

$$= -\frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} - \frac{a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx}$$

$$= -\frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} - \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2\right.}{}$$

Mathematica [C] time = 6.26573, size = 411, normalized size = 1.57

$$-\frac{B\tan(c+dx)}{2bd(a+b\tan(c+dx))^3} - \frac{\frac{aB+2Ab}{3bd(a+b\tan(c+dx))^3} + \frac{\left(6Ab^3-6ab^2B\right)\left(-\frac{b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^3(a+b\tan(c+dx))} - \frac{ab}{\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2} - \frac{b}{3\left(a^2+b^2\right)(a+b\tan(c+dx))^3} + \frac{4ab(a-b)(a}{}\right.}{b}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] -(B*Tan[c + d*x])/(2*b*d*(a + b*Tan[c + d*x])^3) - ((2*A*b + a*B)/(3*b*d*(a
 + b*Tan[c + d*x])^3) + (((6*A*b^3 - 6*a*b^2*B)*(((-I/2)*Log[I - Tan[c + d*
x]])/(a + I*b)^4 + ((I/2)*Log[I + Tan[c + d*x]])/(a - I*b)^4 + (4*a*(a - b)
*b*(a + b)*Log[a + b*Tan[c + d*x]])/(a^2 + b^2)^4 - b/(3*(a^2 + b^2)*(a + b
*Tan[c + d*x])^3) - (a*b)/((a^2 + b^2)^2*(a + b*Tan[c + d*x])^2) - (b*(3*a^
2 - b^2))/((a^2 + b^2)^3*(a + b*Tan[c + d*x]))))/b + 6*b*B*(-Log[I - Tan[c
+ d*x]]/(2*(I*a - b)^3) + Log[I + Tan[c + d*x]]/(2*(I*a + b)^3) + (b*(3*a^2
 - b^2)*Log[a + b*Tan[c + d*x]])/(a^2 + b^2)^3 - b/(2*(a^2 + b^2)*(a + b*Ta
n[c + d*x])^2) - (2*a*b)/((a^2 + b^2)^2*(a + b*Tan[c + d*x]))))/(3*b*d))/(2
*b)
```

Maple [B] time = 0.059, size = 709, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

```
[Out] 2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^3*b-2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^
2)*A*a*b^3-1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a^4+3/d/(a^2+b^2)^4*ln(1+
tan(d*x+c)^2)*B*a^2*b^2-1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*b^4-1/d/(a^2
+b^2)^4*A*arctan(tan(d*x+c))*a^4+6/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a^2*b
^2-1/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*b^4-4/d/(a^2+b^2)^4*B*arctan(tan(d*
x+c))*a^3*b+4/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a*b^3-1/3/d*a^2/b/(a^2+b^2
)/(a+b*tan(d*x+c))^3*A+1/3/d*a^3/b^2/(a^2+b^2)/(a+b*tan(d*x+c))^3*B+3/d*a^2
*b/(a^2+b^2)^3/(a+b*tan(d*x+c))*A-1/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*A*b^3-1/
d*a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))*B+3/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*B*a*b
^2-4/d*a^3/(a^2+b^2)^4*b*ln(a+b*tan(d*x+c))*A+4/d*a/(a^2+b^2)^4*b^3*ln(a+b*
tan(d*x+c))*A+1/d*a^4/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B-6/d*a^2/(a^2+b^2)^4*
b^2*ln(a+b*tan(d*x+c))*B+1/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*b^4+1/d*a/(a^
2+b^2)^2*b/(a+b*tan(d*x+c))^2*A-1/2/d*a^4/b^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^
2*B-3/2/d*a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*B
```

Maxima [B] time = 1.61439, size = 710, normalized size = 2.72

$$-\frac{\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)\log(b\tan(dx+c)+a)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{3\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)\log(\cdots}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] -1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 6*(B*a^4 - 4*A*a^3*b - 6*B*a
^2*b^2 + 4*A*a*b^3 + B*b^4)*log(b*tan(d*x + c) + a)/(a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 +
 B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 +
b^8) + (B*a^7 + 2*A*a^6*b + 14*B*a^5*b^2 - 20*A*a^4*b^3 - 11*B*a^3*b^4 + 2*
A*a^2*b^5 + 6*(B*a^3*b^4 - 3*A*a^2*b^5 - 3*B*a*b^6 + A*b^7)*tan(d*x + c)^2
+ 3*(B*a^6*b + 8*B*a^4*b^3 - 14*A*a^3*b^4 - 9*B*a^2*b^5 + 2*A*a*b^6)*tan(d*
```

```
x + c))/(a^9*b^2 + 3*a^7*b^4 + 3*a^5*b^6 + a^3*b^8 + (a^6*b^5 + 3*a^4*b^7 +
 3*a^2*b^9 + b^11)*tan(d*x + c)^3 + 3*(a^7*b^4 + 3*a^5*b^6 + 3*a^3*b^8 + a*
b^10)*tan(d*x + c)^2 + 3*(a^8*b^3 + 3*a^6*b^5 + 3*a^4*b^7 + a^2*b^9)*tan(d*
x + c)))/d
```

Fricas [B] time = 2.12452, size = 1829, normalized size = 7.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] 1/6*(3*B*a^7 - 12*A*a^6*b - 30*B*a^5*b^2 + 30*A*a^4*b^3 + 11*B*a^3*b^4 - 2*
A*a^2*b^5 + (B*a^6*b + 2*A*a^5*b^2 + 18*B*a^4*b^3 - 30*A*a^3*b^4 - 27*B*a^2
*b^5 + 12*A*a*b^6 - 6*(A*a^4*b^3 + 4*B*a^3*b^4 - 6*A*a^2*b^5 - 4*B*a*b^6 +
A*b^7)*d*x)*tan(d*x + c)^3 - 6*(A*a^7 + 4*B*a^6*b - 6*A*a^5*b^2 - 4*B*a^4*b
^3 + A*a^3*b^4)*d*x + 3*(B*a^7 + 2*A*a^6*b + 16*B*a^5*b^2 - 24*A*a^4*b^3 -
23*B*a^3*b^4 + 16*A*a^2*b^5 + 6*B*a*b^6 - 2*A*b^7 - 6*(A*a^5*b^2 + 4*B*a^4*
b^3 - 6*A*a^3*b^4 - 4*B*a^2*b^5 + A*a*b^6)*d*x)*tan(d*x + c)^2 + 3*(B*a^7 -
 4*A*a^6*b - 6*B*a^5*b^2 + 4*A*a^4*b^3 + B*a^3*b^4 + (B*a^4*b^3 - 4*A*a^3*b
^4 - 6*B*a^2*b^5 + 4*A*a*b^6 + B*b^7)*tan(d*x + c)^3 + 3*(B*a^5*b^2 - 4*A*a
^4*b^3 - 6*B*a^3*b^4 + 4*A*a^2*b^5 + B*a*b^6)*tan(d*x + c)^2 + 3*(B*a^6*b -
 4*A*a^5*b^2 - 6*B*a^4*b^3 + 4*A*a^3*b^4 + B*a^2*b^5)*tan(d*x + c))*log((b^
2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) + 3*(2*A
*a^7 + 9*B*a^6*b - 16*A*a^5*b^2 - 26*B*a^4*b^3 + 24*A*a^3*b^4 + 9*B*a^2*b^5
 - 2*A*a*b^6 - 6*(A*a^6*b + 4*B*a^5*b^2 - 6*A*a^4*b^3 - 4*B*a^3*b^4 + A*a^2
*b^5)*d*x)*tan(d*x + c))/((a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^
11)*d*tan(d*x + c)^3 + 3*(a^9*b^2 + 4*a^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 + a*b
^10)*d*tan(d*x + c)^2 + 3*(a^10*b + 4*a^8*b^3 + 6*a^6*b^5 + 4*a^4*b^7 + a^2
*b^9)*d*tan(d*x + c) + (a^11 + 4*a^9*b^2 + 6*a^7*b^4 + 4*a^5*b^6 + a^3*b^8)
*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.4937, size = 853, normalized size = 3.27

$$-\frac{\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{3\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)\log\left(\tan(dx+c)^2+1\right)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{6\left(Ba^4b-4\,Aa^3b^2-6\,Ba^2b^3+4\,Aab^4+Bb^5\right)\log}{a^8b+4\,a^6b^3+6\,a^4b^5+4\,a^2b^7+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] -1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a
^2*b^2 + 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8) - 6*(B*a^4*b - 4*A*a^3*b^2 - 6*B*a^2*b^3 + 4*A*a*b
^4 + B*b^5)*log(abs(b*tan(d*x + c) + a))/(a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4
*a^2*b^7 + b^9) + (11*B*a^4*b^5*tan(d*x + c)^3 - 44*A*a^3*b^6*tan(d*x + c)^
3 - 66*B*a^2*b^7*tan(d*x + c)^3 + 44*A*a*b^8*tan(d*x + c)^3 + 11*B*b^9*tan(
d*x + c)^3 + 39*B*a^5*b^4*tan(d*x + c)^2 - 150*A*a^4*b^5*tan(d*x + c)^2 - 2
10*B*a^3*b^6*tan(d*x + c)^2 + 120*A*a^2*b^7*tan(d*x + c)^2 + 15*B*a*b^8*tan
(d*x + c)^2 + 6*A*b^9*tan(d*x + c)^2 + 3*B*a^8*b*tan(d*x + c) + 60*B*a^6*b^
3*tan(d*x + c) - 174*A*a^5*b^4*tan(d*x + c) - 201*B*a^4*b^5*tan(d*x + c) +
96*A*a^3*b^6*tan(d*x + c) + 6*B*a^2*b^7*tan(d*x + c) + 6*A*a*b^8*tan(d*x +
c) + B*a^9 + 2*A*a^8*b + 26*B*a^7*b^2 - 62*A*a^6*b^3 - 63*B*a^5*b^4 + 26*A*
a^4*b^5 + 2*A*a^2*b^7)/((a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10
)*(b*tan(d*x + c) + a)^3))/d
```

3.293 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=250

$$\frac{a(Ab-aB)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a^3A+3a^2bB-3aAb^2-b^3B}{d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{a^2A+2abB-Ab^2}{2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}-\frac{\left(-6a^2Ab^2+\right.}{}$$

```
[Out] ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4 - (
(a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*Log[a*Cos[c + d*x] +
b*Sin[c + d*x]])/((a^2 + b^2)^4*d) + (a*(A*b - a*B))/(3*b*(a^2 + b^2)*d*(a
+ b*Tan[c + d*x])^3) + (a^2*A - A*b^2 + 2*a*b*B)/(2*(a^2 + b^2)^2*d*(a + b*
Tan[c + d*x])^2) + (a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)/((a^2 + b^2)^3*d
*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.427556, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3591, 3529, 3531, 3530}

$$\frac{a(Ab-aB)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{a^3A+3a^2bB-3aAb^2-b^3B}{d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{a^2A+2abB-Ab^2}{2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}-\frac{\left(-6a^2Ab^2+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```


```
[Out] ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4 - (
(a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*Log[a*Cos[c + d*x] +
b*Sin[c + d*x]])/((a^2 + b^2)^4*d) + (a*(A*b - a*B))/(3*b*(a^2 + b^2)*d*(a
+ b*Tan[c + d*x])^3) + (a^2*A - A*b^2 + 2*a*b*B)/(2*(a^2 + b^2)^2*d*(a + b*
Tan[c + d*x])^2) + (a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)/((a^2 + b^2)^3*d
*(a + b*Tan[c + d*x]))
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
```

```
-1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = \frac{a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{\int \frac{Ab-aB+(aA+bB)\tan(c+dx)}{(a+b\tan(c+dx))^3}\,dx}{a^2+b^2}$$

$$= \frac{a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a^2A-Ab^2+2abB}{2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} + \frac{\int \frac{2aA\ldots}{}}{}$$

$$= \frac{a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{a^2A-Ab^2+2abB}{2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))^2} + \frac{a^3A\ldots}{\left(a^2+\ldots\right.}$$

$$= \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} + \frac{a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^3}$$

$$= \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} - \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4\ldots\right.}{\left(a^2\ldots\right.}$$

Mathematica [C] time = 1.13117, size = 248, normalized size = 0.99

$$\frac{\frac{2a(Ab-aB)}{b\left(a^2+b^2\right)(a+b\tan(c+dx))^3} + \frac{6\left(a^3A+3a^2bB-3aAb^2-b^3B\right)}{\left(a^2+b^2\right)^3(a+b\tan(c+dx))} + \frac{3\left(a^2A+2abB-Ab^2\right)}{\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2} - \frac{6\left(-6a^2Ab^2+a^4A+4a^3bB-4ab^3B+Ab^4\right)\log(a+b\tan(c+dx))}{\left(a^2+b^2\right)^4} + \frac{3(\ldots}{}}{6d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] ((3*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b)^4 + (3*(A - I*B)*Log[I + Tan
[c + d*x]])/(a - I*b)^4 - (6*(a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a
*b^3*B)*Log[a + b*Tan[c + d*x]])/(a^2 + b^2)^4 + (2*a*(A*b - a*B))/(b*(a^2
+ b^2)*(a + b*Tan[c + d*x])^3) + (3*(a^2*A - A*b^2 + 2*a*b*B))/((a^2 + b^2)
^2*(a + b*Tan[c + d*x])^2) + (6*(a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B))/((
a^2 + b^2)^3*(a + b*Tan[c + d*x])))/(6*d)
```

Maple [B] time = 0.052, size = 702, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^4-3/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^
2)*A*a^2*b^2+1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*b^4+2/d/(a^2+b^2)^4*ln(
1+tan(d*x+c)^2)*B*a^3*b-2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a*b^3+4/d/(a^2
+b^2)^4*A*arctan(tan(d*x+c))*a^3*b-4/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a*b
^3-1/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a^4+6/d/(a^2+b^2)^4*B*arctan(tan(d*
x+c))*a^2*b^2-1/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*b^4+1/3/d*a/(a^2+b^2)/(a
+b*tan(d*x+c))^3*A-1/3/d*a^2/(a^2+b^2)/b/(a+b*tan(d*x+c))^3*B+1/2/d*a^2/(a^
2+b^2)^2/(a+b*tan(d*x+c))^2*A-1/2/d/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*A*b^2+1/
d/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*B*a*b+1/d*a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))
*A-3/d*a/(a^2+b^2)^3*b^2/(a+b*tan(d*x+c))*A+3/d*a^2/(a^2+b^2)^3*b/(a+b*tan(
d*x+c))*B-1/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*B*b^3-1/d/(a^2+b^2)^4*ln(a+b*tan
(d*x+c))*A*a^4+6/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A*a^2*b^2-1/d/(a^2+b^2)^4
*ln(a+b*tan(d*x+c))*A*b^4-4/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*a^3*b+4/d/(a
^2+b^2)^4*ln(a+b*tan(d*x+c))*B*a*b^3
```

Maxima [B] time = 1.59517, size = 706, normalized size = 2.82

$$-\frac{\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)\log(b\tan(dx+c)+a)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{3\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)\log(}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="maxi
ma")
```

```
[Out] -1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 6*(A*a^4 + 4*B*a^3*b - 6*A*a
^2*b^2 - 4*B*a*b^3 + A*b^4)*log(b*tan(d*x + c) + a)/(a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 +
 A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 +
b^8) + (2*B*a^6 - 11*A*a^5*b - 20*B*a^4*b^2 + 14*A*a^3*b^3 + 2*B*a^2*b^4 +
A*a*b^5 - 6*(A*a^3*b^3 + 3*B*a^2*b^4 - 3*A*a*b^5 - B*b^6)*tan(d*x + c)^2 -
3*(5*A*a^4*b^2 + 14*B*a^3*b^3 - 12*A*a^2*b^4 - 2*B*a*b^5 - A*b^6)*tan(d*x +
 c))/(a^9*b + 3*a^7*b^3 + 3*a^5*b^5 + a^3*b^7 + (a^6*b^4 + 3*a^4*b^6 + 3*a^
2*b^8 + b^10)*tan(d*x + c)^3 + 3*(a^7*b^3 + 3*a^5*b^5 + 3*a^3*b^7 + a*b^9)*
tan(d*x + c)^2 + 3*(a^8*b^2 + 3*a^6*b^4 + 3*a^4*b^6 + a^2*b^8)*tan(d*x + c)
))/d
```

Fricas [B] time = 2.10397, size = 1831, normalized size = 7.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fric
as")
```

```
[Out] -1/6*(12*B*a^6*b - 27*A*a^5*b^2 - 30*B*a^4*b^3 + 18*A*a^3*b^4 + 2*B*a^2*b^5
 + A*a*b^6 - (2*B*a^5*b^2 - 11*A*a^4*b^3 - 30*B*a^3*b^4 + 30*A*a^2*b^5 + 12
*B*a*b^6 - 3*A*b^7 - 6*(B*a^4*b^3 - 4*A*a^3*b^4 - 6*B*a^2*b^5 + 4*A*a*b^6 +
 B*b^7)*d*x)*tan(d*x + c)^3 + 6*(B*a^7 - 4*A*a^6*b - 6*B*a^5*b^2 + 4*A*a^4*
b^3 + B*a^3*b^4)*d*x - 3*(2*B*a^6*b - 9*A*a^5*b^2 - 24*B*a^4*b^3 + 26*A*a^3
*b^4 + 16*B*a^2*b^5 - 9*A*a*b^6 - 2*B*b^7 - 6*(B*a^5*b^2 - 4*A*a^4*b^3 - 6*
B*a^3*b^4 + 4*A*a^2*b^5 + B*a*b^6)*d*x)*tan(d*x + c)^2 + 3*(A*a^7 + 4*B*a^6
*b - 6*A*a^5*b^2 - 4*B*a^4*b^3 + A*a^3*b^4 + (A*a^4*b^3 + 4*B*a^3*b^4 - 6*A
*a^2*b^5 - 4*B*a*b^6 + A*b^7)*tan(d*x + c)^3 + 3*(A*a^5*b^2 + 4*B*a^4*b^3 -
 6*A*a^3*b^4 - 4*B*a^2*b^5 + A*a*b^6)*tan(d*x + c)^2 + 3*(A*a^6*b + 4*B*a^5
*b^2 - 6*A*a^4*b^3 - 4*B*a^3*b^4 + A*a^2*b^5)*tan(d*x + c))*log((b^2*tan(d*
x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) - 3*(2*B*a^7 - 6
*A*a^6*b - 16*B*a^5*b^2 + 23*A*a^4*b^3 + 24*B*a^3*b^4 - 16*A*a^2*b^5 - 2*B*
a*b^6 - A*b^7 - 6*(B*a^6*b - 4*A*a^5*b^2 - 6*B*a^4*b^3 + 4*A*a^3*b^4 + B*a^
2*b^5)*d*x)*tan(d*x + c))/((a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b
^11)*d*tan(d*x + c)^3 + 3*(a^9*b^2 + 4*a^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 + a*
b^10)*d*tan(d*x + c)^2 + 3*(a^10*b + 4*a^8*b^3 + 6*a^6*b^5 + 4*a^4*b^7 + a^
2*b^9)*d*tan(d*x + c) + (a^11 + 4*a^9*b^2 + 6*a^7*b^4 + 4*a^5*b^6 + a^3*b^8
)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.2896, size = 861, normalized size = 3.44

$$-\frac{\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{3\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)\log\left(\tan(dx+c)^2+1\right)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(Aa^4b+4\,Ba^3b^2-6\,Aa^2b^3-4\,Bab^4+Ab^5\right)\log}{a^8b+4\,a^6b^3+6\,a^4b^5+4\,a^2b^7+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="giac
")
```

```
[Out] -1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a
^2*b^2 - 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8) + 6*(A*a^4*b + 4*B*a^3*b^2 - 6*A*a^2*b^3 - 4*B*a*b
^4 + A*b^5)*log(abs(b*tan(d*x + c) + a))/(a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4
*a^2*b^7 + b^9) - (11*A*a^4*b^4*tan(d*x + c)^3 + 44*B*a^3*b^5*tan(d*x + c)^
3 - 66*A*a^2*b^6*tan(d*x + c)^3 - 44*B*a*b^7*tan(d*x + c)^3 + 11*A*b^8*tan(
d*x + c)^3 + 39*A*a^5*b^3*tan(d*x + c)^2 + 150*B*a^4*b^4*tan(d*x + c)^2 - 2
10*A*a^3*b^5*tan(d*x + c)^2 - 120*B*a^2*b^6*tan(d*x + c)^2 + 15*A*a*b^7*tan
(d*x + c)^2 - 6*B*b^8*tan(d*x + c)^2 + 48*A*a^6*b^2*tan(d*x + c) + 174*B*a^
5*b^3*tan(d*x + c) - 219*A*a^4*b^4*tan(d*x + c) - 96*B*a^3*b^5*tan(d*x + c)
 - 6*A*a^2*b^6*tan(d*x + c) - 6*B*a*b^7*tan(d*x + c) - 3*A*b^8*tan(d*x + c)
 - 2*B*a^8 + 22*A*a^7*b + 62*B*a^6*b^2 - 69*A*a^5*b^3 - 26*B*a^4*b^4 - 4*A*
a^3*b^5 - 2*B*a^2*b^6 - A*a*b^7)/((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^
7 + b^9)*(b*tan(d*x + c) + a)^3))/d
```

3.294 $\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=247

$$-\frac{Ab-aB}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^3}-\frac{3a^2Ab+a^3(-B)+3ab^2B-Ab^3}{d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}-\frac{a^2(-B)+2aAb+b^2B}{2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{\left(4a^3Ab+6a\right.}{}$$

```
[Out] ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4 + (
(4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*Log[a*Cos[c + d*x] +
b*Sin[c + d*x]])/((a^2 + b^2)^4*d) - (A*b - a*B)/(3*(a^2 + b^2)*d*(a + b*Ta
n[c + d*x])^3) - (2*a*A*b - a^2*B + b^2*B)/(2*(a^2 + b^2)^2*d*(a + b*Tan[c
+ d*x])^2) - (3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)/((a^2 + b^2)^3*d*(a +
b*Tan[c + d*x]))
```

Rubi [A] time = 0.408388, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3529, 3531, 3530}

$$-\frac{Ab-aB}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^3}-\frac{3a^2Ab+a^3(-B)+3ab^2B-Ab^3}{d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}-\frac{a^2(-B)+2aAb+b^2B}{2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{\left(4a^3Ab+6a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^4,x]
```


```
[Out] ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4 + (
(4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*Log[a*Cos[c + d*x] +
b*Sin[c + d*x]])/((a^2 + b^2)^4*d) - (A*b - a*B)/(3*(a^2 + b^2)*d*(a + b*Ta
n[c + d*x])^3) - (2*a*A*b - a^2*B + b^2*B)/(2*(a^2 + b^2)^2*d*(a + b*Tan[c
+ d*x])^2) - (3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)/((a^2 + b^2)^3*d*(a +
b*Tan[c + d*x]))
```


Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^4}\,dx = -\frac{Ab-aB}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3}+\frac{\int \frac{aA+bB-(Ab-aB)\tan(c+dx)}{(a+b\tan(c+dx))^3}\,dx}{a^2+b^2}$$

$$= -\frac{Ab-aB}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3}-\frac{2aAb-a^2B+b^2B}{2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))^2}+\frac{\int \frac{a^2A-Ab^2+2abB-}{(a+}}{(}$$

$$= -\frac{Ab-aB}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3}-\frac{2aAb-a^2B+b^2B}{2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))^2}-\frac{3a^2Ab-Ab^3-}{\left(a^2+b^2\right)^3d(a+}$$

$$= \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4}-\frac{Ab-aB}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3}-\frac{2}{2\left(a^2+b\right.}$$

$$= \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4}+\frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)\log}{\left(a^2+b^2\right)^4d}$$

Mathematica [C] time = 6.23327, size = 327, normalized size = 1.32

$$-\frac{(Ab-aB)\left(\frac{6b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{6ab}{\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}+\frac{2b}{\left(a^2+b^2\right)(a+b\tan(c+dx))^3}-\frac{24ab(a-b)(a+b)\log(a+b\tan(c+dx))}{\left(a^2+b^2\right)^4}+\frac{3i\log(-\tan}{(a-}\right.}{6bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] -((A*b - a*B)*(((3*I)*Log[I - Tan[c + d*x]])/(a + I*b)^4 - ((3*I)*Log[I + T
an[c + d*x]])/(a - I*b)^4 - (24*a*(a - b)*b*(a + b)*Log[a + b*Tan[c + d*x]]
)/(a^2 + b^2)^4 + (2*b)/((a^2 + b^2)*(a + b*Tan[c + d*x])^3) + (6*a*b)/((a^
2 + b^2)^2*(a + b*Tan[c + d*x])^2) + (6*b*(3*a^2 - b^2))/((a^2 + b^2)^3*(a
+ b*Tan[c + d*x]))))/(6*b*d) - (B*(Log[I - Tan[c + d*x]]/(I*a - b)^3 - Log[
I + Tan[c + d*x]]/(I*a + b)^3 - (2*b*(3*a^2 - b^2)*Log[a + b*Tan[c + d*x]])
/(a^2 + b^2)^3 + b/((a^2 + b^2)*(a + b*Tan[c + d*x])^2) + (4*a*b)/((a^2 + b
^2)^2*(a + b*Tan[c + d*x]))))/(2*b*d)
```

Maple [B] time = 0.053, size = 695, normalized size = 2.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^3*b+2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)
^2)*A*a*b^3+1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a^4-3/d/(a^2+b^2)^4*ln(1
+tan(d*x+c)^2)*B*a^2*b^2+1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*b^4+1/d/(a^
2+b^2)^4*A*arctan(tan(d*x+c))*a^4-6/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a^2*
b^2+1/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*b^4+4/d/(a^2+b^2)^4*B*arctan(tan(d
*x+c))*a^3*b-4/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a*b^3-3/d*a^2*b/(a^2+b^2)
^3/(a+b*tan(d*x+c))*A+1/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*A*b^3+1/d*a^3/(a^2+b
^2)^3/(a+b*tan(d*x+c))*B-3/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*B*a*b^2+4/d*a^3/(
a^2+b^2)^4*b*ln(a+b*tan(d*x+c))*A-4/d*a/(a^2+b^2)^4*b^3*ln(a+b*tan(d*x+c))*
A-1/d*a^4/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B+6/d*a^2/(a^2+b^2)^4*b^2*ln(a+b*t
an(d*x+c))*B-1/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*b^4-1/3/d/(a^2+b^2)/(a+b*
tan(d*x+c))^3*A*b+1/3/d/(a^2+b^2)/(a+b*tan(d*x+c))^3*a*B-1/d*a/(a^2+b^2)^2*
b/(a+b*tan(d*x+c))^2*A+1/2/d*a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*B-1/2/d/(a^
2+b^2)^2/(a+b*tan(d*x+c))^2*b^2*B
```

Maxima [B] time = 1.53686, size = 694, normalized size = 2.81

$$\frac{\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}-\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)\log(b\tan(dx+c)+a)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{3\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)\log(\tan(}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 6*(B*a^4 - 4*A*a^3*b - 6*B*a^
2*b^2 + 4*A*a*b^3 + B*b^4)*log(b*tan(d*x + c) + a)/(a^8 + 4*a^6*b^2 + 6*a^4
*b^4 + 4*a^2*b^6 + b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 +
B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b
^8) + (11*B*a^5 - 26*A*a^4*b - 14*B*a^3*b^2 - 4*A*a^2*b^3 - B*a*b^4 - 2*A*b
^5 + 6*(B*a^3*b^2 - 3*A*a^2*b^3 - 3*B*a*b^4 + A*b^5)*tan(d*x + c)^2 + 3*(5*
B*a^4*b - 14*A*a^3*b^2 - 12*B*a^2*b^3 + 2*A*a*b^4 - B*b^5)*tan(d*x + c))/(a
^9 + 3*a^7*b^2 + 3*a^5*b^4 + a^3*b^6 + (a^6*b^3 + 3*a^4*b^5 + 3*a^2*b^7 + b
^9)*tan(d*x + c)^3 + 3*(a^7*b^2 + 3*a^5*b^4 + 3*a^3*b^6 + a*b^8)*tan(d*x +
c)^2 + 3*(a^8*b + 3*a^6*b^3 + 3*a^4*b^5 + a^2*b^7)*tan(d*x + c)))/d
```

Fricas [B] time = 2.06781, size = 1777, normalized size = 7.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fricas")
```

```
[Out] 1/6*(27*B*a^5*b^2 - 48*A*a^4*b^3 - 18*B*a^3*b^4 - 6*A*a^2*b^5 - B*a*b^6 - 2
*A*b^7 - (11*B*a^4*b^3 - 26*A*a^3*b^4 - 30*B*a^2*b^5 + 18*A*a*b^6 + 3*B*b^7
 - 6*(A*a^4*b^3 + 4*B*a^3*b^4 - 6*A*a^2*b^5 - 4*B*a*b^6 + A*b^7)*d*x)*tan(d
*x + c)^3 + 6*(A*a^7 + 4*B*a^6*b - 6*A*a^5*b^2 - 4*B*a^4*b^3 + A*a^3*b^4)*d
*x - 3*(9*B*a^5*b^2 - 20*A*a^4*b^3 - 26*B*a^3*b^4 + 22*A*a^2*b^5 + 9*B*a*b^
6 - 2*A*b^7 - 6*(A*a^5*b^2 + 4*B*a^4*b^3 - 6*A*a^3*b^4 - 4*B*a^2*b^5 + A*a*
b^6)*d*x)*tan(d*x + c)^2 - 3*(B*a^7 - 4*A*a^6*b - 6*B*a^5*b^2 + 4*A*a^4*b^3
 + B*a^3*b^4 + (B*a^4*b^3 - 4*A*a^3*b^4 - 6*B*a^2*b^5 + 4*A*a*b^6 + B*b^7)*
tan(d*x + c)^3 + 3*(B*a^5*b^2 - 4*A*a^4*b^3 - 6*B*a^3*b^4 + 4*A*a^2*b^5 + B
*a*b^6)*tan(d*x + c)^2 + 3*(B*a^6*b - 4*A*a^5*b^2 - 6*B*a^4*b^3 + 4*A*a^3*b
^4 + B*a^2*b^5)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c)
+ a^2)/(tan(d*x + c)^2 + 1)) - 3*(6*B*a^6*b - 12*A*a^5*b^2 - 23*B*a^4*b^3 +
 30*A*a^3*b^4 + 16*B*a^2*b^5 - 2*A*a*b^6 + B*b^7 - 6*(A*a^6*b + 4*B*a^5*b^2
 - 6*A*a^4*b^3 - 4*B*a^3*b^4 + A*a^2*b^5)*d*x)*tan(d*x + c))/((a^8*b^3 + 4*
a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11)*d*tan(d*x + c)^3 + 3*(a^9*b^2 + 4*a
^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 + a*b^10)*d*tan(d*x + c)^2 + 3*(a^10*b + 4*a
^8*b^3 + 6*a^6*b^5 + 4*a^4*b^7 + a^2*b^9)*d*tan(d*x + c) + (a^11 + 4*a^9*b^
```

```
2 + 6*a^7*b^4 + 4*a^5*b^6 + a^3*b^8)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [B] time = 1.2606, size = 851, normalized size = 3.45

$$\frac{\frac{6\left(Aa^4+4Ba^3b-6Aa^2b^2-4Bab^3+Ab^4\right)(dx+c)}{a^8+4a^6b^2+6a^4b^4+4a^2b^6+b^8}+\frac{3\left(Ba^4-4Aa^3b-6Ba^2b^2+4Aab^3+Bb^4\right)\log\left(\tan(dx+c)^2+1\right)}{a^8+4a^6b^2+6a^4b^4+4a^2b^6+b^8}-\frac{6\left(Ba^4b-4Aa^3b^2-6Ba^2b^3+4Aab^4+Bb^5\right)\log(|b}{a^8b+4a^6b^3+6a^4b^5+4a^2b^7+b^9}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="giac")
```

```
[Out] 1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a^
2*b^2 + 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4
*b^4 + 4*a^2*b^6 + b^8) - 6*(B*a^4*b - 4*A*a^3*b^2 - 6*B*a^2*b^3 + 4*A*a*b^
4 + B*b^5)*log(abs(b*tan(d*x + c) + a))/(a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*
a^2*b^7 + b^9) + (11*B*a^4*b^3*tan(d*x + c)^3 - 44*A*a^3*b^4*tan(d*x + c)^3
 - 66*B*a^2*b^5*tan(d*x + c)^3 + 44*A*a*b^6*tan(d*x + c)^3 + 11*B*b^7*tan(d
*x + c)^3 + 39*B*a^5*b^2*tan(d*x + c)^2 - 150*A*a^4*b^3*tan(d*x + c)^2 - 21
0*B*a^3*b^4*tan(d*x + c)^2 + 120*A*a^2*b^5*tan(d*x + c)^2 + 15*B*a*b^6*tan(
d*x + c)^2 + 6*A*b^7*tan(d*x + c)^2 + 48*B*a^6*b*tan(d*x + c) - 174*A*a^5*b
^2*tan(d*x + c) - 219*B*a^4*b^3*tan(d*x + c) + 96*A*a^3*b^4*tan(d*x + c) -
6*B*a^2*b^5*tan(d*x + c) + 6*A*a*b^6*tan(d*x + c) - 3*B*b^7*tan(d*x + c) +
22*B*a^7 - 70*A*a^6*b - 69*B*a^5*b^2 + 14*A*a^4*b^3 - 4*B*a^3*b^4 - 6*A*a^2
*b^5 - B*a*b^6 - 2*A*b^7)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*
(b*tan(d*x + c) + a)^3))/d
```

3.295 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=302

$$\frac{b(Ab-aB)}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{b\left(3a^2Ab^3+6a^4Ab+a^3b^2B-3a^5B+Ab^5\right)}{a^3d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{b\left(3a^2Ab-2a^3B+Ab^3\right)}{2a^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}$$

```
[Out] -((((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4)
+ (A*Log[Sin[c + d*x]])/(a^4*d) - (b*(10*a^6*A*b + 5*a^4*A*b^3 + 4*a^2*A*b^
5 + A*b^7 - 4*a^7*B + 4*a^5*b^2*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a
^4*(a^2 + b^2)^4*d) + (b*(A*b - a*B))/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x
])^3) + (b*(3*a^2*A*b + A*b^3 - 2*a^3*B))/(2*a^2*(a^2 + b^2)^2*d*(a + b*Tan
[c + d*x])^2) + (b*(6*a^4*A*b + 3*a^2*A*b^3 + A*b^5 - 3*a^5*B + a^3*b^2*B))
/(a^3*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.898587, antiderivative size = 302, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {3609, 3649, 3651, 3530, 3475}

$$\frac{b(Ab-aB)}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^3}+\frac{b\left(3a^2Ab^3+6a^4Ab+a^3b^2B-3a^5B+Ab^5\right)}{a^3d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{b\left(3a^2Ab-2a^3B+Ab^3\right)}{2a^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] -((((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4)
+ (A*Log[Sin[c + d*x]])/(a^4*d) - (b*(10*a^6*A*b + 5*a^4*A*b^3 + 4*a^2*A*b^
5 + A*b^7 - 4*a^7*B + 4*a^5*b^2*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a
^4*(a^2 + b^2)^4*d) + (b*(A*b - a*B))/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x
])^3) + (b*(3*a^2*A*b + A*b^3 - 2*a^3*B))/(2*a^2*(a^2 + b^2)^2*d*(a + b*Tan
[c + d*x])^2) + (b*(6*a^4*A*b + 3*a^2*A*b^3 + A*b^5 - 3*a^5*B + a^3*b^2*B))
/(a^3*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
```

```
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = \frac{b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{\int \frac{\cot(c+dx)\left(3A\left(a^2+b^2\right)-3a(Ab-aB)\tan(c+dx)+3b(A}{(a+b\tan(c+dx))^3}}{3a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{b\left(3a^2Ab+Ab^3-2a^3B\right)}{2a^2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))^2} + \int$$

$$= \frac{b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{b\left(3a^2Ab+Ab^3-2a^3B\right)}{2a^2\left(a^2+b^2\right)^2d(a+b\tan(c+dx))^2} + \frac{b\left(\right.}{}$$

$$= -\frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} + \frac{b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx)}$$

$$= -\frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} + \frac{A\log(\sin(c+dx))}{a^4d} - \frac{b\left(10a^6Ab\right.}{}$$

Mathematica [C] time = 3.04072, size = 308, normalized size = 1.02

$$\frac{\frac{2ab\left(a^2+b^2\right)(Ab-aB)}{(a+b\tan(c+dx))^3} + \frac{6b\left(3a^2Ab^3+6a^4Ab+a^3b^2B-3a^5B+Ab^5\right)}{a\left(a^2+b^2\right)(a+b\tan(c+dx))} + \frac{3b\left(3a^2Ab-2a^3B+Ab^3\right)}{(a+b\tan(c+dx))^2} + \frac{3\left(-2b\left(5a^4Ab^3+4a^2Ab^5+10a^6Ab+4a^5b^2B-4a^7B+Ab^7\right)\log(a+b\right.}{}}{6a^2d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] ((3*(-(a^4*(a - I*b)^4*(A + I*B)*Log[I - Tan[c + d*x]]) + 2*A*(a^2 + b^2)^4
*Log[Tan[c + d*x]] - a^4*(a + I*b)^4*(A - I*B)*Log[I + Tan[c + d*x]] - 2*b*
(10*a^6*A*b + 5*a^4*A*b^3 + 4*a^2*A*b^5 + A*b^7 - 4*a^7*B + 4*a^5*b^2*B)*Lo
g[a + b*Tan[c + d*x]]))/(a^2*(a^2 + b^2)^2) + (2*a*b*(a^2 + b^2)*(A*b - a*B
))/(a + b*Tan[c + d*x])^3 + (3*b*(3*a^2*A*b + A*b^3 - 2*a^3*B))/(a + b*Tan[
c + d*x])^2 + (6*b*(6*a^4*A*b + 3*a^2*A*b^3 + A*b^5 - 3*a^5*B + a^3*b^2*B))
/(a*(a^2 + b^2)*(a + b*Tan[c + d*x])))/(6*a^2*(a^2 + b^2)^2*d)
```

Maple [B] time = 0.189, size = 789, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

```
[Out] 6/d*a/(a^2+b^2)^3*b^2/(a+b*tan(d*x+c))*A-3/d*a^2/(a^2+b^2)^3*b/(a+b*tan(d*x
+c))*B-5/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A*b^4+3/2/d/(a^2+b^2)^2/(a+b*tan(
d*x+c))^2*A*b^2+1/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*B*b^3-1/d/(a^2+b^2)^2/(a+b
*tan(d*x+c))^2*B*a*b-1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^4-1/2/d/(a^2+
b^2)^4*ln(1+tan(d*x+c)^2)*A*b^4+1/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a^4+1/
d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*b^4+4/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B
*a^3*b+3/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^2*b^2-2/d/(a^2+b^2)^4*ln(1+ta
n(d*x+c)^2)*B*a^3*b+2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a*b^3-4/d/(a^2+b^2
)^4*A*arctan(tan(d*x+c))*a^3*b-4/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*a*b^3-1
0/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A*a^2*b^2-6/d/(a^2+b^2)^4*B*arctan(tan(d
*x+c))*a^2*b^2+4/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a*b^3+1/3/d*b^2/a/(a^2+
b^2)/(a+b*tan(d*x+c))^3*A-4/d*b^6/a^2/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A-1/d*
b^8/a^4/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A+1/2/d*b^4/a^2/(a^2+b^2)^2/(a+b*tan
(d*x+c))^2*A+1/d*b^6/a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))*A+3/d*b^4/a/(a^2+b^2)
^3/(a+b*tan(d*x+c))*A+1/d/a^4*A*ln(tan(d*x+c))-1/3/d*b/(a^2+b^2)/(a+b*tan(d
*x+c))^3*B
```

Maxima [A] time = 1.58947, size = 783, normalized size = 2.59

$$\frac{6\left(Ba^4-4\,Aa^3b-6\,Ba^2b^2+4\,Aab^3+Bb^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(4\,Ba^7b-10\,Aa^6b^2-4\,Ba^5b^3-5\,Aa^4b^4-4\,Aa^2b^6-Ab^8\right)\log(b\tan(dx+c)+a)}{a^{12}+4\,a^{10}b^2+6\,a^8b^4+4\,a^6b^6+a^4b^8}-\frac{3\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3\cdots\right.}{a^8+4\,a^6b^2+6\,a^4b^4\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="maxi
ma")
```

```
[Out] 1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 6*(4*B*a^7*b - 10*A*a^6*b^2 -
 4*B*a^5*b^3 - 5*A*a^4*b^4 - 4*A*a^2*b^6 - A*b^8)*log(b*tan(d*x + c) + a)/(
a^12 + 4*a^10*b^2 + 6*a^8*b^4 + 4*a^6*b^6 + a^4*b^8) - 3*(A*a^4 + 4*B*a^3*b
 - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^
2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - (26*B*a^7*b - 47*A*a^6*b^2 + 4*B*a^5*b^3
```

```
 - 34*A*a^4*b^4 + 2*B*a^3*b^5 - 11*A*a^2*b^6 + 6*(3*B*a^5*b^3 - 6*A*a^4*b^4
 - B*a^3*b^5 - 3*A*a^2*b^6 - A*b^8)*tan(d*x + c)^2 + 3*(14*B*a^6*b^2 - 27*A
*a^5*b^3 - 2*B*a^4*b^4 - 16*A*a^3*b^5 - 5*A*a*b^7)*tan(d*x + c))/(a^12 + 3*
a^10*b^2 + 3*a^8*b^4 + a^6*b^6 + (a^9*b^3 + 3*a^7*b^5 + 3*a^5*b^7 + a^3*b^9
)*tan(d*x + c)^3 + 3*(a^10*b^2 + 3*a^8*b^4 + 3*a^6*b^6 + a^4*b^8)*tan(d*x +
 c)^2 + 3*(a^11*b + 3*a^9*b^3 + 3*a^7*b^5 + a^5*b^7)*tan(d*x + c)) + 6*A*lo
g(tan(d*x + c))/a^4)/d
```

Fricas [B] time = 3.56422, size = 2457, normalized size = 8.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fric
as")
```

```
[Out] -1/6*(48*B*a^8*b^3 - 75*A*a^7*b^4 + 6*B*a^6*b^5 - 42*A*a^5*b^6 + 2*B*a^4*b^
7 - 11*A*a^3*b^8 - (26*B*a^7*b^4 - 47*A*a^6*b^5 - 18*B*a^5*b^6 - 6*A*a^4*b^
7 - 3*A*a^2*b^9 + 6*(B*a^8*b^3 - 4*A*a^7*b^4 - 6*B*a^6*b^5 + 4*A*a^5*b^6 +
B*a^4*b^7)*d*x)*tan(d*x + c)^3 - 6*(B*a^11 - 4*A*a^10*b - 6*B*a^9*b^2 + 4*A
*a^8*b^3 + B*a^7*b^4)*d*x - 3*(20*B*a^8*b^3 - 35*A*a^7*b^4 - 22*B*a^6*b^5 +
 12*A*a^5*b^6 + 2*B*a^4*b^7 + 5*A*a^3*b^8 + 2*A*a*b^10 + 6*(B*a^9*b^2 - 4*A
*a^8*b^3 - 6*B*a^7*b^4 + 4*A*a^6*b^5 + B*a^5*b^6)*d*x)*tan(d*x + c)^2 - 3*(
A*a^11 + 4*A*a^9*b^2 + 6*A*a^7*b^4 + 4*A*a^5*b^6 + A*a^3*b^8 + (A*a^8*b^3 +
 4*A*a^6*b^5 + 6*A*a^4*b^7 + 4*A*a^2*b^9 + A*b^11)*tan(d*x + c)^3 + 3*(A*a^
9*b^2 + 4*A*a^7*b^4 + 6*A*a^5*b^6 + 4*A*a^3*b^8 + A*a*b^10)*tan(d*x + c)^2
+ 3*(A*a^10*b + 4*A*a^8*b^3 + 6*A*a^6*b^5 + 4*A*a^4*b^7 + A*a^2*b^9)*tan(d*
x + c))*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1)) - 3*(4*B*a^10*b - 10*A*a^9
*b^2 - 4*B*a^8*b^3 - 5*A*a^7*b^4 - 4*A*a^5*b^6 - A*a^3*b^8 + (4*B*a^7*b^4 -
 10*A*a^6*b^5 - 4*B*a^5*b^6 - 5*A*a^4*b^7 - 4*A*a^2*b^9 - A*b^11)*tan(d*x +
 c)^3 + 3*(4*B*a^8*b^3 - 10*A*a^7*b^4 - 4*B*a^6*b^5 - 5*A*a^5*b^6 - 4*A*a^3
*b^8 - A*a*b^10)*tan(d*x + c)^2 + 3*(4*B*a^9*b^2 - 10*A*a^8*b^3 - 4*B*a^7*b
^4 - 5*A*a^6*b^5 - 4*A*a^4*b^7 - A*a^2*b^9)*tan(d*x + c))*log((b^2*tan(d*x
+ c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) - 3*(12*B*a^9*b^2
- 20*A*a^8*b^3 - 30*B*a^7*b^4 + 37*A*a^6*b^5 + 2*B*a^5*b^6 + 18*A*a^4*b^7 +
 5*A*a^2*b^9 + 6*(B*a^10*b - 4*A*a^9*b^2 - 6*B*a^8*b^3 + 4*A*a^7*b^4 + B*a^
6*b^5)*d*x)*tan(d*x + c))/((a^12*b^3 + 4*a^10*b^5 + 6*a^8*b^7 + 4*a^6*b^9 +
 a^4*b^11)*d*tan(d*x + c)^3 + 3*(a^13*b^2 + 4*a^11*b^4 + 6*a^9*b^6 + 4*a^7*
b^8 + a^5*b^10)*d*tan(d*x + c)^2 + 3*(a^14*b + 4*a^12*b^3 + 6*a^10*b^5 + 4*
a^8*b^7 + a^6*b^9)*d*tan(d*x + c) + (a^15 + 4*a^13*b^2 + 6*a^11*b^4 + 4*a^9
*b^6 + a^7*b^8)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [B] time = 1.29046, size = 975, normalized size = 3.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="giac
")
```

```
[Out] 1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a^
2*b^2 - 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4
*b^4 + 4*a^2*b^6 + b^8) + 6*(4*B*a^7*b^2 - 10*A*a^6*b^3 - 4*B*a^5*b^4 - 5*A
*a^4*b^5 - 4*A*a^2*b^7 - A*b^9)*log(abs(b*tan(d*x + c) + a))/(a^12*b + 4*a^
10*b^3 + 6*a^8*b^5 + 4*a^6*b^7 + a^4*b^9) + 6*A*log(abs(tan(d*x + c)))/a^4
- (44*B*a^7*b^4*tan(d*x + c)^3 - 110*A*a^6*b^5*tan(d*x + c)^3 - 44*B*a^5*b^
6*tan(d*x + c)^3 - 55*A*a^4*b^7*tan(d*x + c)^3 - 44*A*a^2*b^9*tan(d*x + c)^
3 - 11*A*b^11*tan(d*x + c)^3 + 150*B*a^8*b^3*tan(d*x + c)^2 - 366*A*a^7*b^4
*tan(d*x + c)^2 - 120*B*a^6*b^5*tan(d*x + c)^2 - 219*A*a^5*b^6*tan(d*x + c)
^2 - 6*B*a^4*b^7*tan(d*x + c)^2 - 156*A*a^3*b^8*tan(d*x + c)^2 - 39*A*a*b^1
0*tan(d*x + c)^2 + 174*B*a^9*b^2*tan(d*x + c) - 411*A*a^8*b^3*tan(d*x + c)
- 96*B*a^7*b^4*tan(d*x + c) - 294*A*a^6*b^5*tan(d*x + c) - 6*B*a^5*b^6*tan(
d*x + c) - 195*A*a^4*b^7*tan(d*x + c) - 48*A*a^2*b^9*tan(d*x + c) + 70*B*a^
10*b - 157*A*a^9*b^2 - 14*B*a^8*b^3 - 136*A*a^7*b^4 + 6*B*a^6*b^5 - 89*A*a^
5*b^6 + 2*B*a^4*b^7 - 22*A*a^3*b^8)/((a^12 + 4*a^10*b^2 + 6*a^8*b^4 + 4*a^6
*b^6 + a^4*b^8)*(b*tan(d*x + c) + a)^3))/d
```

3.296 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=399

$$-\frac{b\left(13a^4Ab^2+12a^2Ab^4+a^6A-3a^3b^3B-6a^5bB-ab^5B+4Ab^6\right)}{a^4d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}-\frac{b\left(8a^2Ab^2+2a^4A-3a^3bB-ab^3B+4Ab^4\right)}{2a^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}-\frac{}{3a^2}$$

```
[Out] -(((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4)
- ((4*A*b - a*B)*Log[Sin[c + d*x]])/(a^5*d) + (b^2*(20*a^6*A*b + 24*a^4*A*b
^3 + 16*a^2*A*b^5 + 4*A*b^7 - 10*a^7*B - 5*a^5*b^2*B - 4*a^3*b^4*B - a*b^6*
B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^5*(a^2 + b^2)^4*d) - (b*(3*a^2*
A + 4*A*b^2 - a*b*B))/(3*a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) - (A*Cot
[c + d*x])/(a*d*(a + b*Tan[c + d*x])^3) - (b*(2*a^4*A + 8*a^2*A*b^2 + 4*A*b
^4 - 3*a^3*b*B - a*b^3*B))/(2*a^3*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])^2) -
 (b*(a^6*A + 13*a^4*A*b^2 + 12*a^2*A*b^4 + 4*A*b^6 - 6*a^5*b*B - 3*a^3*b^3*
B - a*b^5*B))/(a^4*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.32076, antiderivative size = 399, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$-\frac{b\left(13a^4Ab^2+12a^2Ab^4+a^6A-3a^3b^3B-6a^5bB-ab^5B+4Ab^6\right)}{a^4d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}-\frac{b\left(8a^2Ab^2+2a^4A-3a^3bB-ab^3B+4Ab^4\right)}{2a^3d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2}-\frac{}{3a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```


```
[Out] -(((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*x)/(a^2 + b^2)^4)
- ((4*A*b - a*B)*Log[Sin[c + d*x]])/(a^5*d) + (b^2*(20*a^6*A*b + 24*a^4*A*b
^3 + 16*a^2*A*b^5 + 4*A*b^7 - 10*a^7*B - 5*a^5*b^2*B - 4*a^3*b^4*B - a*b^6*
B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^5*(a^2 + b^2)^4*d) - (b*(3*a^2*
A + 4*A*b^2 - a*b*B))/(3*a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) - (A*Cot
[c + d*x])/(a*d*(a + b*Tan[c + d*x])^3) - (b*(2*a^4*A + 8*a^2*A*b^2 + 4*A*b
^4 - 3*a^3*b*B - a*b^3*B))/(2*a^3*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])^2) -
 (b*(a^6*A + 13*a^4*A*b^2 + 12*a^2*A*b^4 + 4*A*b^6 - 6*a^5*b*B - 3*a^3*b^3*
B - a*b^5*B))/(a^4*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = -\frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^3} - \frac{\int \frac{\cot(c+dx)\left(4Ab-aB+aA\tan(c+dx)+4Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^4}\,dx}{a}$$

$$= -\frac{b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^3} - \int \frac{\cot(c+dx)(3(\ldots}{\ldots}$$

$$= -\frac{b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^3} - \frac{b\left(2a^4A+8a\ldots\right.}{2a^3\left(a^2+\ldots\right.}$$

$$= -\frac{b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^3} - \frac{b\left(2a^4A+8a\ldots\right.}{2a^3\left(a^2+\ldots\right.}$$

$$= -\frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} - \frac{b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+\ldots}$$

$$= -\frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)x}{\left(a^2+b^2\right)^4} - \frac{(4Ab-aB)\log(\sin(c+dx))}{a^5d} + \ldots$$

Mathematica [C] time = 5.87198, size = 357, normalized size = 0.89

$$\frac{\frac{6b^2\left(-9a^2Ab^3-10a^4Ab+3a^3b^2B+6a^5B+ab^4B-3Ab^5\right)}{a^4\left(a^2+b^2\right)^3(a+b\tan(c+dx))} + \frac{3b^2\left(-4a^2Ab+3a^3B+ab^2B-2Ab^3\right)}{a^3\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2} + \frac{2b^2(aB-Ab)}{a^2\left(a^2+b^2\right)(a+b\tan(c+dx))^3} - \frac{6b^2\left(-24a^4Ab^3-16a^2Ab^5-20a^6A\ldots\right.}{\ldots}}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] ((-6*A*Cot[c + d*x])/a^4 + ((3*I)*(A + I*B)*Log[I - Tan[c + d*x]])/(a + I*b
)^4 + (6*(-4*A*b + a*B)*Log[Tan[c + d*x]])/a^5 - (3*(I*A + B)*Log[I + Tan[c
 + d*x]])/(a - I*b)^4 - (6*b^2*(-20*a^6*A*b - 24*a^4*A*b^3 - 16*a^2*A*b^5 -
 4*A*b^7 + 10*a^7*B + 5*a^5*b^2*B + 4*a^3*b^4*B + a*b^6*B)*Log[a + b*Tan[c
```

```
+ d*x]])/(a^5*(a^2 + b^2)^4) + (2*b^2*(-(A*b) + a*B))/(a^2*(a^2 + b^2)*(a +
 b*Tan[c + d*x])^3) + (3*b^2*(-4*a^2*A*b - 2*A*b^3 + 3*a^3*B + a*b^2*B))/(a
^3*(a^2 + b^2)^2*(a + b*Tan[c + d*x])^2) + (6*b^2*(-10*a^4*A*b - 9*a^2*A*b^
3 - 3*A*b^5 + 6*a^5*B + 3*a^3*b^2*B + a*b^4*B))/(a^4*(a^2 + b^2)^3*(a + b*T
an[c + d*x])))/(6*d)
```

Maple [B] time = 0.165, size = 969, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

```
[Out] 20/d*a/(a^2+b^2)^4*b^3*ln(a+b*tan(d*x+c))*A-2/d*b^3/a/(a^2+b^2)^2/(a+b*tan(
d*x+c))^2*A-1/d*b^5/a^3/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*A+1/2/d*b^4/a^2/(a^2
+b^2)^2/(a+b*tan(d*x+c))^2*B-9/d*b^5/a^2/(a^2+b^2)^3/(a+b*tan(d*x+c))*A-3/d
*b^7/a^4/(a^2+b^2)^3/(a+b*tan(d*x+c))*A+3/d*b^4/a/(a^2+b^2)^3/(a+b*tan(d*x+
c))*B+1/d*b^6/a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))*B+24/d*b^5/a/(a^2+b^2)^4*ln(
a+b*tan(d*x+c))*A+16/d*b^7/a^3/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A+4/d*b^9/a^5
/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A-4/d*b^6/a^2/(a^2+b^2)^4*ln(a+b*tan(d*x+c)
)*B-1/d*b^8/a^4/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B+6/d/(a^2+b^2)^3/(a+b*tan(d
*x+c))*B*a*b^2-4/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a^3*b+4/d/(a^2+b^2)^4*B
*arctan(tan(d*x+c))*a*b^3+2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^3*b-10/d*a
^2/(a^2+b^2)^4*b^2*ln(a+b*tan(d*x+c))*B+3/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*
B*a^2*b^2+6/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a^2*b^2-10/d/(a^2+b^2)^3/(a+
b*tan(d*x+c))*A*b^3-5/d/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B*b^4+3/2/d/(a^2+b^2
)^2/(a+b*tan(d*x+c))^2*b^2*B-1/d/a^4*A/tan(d*x+c)+1/d/a^4*B*ln(tan(d*x+c))-
2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a*b^3-1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c
)^2)*B*a^4-1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*b^4-1/d/(a^2+b^2)^4*A*arc
tan(tan(d*x+c))*a^4-1/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*b^4-1/3/d*b^3/a^2/
(a^2+b^2)/(a+b*tan(d*x+c))^3*A+1/3/d*b^2/a/(a^2+b^2)/(a+b*tan(d*x+c))^3*B-4
/d/a^5*ln(tan(d*x+c))*A*b
```

Maxima [A] time = 1.59373, size = 942, normalized size = 2.36

$$-\frac{\frac{6\left(Aa^4+4\,Ba^3b-6\,Aa^2b^2-4\,Bab^3+Ab^4\right)(dx+c)}{a^8+4\,a^6b^2+6\,a^4b^4+4\,a^2b^6+b^8}+\frac{6\left(10\,Ba^7b^2-20\,Aa^6b^3+5\,Ba^5b^4-24\,Aa^4b^5+4\,Ba^3b^6-16\,Aa^2b^7+Bab^8-4\,Ab^9\right)\log(b\tan(dx+c)+a)}{a^{13}+4\,a^{11}b^2+6\,a^9b^4+4\,a^7b^6+a^5b^8}+\frac{3\left(Ba^4-\cdots\right.}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] -1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 6*(10*B*a^7*b^2 - 20*A*a^6*b
^3 + 5*B*a^5*b^4 - 24*A*a^4*b^5 + 4*B*a^3*b^6 - 16*A*a^2*b^7 + B*a*b^8 - 4*
A*b^9)*log(b*tan(d*x + c) + a)/(a^13 + 4*a^11*b^2 + 6*a^9*b^4 + 4*a^7*b^6 +
 a^5*b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*log(tan
(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + (6*A*a^9
 + 18*A*a^7*b^2 + 18*A*a^5*b^4 + 6*A*a^3*b^6 + 6*(A*a^6*b^3 - 6*B*a^5*b^4 +
 13*A*a^4*b^5 - 3*B*a^3*b^6 + 12*A*a^2*b^7 - B*a*b^8 + 4*A*b^9)*tan(d*x + c
)^3 + 3*(6*A*a^7*b^2 - 27*B*a^6*b^3 + 62*A*a^5*b^4 - 16*B*a^4*b^5 + 60*A*a^
3*b^6 - 5*B*a^2*b^7 + 20*A*a*b^8)*tan(d*x + c)^2 + (18*A*a^8*b - 47*B*a^7*b
^2 + 128*A*a^6*b^3 - 34*B*a^5*b^4 + 130*A*a^4*b^5 - 11*B*a^3*b^6 + 44*A*a^2
*b^7)*tan(d*x + c))/((a^10*b^3 + 3*a^8*b^5 + 3*a^6*b^7 + a^4*b^9)*tan(d*x +
 c)^4 + 3*(a^11*b^2 + 3*a^9*b^4 + 3*a^7*b^6 + a^5*b^8)*tan(d*x + c)^3 + 3*(
a^12*b + 3*a^10*b^3 + 3*a^8*b^5 + a^6*b^7)*tan(d*x + c)^2 + (a^13 + 3*a^11*
b^2 + 3*a^9*b^4 + a^7*b^6)*tan(d*x + c)) - 6*(B*a - 4*A*b)*log(tan(d*x + c)
)/a^5)/d
```

Fricas [B] time = 4.27353, size = 3368, normalized size = 8.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] -1/6*(6*A*a^12 + 24*A*a^10*b^2 + 36*A*a^8*b^4 + 24*A*a^6*b^6 + 6*A*a^4*b^8
+ (47*B*a^7*b^5 - 74*A*a^6*b^6 + 6*B*a^5*b^7 - 42*A*a^4*b^8 + 3*B*a^3*b^9 -
 12*A*a^2*b^10 + 6*(A*a^9*b^3 + 4*B*a^8*b^4 - 6*A*a^7*b^5 - 4*B*a^6*b^6 + A
*a^5*b^7)*d*x)*tan(d*x + c)^4 + 3*(2*A*a^9*b^3 + 35*B*a^8*b^4 - 46*A*a^7*b^
5 - 12*B*a^6*b^6 + 8*A*a^5*b^7 - 5*B*a^4*b^8 + 20*A*a^3*b^9 - 2*B*a^2*b^10
+ 8*A*a*b^11 + 6*(A*a^10*b^2 + 4*B*a^9*b^3 - 6*A*a^8*b^4 - 4*B*a^7*b^5 + A*
a^6*b^6)*d*x)*tan(d*x + c)^3 + 3*(6*A*a^10*b^2 + 20*B*a^9*b^3 - 6*A*a^8*b^4
 - 37*B*a^7*b^5 + 80*A*a^6*b^6 - 18*B*a^5*b^7 + 68*A*a^4*b^8 - 5*B*a^3*b^9
+ 20*A*a^2*b^10 + 6*(A*a^11*b + 4*B*a^10*b^2 - 6*A*a^9*b^3 - 4*B*a^8*b^4 +
A*a^7*b^5)*d*x)*tan(d*x + c)^2 - 3*((B*a^9*b^3 - 4*A*a^8*b^4 + 4*B*a^7*b^5
- 16*A*a^6*b^6 + 6*B*a^5*b^7 - 24*A*a^4*b^8 + 4*B*a^3*b^9 - 16*A*a^2*b^10 +
 B*a*b^11 - 4*A*b^12)*tan(d*x + c)^4 + 3*(B*a^10*b^2 - 4*A*a^9*b^3 + 4*B*a^
8*b^4 - 16*A*a^7*b^5 + 6*B*a^6*b^6 - 24*A*a^5*b^7 + 4*B*a^4*b^8 - 16*A*a^3*
```

```
b^9 + B*a^2*b^10 - 4*A*a*b^11)*tan(d*x + c)^3 + 3*(B*a^11*b - 4*A*a^10*b^2
+ 4*B*a^9*b^3 - 16*A*a^8*b^4 + 6*B*a^7*b^5 - 24*A*a^6*b^6 + 4*B*a^5*b^7 - 1
6*A*a^4*b^8 + B*a^3*b^9 - 4*A*a^2*b^10)*tan(d*x + c)^2 + (B*a^12 - 4*A*a^11
*b + 4*B*a^10*b^2 - 16*A*a^9*b^3 + 6*B*a^8*b^4 - 24*A*a^7*b^5 + 4*B*a^6*b^6
 - 16*A*a^5*b^7 + B*a^4*b^8 - 4*A*a^3*b^9)*tan(d*x + c))*log(tan(d*x + c)^2
/(tan(d*x + c)^2 + 1)) + 3*((10*B*a^7*b^5 - 20*A*a^6*b^6 + 5*B*a^5*b^7 - 24
*A*a^4*b^8 + 4*B*a^3*b^9 - 16*A*a^2*b^10 + B*a*b^11 - 4*A*b^12)*tan(d*x + c
)^4 + 3*(10*B*a^8*b^4 - 20*A*a^7*b^5 + 5*B*a^6*b^6 - 24*A*a^5*b^7 + 4*B*a^4
*b^8 - 16*A*a^3*b^9 + B*a^2*b^10 - 4*A*a*b^11)*tan(d*x + c)^3 + 3*(10*B*a^9
*b^3 - 20*A*a^8*b^4 + 5*B*a^7*b^5 - 24*A*a^6*b^6 + 4*B*a^5*b^7 - 16*A*a^4*b
^8 + B*a^3*b^9 - 4*A*a^2*b^10)*tan(d*x + c)^2 + (10*B*a^10*b^2 - 20*A*a^9*b
^3 + 5*B*a^8*b^4 - 24*A*a^7*b^5 + 4*B*a^6*b^6 - 16*A*a^5*b^7 + B*a^4*b^8 -
4*A*a^3*b^9)*tan(d*x + c))*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a
^2)/(tan(d*x + c)^2 + 1)) + (18*A*a^11*b + 72*A*a^9*b^3 - 75*B*a^8*b^4 + 21
6*A*a^7*b^5 - 42*B*a^6*b^6 + 162*A*a^5*b^7 - 11*B*a^4*b^8 + 44*A*a^3*b^9 +
6*(A*a^12 + 4*B*a^11*b - 6*A*a^10*b^2 - 4*B*a^9*b^3 + A*a^8*b^4)*d*x)*tan(d
*x + c))/((a^13*b^3 + 4*a^11*b^5 + 6*a^9*b^7 + 4*a^7*b^9 + a^5*b^11)*d*tan(
d*x + c)^4 + 3*(a^14*b^2 + 4*a^12*b^4 + 6*a^10*b^6 + 4*a^8*b^8 + a^6*b^10)*
d*tan(d*x + c)^3 + 3*(a^15*b + 4*a^13*b^3 + 6*a^11*b^5 + 4*a^9*b^7 + a^7*b^
9)*d*tan(d*x + c)^2 + (a^16 + 4*a^14*b^2 + 6*a^12*b^4 + 4*a^10*b^6 + a^8*b^
8)*d*tan(d*x + c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)

[Out] Timed out
```

Giac [B] time = 1.33929, size = 1142, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] -1/6*(6*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + 3*(B*a^4 - 4*A*a^3*b - 6*B*a
^2*b^2 + 4*A*a*b^3 + B*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8) + 6*(10*B*a^7*b^3 - 20*A*a^6*b^4 + 5*B*a^5*b^5 - 2
4*A*a^4*b^6 + 4*B*a^3*b^7 - 16*A*a^2*b^8 + B*a*b^9 - 4*A*b^10)*log(abs(b*ta
n(d*x + c) + a))/(a^13*b + 4*a^11*b^3 + 6*a^9*b^5 + 4*a^7*b^7 + a^5*b^9) -
(110*B*a^7*b^5*tan(d*x + c)^3 - 220*A*a^6*b^6*tan(d*x + c)^3 + 55*B*a^5*b^7
*tan(d*x + c)^3 - 264*A*a^4*b^8*tan(d*x + c)^3 + 44*B*a^3*b^9*tan(d*x + c)^
3 - 176*A*a^2*b^10*tan(d*x + c)^3 + 11*B*a*b^11*tan(d*x + c)^3 - 44*A*b^12*
tan(d*x + c)^3 + 366*B*a^8*b^4*tan(d*x + c)^2 - 720*A*a^7*b^5*tan(d*x + c)^
2 + 219*B*a^6*b^6*tan(d*x + c)^2 - 906*A*a^5*b^7*tan(d*x + c)^2 + 156*B*a^4
*b^8*tan(d*x + c)^2 - 600*A*a^3*b^9*tan(d*x + c)^2 + 39*B*a^2*b^10*tan(d*x
+ c)^2 - 150*A*a*b^11*tan(d*x + c)^2 + 411*B*a^9*b^3*tan(d*x + c) - 792*A*a
^8*b^4*tan(d*x + c) + 294*B*a^7*b^5*tan(d*x + c) - 1050*A*a^6*b^6*tan(d*x +
 c) + 195*B*a^5*b^7*tan(d*x + c) - 696*A*a^4*b^8*tan(d*x + c) + 48*B*a^3*b^
9*tan(d*x + c) - 174*A*a^2*b^10*tan(d*x + c) + 157*B*a^10*b^2 - 294*A*a^9*b
^3 + 136*B*a^8*b^4 - 414*A*a^7*b^5 + 89*B*a^6*b^6 - 278*A*a^5*b^7 + 22*B*a^
4*b^8 - 70*A*a^3*b^9)/((a^13 + 4*a^11*b^2 + 6*a^9*b^4 + 4*a^7*b^6 + a^5*b^8
)*(b*tan(d*x + c) + a)^3) - 6*(B*a - 4*A*b)*log(abs(tan(d*x + c)))/a^5 + 6*
(B*a*tan(d*x + c) - 4*A*b*tan(d*x + c) + A*a)/(a^5*tan(d*x + c)))/d
```

3.297 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=477

$$\frac{b\left(27a^4Ab^3+29a^2Ab^5+4a^6Ab-13a^5b^2B-12a^3b^4B+a^7(-B)-4ab^6B+10Ab^7\right)}{a^5d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{b\left(19a^2Ab^3+7a^4Ab-8a^3b^2B-2a\right.}{2a^4d\left(a^2+b^2\right)^2(a+b\,\mathrm{ta}}$$

```
[Out] ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4 - (
(a^2*A - 10*A*b^2 + 4*a*b*B)*Log[Sin[c + d*x]])/(a^6*d) - (b^3*(35*a^6*A*b
+ 56*a^4*A*b^3 + 39*a^2*A*b^5 + 10*A*b^7 - 20*a^7*B - 24*a^5*b^2*B - 16*a^3
*b^4*B - 4*a*b^6*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^6*(a^2 + b^2)^
4*d) + (b*(9*a^2*A*b + 10*A*b^3 - 3*a^3*B - 4*a*b^2*B))/(3*a^3*(a^2 + b^2)*
d*(a + b*Tan[c + d*x])^3) + ((5*A*b - 2*a*B)*Cot[c + d*x])/(2*a^2*d*(a + b*
Tan[c + d*x])^3) - (A*Cot[c + d*x]^2)/(2*a*d*(a + b*Tan[c + d*x])^3) + (b*(
7*a^4*A*b + 19*a^2*A*b^3 + 10*A*b^5 - 2*a^5*B - 8*a^3*b^2*B - 4*a*b^4*B))/(
2*a^4*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])^2) + (b*(4*a^6*A*b + 27*a^4*A*b^
3 + 29*a^2*A*b^5 + 10*A*b^7 - a^7*B - 13*a^5*b^2*B - 12*a^3*b^4*B - 4*a*b^6
*B))/(a^5*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.73836, antiderivative size = 477, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3609, 3649, 3651, 3530, 3475}

$$\frac{b\left(27a^4Ab^3+29a^2Ab^5+4a^6Ab-13a^5b^2B-12a^3b^4B+a^7(-B)-4ab^6B+10Ab^7\right)}{a^5d\left(a^2+b^2\right)^3(a+b\tan(c+dx))}+\frac{b\left(19a^2Ab^3+7a^4Ab-8a^3b^2B-2a\right.}{2a^4d\left(a^2+b^2\right)^2(a+b\,\mathrm{ta}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```


```
[Out] ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*x)/(a^2 + b^2)^4 - (
(a^2*A - 10*A*b^2 + 4*a*b*B)*Log[Sin[c + d*x]])/(a^6*d) - (b^3*(35*a^6*A*b
+ 56*a^4*A*b^3 + 39*a^2*A*b^5 + 10*A*b^7 - 20*a^7*B - 24*a^5*b^2*B - 16*a^3
*b^4*B - 4*a*b^6*B)*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^6*(a^2 + b^2)^
4*d) + (b*(9*a^2*A*b + 10*A*b^3 - 3*a^3*B - 4*a*b^2*B))/(3*a^3*(a^2 + b^2)*
d*(a + b*Tan[c + d*x])^3) + ((5*A*b - 2*a*B)*Cot[c + d*x])/(2*a^2*d*(a + b*
Tan[c + d*x])^3) - (A*Cot[c + d*x]^2)/(2*a*d*(a + b*Tan[c + d*x])^3) + (b*(
7*a^4*A*b + 19*a^2*A*b^3 + 10*A*b^5 - 2*a^5*B - 8*a^3*b^2*B - 4*a*b^4*B))/(
2*a^4*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])^2) + (b*(4*a^6*A*b + 27*a^4*A*b^
3 + 29*a^2*A*b^5 + 10*A*b^7 - a^7*B - 13*a^5*b^2*B - 12*a^3*b^4*B - 4*a*b^6
```

```
*B))/(a^5*(a^2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
```

```
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = -\frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^3} - \frac{\int \frac{\cot^2(c+dx)\left(5Ab-2aB+2aA\tan(c+dx)+5Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^4}\,dx}{2a}$$

$$= \frac{(5Ab-2aB)\cot(c+dx)}{2a^2d(a+b\tan(c+dx))^3} - \frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^3} + \int \frac{\cot(c+dx)\left(-2\left(a^2A-10Ab^2+\right.\right.}{}$$

$$= \frac{b\left(9a^2Ab+10Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{(5Ab-2aB)\cot(c+dx)}{2a^2d(a+b\tan(c+dx))^3} - \frac{A\cot^2(}{2ad(a+b\,\mathrm{ta}}$$

$$= \frac{b\left(9a^2Ab+10Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{(5Ab-2aB)\cot(c+dx)}{2a^2d(a+b\tan(c+dx))^3} - \frac{A\cot^2(}{2ad(a+b\,\mathrm{ta}}$$

$$= \frac{b\left(9a^2Ab+10Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{(5Ab-2aB)\cot(c+dx)}{2a^2d(a+b\tan(c+dx))^3} - \frac{A\cot^2(}{2ad(a+b\,\mathrm{ta}}$$

$$= \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} + \frac{b\left(9a^2Ab+10Ab^3-3a^3B-4ab^2\right.}{3a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))}$$

$$= \frac{\left(4a^3Ab-4aAb^3-a^4B+6a^2b^2B-b^4B\right)x}{\left(a^2+b^2\right)^4} - \frac{\left(a^2A-10Ab^2+4abB\right)\log(\sin(c}{a^6d}$$

Mathematica [C] time = 6.62844, size = 417, normalized size = 0.87

$$\frac{b^3\left(17a^2Ab^3+15a^4Ab-9a^3b^2B-10a^5B-3ab^4B+6Ab^5\right)}{a^5d\left(a^2+b^2\right)^3(a+b\tan(c+dx))} + \frac{b^3\left(5a^2Ab-4a^3B-2ab^2B+3Ab^3\right)}{2a^4d\left(a^2+b^2\right)^2(a+b\tan(c+dx))^2} + \frac{b^3(Ab-}{3a^3d\left(a^2+b^2\right)(a+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] ((4*A*b - a*B)*Cot[c + d*x])/(a^5*d) - (A*Cot[c + d*x]^2)/(2*a^4*d) + ((A +
 I*B)*Log[I - Tan[c + d*x]])/(2*(a + I*b)^4*d) - ((a^2*A - 10*A*b^2 + 4*a*b
*B)*Log[Tan[c + d*x]])/(a^6*d) + ((A - I*B)*Log[I + Tan[c + d*x]])/(2*(a -
I*b)^4*d) - (b^3*(35*a^6*A*b + 56*a^4*A*b^3 + 39*a^2*A*b^5 + 10*A*b^7 - 20*
a^7*B - 24*a^5*b^2*B - 16*a^3*b^4*B - 4*a*b^6*B)*Log[a + b*Tan[c + d*x]])/(
a^6*(a^2 + b^2)^4*d) + (b^3*(A*b - a*B))/(3*a^3*(a^2 + b^2)*d*(a + b*Tan[c
+ d*x])^3) + (b^3*(5*a^2*A*b + 3*A*b^3 - 4*a^3*B - 2*a*b^2*B))/(2*a^4*(a^2
+ b^2)^2*d*(a + b*Tan[c + d*x])^2) + (b^3*(15*a^4*A*b + 17*a^2*A*b^3 + 6*A*
b^5 - 10*a^5*B - 9*a^3*b^2*B - 3*a*b^4*B))/(a^5*(a^2 + b^2)^3*d*(a + b*Tan[
c + d*x]))
```

Maple [B] time = 0.173, size = 1030, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

```
[Out] -1/2/d/a^4*A/tan(d*x+c)^2-1/d/a^4/tan(d*x+c)*B-35/d/(a^2+b^2)^4*ln(a+b*tan(
d*x+c))*A*b^4-10/d/(a^2+b^2)^3/(a+b*tan(d*x+c))*B*b^3+1/2/d/(a^2+b^2)^4*ln(
1+tan(d*x+c)^2)*A*a^4+1/2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*b^4-1/d/(a^2+b
^2)^4*B*arctan(tan(d*x+c))*a^4-1/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*b^4-3/d
/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*A*a^2*b^2+2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2
)*B*a^3*b-10/d*b^10/a^6/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A-9/d*b^5/a^2/(a^2+b
^2)^3/(a+b*tan(d*x+c))*B-3/d*b^7/a^4/(a^2+b^2)^3/(a+b*tan(d*x+c))*B+24/d*b^
5/a/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B-2/d/(a^2+b^2)^4*ln(1+tan(d*x+c)^2)*B*a
*b^3+4/d/(a^2+b^2)^4*A*arctan(tan(d*x+c))*a^3*b+20/d/(a^2+b^2)^4*ln(a+b*tan
(d*x+c))*B*a*b^3+6/d/(a^2+b^2)^4*B*arctan(tan(d*x+c))*a^2*b^2-4/d/(a^2+b^2)
^4*A*arctan(tan(d*x+c))*a*b^3+6/d*b^8/a^5/(a^2+b^2)^3/(a+b*tan(d*x+c))*A+1/
3/d*b^4/a^3/(a^2+b^2)/(a+b*tan(d*x+c))^3*A-1/3/d*b^3/a^2/(a^2+b^2)/(a+b*tan
(d*x+c))^3*B+3/2/d*b^6/a^4/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*A-2/d*b^3/a/(a^2+
b^2)^2/(a+b*tan(d*x+c))^2*B-1/d*b^5/a^3/(a^2+b^2)^2/(a+b*tan(d*x+c))^2*B+16
/d*b^7/a^3/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*B+4/d*b^9/a^5/(a^2+b^2)^4*ln(a+b*
tan(d*x+c))*B-56/d*b^6/a^2/(a^2+b^2)^4*ln(a+b*tan(d*x+c))*A-39/d*b^8/a^4/(a
^2+b^2)^4*ln(a+b*tan(d*x+c))*A+5/2/d*b^4/a^2/(a^2+b^2)^2/(a+b*tan(d*x+c))^2
*A+17/d*b^6/a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))*A+15/d*b^4/a/(a^2+b^2)^3/(a+b*
tan(d*x+c))*A+10/d/a^6*ln(tan(d*x+c))*A*b^2-4/d/a^5*ln(tan(d*x+c))*B*b+4/d/
a^5/tan(d*x+c)*A*b-1/d/a^4*A*ln(tan(d*x+c))
```

Maxima [A] time = 1.6436, size = 1100, normalized size = 2.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] -1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 6*(20*B*a^7*b^3 - 35*A*a^6*b
^4 + 24*B*a^5*b^5 - 56*A*a^4*b^6 + 16*B*a^3*b^7 - 39*A*a^2*b^8 + 4*B*a*b^9
- 10*A*b^10)*log(b*tan(d*x + c) + a)/(a^14 + 4*a^12*b^2 + 6*a^10*b^4 + 4*a^
8*b^6 + a^6*b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a^2*b^2 - 4*B*a*b^3 + A*b^4)*
log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) + (
3*A*a^10 + 9*A*a^8*b^2 + 9*A*a^6*b^4 + 3*A*a^4*b^6 + 6*(B*a^7*b^3 - 4*A*a^6
*b^4 + 13*B*a^5*b^5 - 27*A*a^4*b^6 + 12*B*a^3*b^7 - 29*A*a^2*b^8 + 4*B*a*b^
9 - 10*A*b^10)*tan(d*x + c)^4 + 3*(6*B*a^8*b^2 - 23*A*a^7*b^3 + 62*B*a^6*b^
4 - 134*A*a^5*b^5 + 60*B*a^4*b^6 - 145*A*a^3*b^7 + 20*B*a^2*b^8 - 50*A*a*b^
9)*tan(d*x + c)^3 + (18*B*a^9*b - 63*A*a^8*b^2 + 128*B*a^7*b^3 - 296*A*a^6*
b^4 + 130*B*a^5*b^5 - 319*A*a^4*b^6 + 44*B*a^3*b^7 - 110*A*a^2*b^8)*tan(d*x
 + c)^2 + 3*(2*B*a^10 - 5*A*a^9*b + 6*B*a^8*b^2 - 15*A*a^7*b^3 + 6*B*a^6*b^
4 - 15*A*a^5*b^5 + 2*B*a^4*b^6 - 5*A*a^3*b^7)*tan(d*x + c))/((a^11*b^3 + 3*
a^9*b^5 + 3*a^7*b^7 + a^5*b^9)*tan(d*x + c)^5 + 3*(a^12*b^2 + 3*a^10*b^4 +
3*a^8*b^6 + a^6*b^8)*tan(d*x + c)^4 + 3*(a^13*b + 3*a^11*b^3 + 3*a^9*b^5 +
a^7*b^7)*tan(d*x + c)^3 + (a^14 + 3*a^12*b^2 + 3*a^10*b^4 + a^8*b^6)*tan(d*
x + c)^2) + 6*(A*a^2 + 4*B*a*b - 10*A*b^2)*log(tan(d*x + c))/a^6)/d
```

Fricas [B] time = 4.68492, size = 3954, normalized size = 8.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] -1/6*(3*A*a^13 + 12*A*a^11*b^2 + 18*A*a^9*b^4 + 12*A*a^7*b^6 + 3*A*a^5*b^8
+ (3*A*a^10*b^3 + 12*A*a^8*b^5 - 74*B*a^7*b^6 + 125*A*a^6*b^7 - 42*B*a^5*b^
8 + 102*A*a^4*b^9 - 12*B*a^3*b^10 + 30*A*a^2*b^11 + 6*(B*a^10*b^3 - 4*A*a^9
```

```
*b^4 - 6*B*a^8*b^5 + 4*A*a^7*b^6 + B*a^6*b^7)*d*x)*tan(d*x + c)^5 + 3*(3*A*
a^11*b^2 + 2*B*a^10*b^3 + 4*A*a^9*b^4 - 46*B*a^8*b^5 + 63*A*a^7*b^6 + 8*B*a
^6*b^7 - 10*A*a^5*b^8 + 20*B*a^4*b^9 - 48*A*a^3*b^10 + 8*B*a^2*b^11 - 20*A*
a*b^12 + 6*(B*a^11*b^2 - 4*A*a^10*b^3 - 6*B*a^9*b^4 + 4*A*a^8*b^5 + B*a^7*b
^6)*d*x)*tan(d*x + c)^4 + 3*(3*A*a^12*b + 6*B*a^11*b^2 - 11*A*a^10*b^3 - 6*
B*a^9*b^4 - 32*A*a^8*b^5 + 80*B*a^7*b^6 - 177*A*a^6*b^7 + 68*B*a^5*b^8 - 16
5*A*a^4*b^9 + 20*B*a^3*b^10 - 50*A*a^2*b^11 + 6*(B*a^12*b - 4*A*a^11*b^2 -
6*B*a^10*b^3 + 4*A*a^9*b^4 + B*a^8*b^5)*d*x)*tan(d*x + c)^3 + (3*A*a^13 + 1
8*B*a^12*b - 51*A*a^11*b^2 + 72*B*a^10*b^3 - 234*A*a^9*b^4 + 216*B*a^8*b^5
- 513*A*a^7*b^6 + 162*B*a^6*b^7 - 399*A*a^5*b^8 + 44*B*a^4*b^9 - 110*A*a^3*
b^10 + 6*(B*a^13 - 4*A*a^12*b - 6*B*a^11*b^2 + 4*A*a^10*b^3 + B*a^9*b^4)*d*
x)*tan(d*x + c)^2 + 3*((A*a^10*b^3 + 4*B*a^9*b^4 - 6*A*a^8*b^5 + 16*B*a^7*b
^6 - 34*A*a^6*b^7 + 24*B*a^5*b^8 - 56*A*a^4*b^9 + 16*B*a^3*b^10 - 39*A*a^2*
b^11 + 4*B*a*b^12 - 10*A*b^13)*tan(d*x + c)^5 + 3*(A*a^11*b^2 + 4*B*a^10*b^
3 - 6*A*a^9*b^4 + 16*B*a^8*b^5 - 34*A*a^7*b^6 + 24*B*a^6*b^7 - 56*A*a^5*b^8
 + 16*B*a^4*b^9 - 39*A*a^3*b^10 + 4*B*a^2*b^11 - 10*A*a*b^12)*tan(d*x + c)^
4 + 3*(A*a^12*b + 4*B*a^11*b^2 - 6*A*a^10*b^3 + 16*B*a^9*b^4 - 34*A*a^8*b^5
 + 24*B*a^7*b^6 - 56*A*a^6*b^7 + 16*B*a^5*b^8 - 39*A*a^4*b^9 + 4*B*a^3*b^10
 - 10*A*a^2*b^11)*tan(d*x + c)^3 + (A*a^13 + 4*B*a^12*b - 6*A*a^11*b^2 + 16
*B*a^10*b^3 - 34*A*a^9*b^4 + 24*B*a^8*b^5 - 56*A*a^7*b^6 + 16*B*a^6*b^7 - 3
9*A*a^5*b^8 + 4*B*a^4*b^9 - 10*A*a^3*b^10)*tan(d*x + c)^2)*log(tan(d*x + c)
^2/(tan(d*x + c)^2 + 1)) - 3*((20*B*a^7*b^6 - 35*A*a^6*b^7 + 24*B*a^5*b^8 -
 56*A*a^4*b^9 + 16*B*a^3*b^10 - 39*A*a^2*b^11 + 4*B*a*b^12 - 10*A*b^13)*tan
(d*x + c)^5 + 3*(20*B*a^8*b^5 - 35*A*a^7*b^6 + 24*B*a^6*b^7 - 56*A*a^5*b^8
+ 16*B*a^4*b^9 - 39*A*a^3*b^10 + 4*B*a^2*b^11 - 10*A*a*b^12)*tan(d*x + c)^4
 + 3*(20*B*a^9*b^4 - 35*A*a^8*b^5 + 24*B*a^7*b^6 - 56*A*a^6*b^7 + 16*B*a^5*
b^8 - 39*A*a^4*b^9 + 4*B*a^3*b^10 - 10*A*a^2*b^11)*tan(d*x + c)^3 + (20*B*a
^10*b^3 - 35*A*a^9*b^4 + 24*B*a^8*b^5 - 56*A*a^7*b^6 + 16*B*a^6*b^7 - 39*A*
a^5*b^8 + 4*B*a^4*b^9 - 10*A*a^3*b^10)*tan(d*x + c)^2)*log((b^2*tan(d*x + c
)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x + c)^2 + 1)) + 3*(2*B*a^13 - 5*A*a
^12*b + 8*B*a^11*b^2 - 20*A*a^10*b^3 + 12*B*a^9*b^4 - 30*A*a^8*b^5 + 8*B*a^
7*b^6 - 20*A*a^6*b^7 + 2*B*a^5*b^8 - 5*A*a^4*b^9)*tan(d*x + c))/((a^14*b^3
+ 4*a^12*b^5 + 6*a^10*b^7 + 4*a^8*b^9 + a^6*b^11)*d*tan(d*x + c)^5 + 3*(a^1
5*b^2 + 4*a^13*b^4 + 6*a^11*b^6 + 4*a^9*b^8 + a^7*b^10)*d*tan(d*x + c)^4 +
3*(a^16*b + 4*a^14*b^3 + 6*a^12*b^5 + 4*a^10*b^7 + a^8*b^9)*d*tan(d*x + c)^
3 + (a^17 + 4*a^15*b^2 + 6*a^13*b^4 + 4*a^11*b^6 + a^9*b^8)*d*tan(d*x + c)^
2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.3566, size = 1219, normalized size = 2.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] -1/6*(6*(B*a^4 - 4*A*a^3*b - 6*B*a^2*b^2 + 4*A*a*b^3 + B*b^4)*(d*x + c)/(a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8) - 3*(A*a^4 + 4*B*a^3*b - 6*A*a
^2*b^2 - 4*B*a*b^3 + A*b^4)*log(tan(d*x + c)^2 + 1)/(a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8) - 6*(20*B*a^7*b^4 - 35*A*a^6*b^5 + 24*B*a^5*b^6 -
56*A*a^4*b^7 + 16*B*a^3*b^8 - 39*A*a^2*b^9 + 4*B*a*b^10 - 10*A*b^11)*log(ab
s(b*tan(d*x + c) + a))/(a^14*b + 4*a^12*b^3 + 6*a^10*b^5 + 4*a^8*b^7 + a^6*
b^9) + (220*B*a^7*b^6*tan(d*x + c)^3 - 385*A*a^6*b^7*tan(d*x + c)^3 + 264*B
*a^5*b^8*tan(d*x + c)^3 - 616*A*a^4*b^9*tan(d*x + c)^3 + 176*B*a^3*b^10*tan
(d*x + c)^3 - 429*A*a^2*b^11*tan(d*x + c)^3 + 44*B*a*b^12*tan(d*x + c)^3 -
110*A*b^13*tan(d*x + c)^3 + 720*B*a^8*b^5*tan(d*x + c)^2 - 1245*A*a^7*b^6*t
an(d*x + c)^2 + 906*B*a^6*b^7*tan(d*x + c)^2 - 2040*A*a^5*b^8*tan(d*x + c)^
2 + 600*B*a^4*b^9*tan(d*x + c)^2 - 1425*A*a^3*b^10*tan(d*x + c)^2 + 150*B*a
^2*b^11*tan(d*x + c)^2 - 366*A*a*b^12*tan(d*x + c)^2 + 792*B*a^9*b^4*tan(d*
x + c) - 1350*A*a^8*b^5*tan(d*x + c) + 1050*B*a^7*b^6*tan(d*x + c) - 2271*A
*a^6*b^7*tan(d*x + c) + 696*B*a^5*b^8*tan(d*x + c) - 1596*A*a^4*b^9*tan(d*x
 + c) + 174*B*a^3*b^10*tan(d*x + c) - 411*A*a^2*b^11*tan(d*x + c) + 294*B*a
^10*b^3 - 492*A*a^9*b^4 + 414*B*a^8*b^5 - 853*A*a^7*b^6 + 278*B*a^6*b^7 - 6
06*A*a^5*b^8 + 70*B*a^4*b^9 - 157*A*a^3*b^10)/((a^14 + 4*a^12*b^2 + 6*a^10*
b^4 + 4*a^8*b^6 + a^6*b^8)*(b*tan(d*x + c) + a)^3) + 6*(A*a^2 + 4*B*a*b - 1
0*A*b^2)*log(abs(tan(d*x + c)))/a^6 - 3*(3*A*a^2*tan(d*x + c)^2 + 12*B*a*b*
tan(d*x + c)^2 - 30*A*b^2*tan(d*x + c)^2 - 2*B*a^2*tan(d*x + c) + 8*A*a*b*t
an(d*x + c) - A*a^2)/(a^6*tan(d*x + c)^2))/d
```

3.298 $\int \frac{\tan^3(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=29

$$\frac{B\tan^2(c+dx)}{2d}+\frac{B\log(\cos(c+dx))}{d}$$

```
[Out] (B*Log[Cos[c + d*x]])/d + (B*Tan[c + d*x]^2)/(2*d)
```

Rubi [A] time = 0.0175713, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 3473, 3475}

$$\frac{B\tan^2(c+dx)}{2d}+\frac{B\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (B*Log[Cos[c + d*x]])/d + (B*Tan[c + d*x]^2)/(2*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \tan^3(c+dx)\,dx$$
$$= \frac{B\tan^2(c+dx)}{2d} - B\int \tan(c+dx)\,dx$$
$$= \frac{B\log(\cos(c+dx))}{d} + \frac{B\tan^2(c+dx)}{2d}$$

Mathematica [A] time = 0.028094, size = 26, normalized size = 0.9

$$\frac{B\left(\tan^2(c+dx)+2\log(\cos(c+dx))\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (B*(2*Log[Cos[c + d*x]] + Tan[c + d*x]^2))/(2*d)
```

Maple [A] time = 0.022, size = 33, normalized size = 1.1

$$\frac{B(\tan(dx+c))^2}{2d} - \frac{B\ln\left(1+(\tan(dx+c))^2\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2*B*tan(d*x+c)^2/d-1/2/d*B*ln(1+tan(d*x+c)^2)
```

Maxima [A] time = 1.48099, size = 41, normalized size = 1.41

$$\frac{B\tan(dx+c)^2 - B\log\left(\tan(dx+c)^2+1\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/2*(B*tan(d*x + c)^2 - B*log(tan(d*x + c)^2 + 1))/d
```

Fricas [A] time = 1.71534, size = 78, normalized size = 2.69

$$\frac{B\tan\left(dx+c\right)^2+B\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/2*(B*tan(d*x + c)^2 + B*log(1/(tan(d*x + c)^2 + 1)))/d
```

Sympy [A] time = 14.0065, size = 53, normalized size = 1.83

$$\begin{cases} -\frac{B\log\left(\tan^2(c+dx)+1\right)}{2d}+\frac{B\tan^2(c+dx)}{2d} & \text{for } d\neq 0\\ \frac{x(Ba+Bb\tan(c))\tan^3(c)}{a+b\tan(c)} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((-B*log(tan(c + d*x)**2 + 1)/(2*d) + B*tan(c + d*x)**2/(2*d), Ne(
d, 0)), (x*(B*a + B*b*tan(c))*tan(c)**3/(a + b*tan(c)), True))
```

Giac [B] time = 1.83875, size = 252, normalized size = 8.69

$$-\frac{B\log\left(\left|-\frac{\cos(dx+c)+1}{\cos(dx+c)-1}-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}+2\right|\right)-B\log\left(\left|-\frac{\cos(dx+c)+1}{\cos(dx+c)-1}-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}-2\right|\right)+\frac{B\left(\frac{\cos(dx+c)+1}{\cos(dx+c)-1}+\frac{\cos(dx+c)-1}{\cos(dx+c)+1}\right)+6\,B}{\frac{\cos(dx+c)+1}{\cos(dx+c)-1}+\frac{\cos(dx+c)-1}{\cos(dx+c)+1}+2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/2*(B*log(abs(-(cos(d*x + c) + 1)/(cos(d*x + c) - 1) - (cos(d*x + c) - 1)
/(cos(d*x + c) + 1) + 2)) - B*log(abs(-(cos(d*x + c) + 1)/(cos(d*x + c) - 1
) - (cos(d*x + c) - 1)/(cos(d*x + c) + 1) - 2)) + (B*((cos(d*x + c) + 1)/(c
os(d*x + c) - 1) + (cos(d*x + c) - 1)/(cos(d*x + c) + 1)) + 6*B)/((cos(d*x
+ c) + 1)/(cos(d*x + c) - 1) + (cos(d*x + c) - 1)/(cos(d*x + c) + 1) + 2))/
d
```

3.299 $\int \frac{\tan^2(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=16

$$\frac{B\tan(c+dx)}{d}-Bx$$

```
[Out] -(B*x) + (B*Tan[c + d*x])/d
```

Rubi [A] time = 0.0116281, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 3473, 8}

$$\frac{B\tan(c+dx)}{d}-Bx$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(B*x) + (B*Tan[c + d*x])/d
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \tan^2(c+dx)\,dx$$
$$= \frac{B\tan(c+dx)}{d} - B\int 1\,dx$$
$$= -Bx + \frac{B\tan(c+dx)}{d}$$

Mathematica [A] time = 0.0096435, size = 25, normalized size = 1.56

$$B\left(\frac{\tan(c+dx)}{d} - \frac{\tan^{-1}(\tan(c+dx))}{d}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] B*(-(ArcTan[Tan[c + d*x]]/d) + Tan[c + d*x]/d)
```

Maple [A] time = 0.022, size = 26, normalized size = 1.6

$$\frac{B\tan(dx+c)}{d} - \frac{B\arctan(\tan(dx+c))}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*tan(d*x+c)/d-1/d*B*arctan(tan(d*x+c))
```

Maxima [A] time = 1.66764, size = 30, normalized size = 1.88

$$-\frac{(dx+c)B - B\tan(dx+c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -((d*x + c)*B - B*tan(d*x + c))/d
```

Fricas [A] time = 1.73815, size = 39, normalized size = 2.44

$$-\frac{Bdx - B\tan(dx + c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -(B*d*x - B*tan(d*x + c))/d
```

Sympy [A] time = 0.82752, size = 36, normalized size = 2.25

$$\begin{cases} -Bx + \frac{B\tan(c+dx)}{d} & \text{for}\: d \neq 0 \\ \frac{x(Ba+Bb\tan(c))\tan^2(c)}{a+b\tan(c)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((-B*x + B*tan(c + d*x)/d, Ne(d, 0)), (x*(B*a + B*b*tan(c))*tan(c)
**2/(a + b*tan(c)), True))
```

Giac [A] time = 1.48349, size = 30, normalized size = 1.88

$$-\frac{(dx + c)B - B\tan(dx + c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -((d*x + c)*B - B*tan(d*x + c))/d
```

3.300 $\int \frac{\tan(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=13

$$-\frac{B\log(\cos(c+dx))}{d}$$

```
[Out] -((B*Log[Cos[c + d*x]])/d)
```

Rubi [A] time = 0.0066428, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {21, 3475}

$$-\frac{B\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -((B*Log[Cos[c + d*x]])/d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\tan(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx &= B\int \tan(c+dx)\,dx\\ &= -\frac{B\log(\cos(c+dx))}{d}\end{aligned}$$

Mathematica [A] time = 0.0068276, size = 13, normalized size = 1.

$$-\frac{B\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -((B*Log[Cos[c + d*x]])/d)
```

Maple [A] time = 0.017, size = 18, normalized size = 1.4

$$\frac{B\ln\left(1+(\tan(dx+c))^2\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d*B*ln(1+tan(d*x+c)^2)
```

Maxima [A] time = 1.67684, size = 23, normalized size = 1.77

$$\frac{B\log\left(\tan(dx+c)^2+1\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] 1/2*B*log(tan(d*x + c)^2 + 1)/d
```

Fricas [A] time = 1.93919, size = 51, normalized size = 3.92

$$-\frac{B\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/2*B*log(1/(tan(d*x + c)^2 + 1))/d
```

Sympy [A] time = 0.688866, size = 37, normalized size = 2.85

$$\begin{cases} \frac{B\log\left(\tan^{2}(c+dx)+1\right)}{2d} & \text{for } d \neq 0 \\ \frac{x(Ba+Bb\tan(c))\tan(c)}{a+b\tan(c)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((B*log(tan(c + d*x)**2 + 1)/(2*d), Ne(d, 0)), (x*(B*a + B*b*tan(c
))*tan(c)/(a + b*tan(c)), True))
```

Giac [B] time = 1.22798, size = 134, normalized size = 10.31

$$\frac{B\log\left(\left|-\frac{\cos(dx+c)+1}{\cos(dx+c)-1}-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}+2\right|\right)-B\log\left(\left|-\frac{\cos(dx+c)+1}{\cos(dx+c)-1}-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}-2\right|\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(B*log(abs(-(cos(d*x + c) + 1)/(cos(d*x + c) - 1) - (cos(d*x + c) - 1)/
(cos(d*x + c) + 1) + 2)) - B*log(abs(-(cos(d*x + c) + 1)/(cos(d*x + c) - 1)
 - (cos(d*x + c) - 1)/(cos(d*x + c) + 1) - 2)))/d
```

3.301 $\int \frac{aB+bB\tan(c+dx)}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=3

$$Bx$$

```
[Out] B*x
```

Rubi [A] time = 0.0009798, antiderivative size = 3, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {21, 8}

$$Bx$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x]),x]
```

```
[Out] B*x
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\begin{aligned}\int \frac{aB+bB\tan(c+dx)}{a+b\tan(c+dx)}\,dx &= B\int 1\,dx\\ &= Bx\end{aligned}$$

Mathematica [A] time = 0.0002505, size = 3, normalized size = 1.

$$Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x]),x]
```

```
[Out] B*x
```

Maple [A] time = 0.006, size = 4, normalized size = 1.3

$$Bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*x
```

Maxima [C] time = 1.67687, size = 14, normalized size = 4.67

$$\frac{(dx+c)B}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] (d*x + c)*B/d
```

Fricas [A] time = 1.72428, size = 7, normalized size = 2.33

$$Bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] B*x
```

Sympy [A] time = 0.172329, size = 2, normalized size = 0.67

$$Bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*x
```

Giac [C] time = 1.19308, size = 14, normalized size = 4.67

$$\frac{(dx + c)B}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] (d*x + c)*B/d
```

3.302 $\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=12

$$\frac{B\log(\sin(c+dx))}{d}$$

```
[Out] (B*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.0066853, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {21, 3475}

$$\frac{B\log(\sin(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (B*Log[Sin[c + d*x]])/d
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx &= B\int \cot(c+dx)\,dx\\ &= \frac{B\log(\sin(c+dx))}{d}\end{aligned}$$

Mathematica [A] time = 0.0106897, size = 20, normalized size = 1.67

$$\frac{B(\log(\tan(c+dx))+\log(\cos(c+dx)))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (B*(Log[Cos[c + d*x]] + Log[Tan[c + d*x]]))/d
```

Maple [A] time = 0.044, size = 13, normalized size = 1.1

$$\frac{B\ln(\sin(dx+c))}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*ln(sin(d*x+c))/d
```

Maxima [B] time = 1.69498, size = 39, normalized size = 3.25

$$-\frac{B\log\left(\tan(dx+c)^2+1\right)-2B\log(\tan(dx+c))}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] -1/2*(B*log(tan(d*x + c)^2 + 1) - 2*B*log(tan(d*x + c)))/d
```

Fricas [A] time = 2.05819, size = 57, normalized size = 4.75

$$\frac{B\log\left(-\frac{1}{2}\cos(2dx+2c)+\frac{1}{2}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/2*B*log(-1/2*cos(2*d*x + 2*c) + 1/2)/d
```

Sympy [A] time = 1.18723, size = 49, normalized size = 4.08

$$\begin{cases} -\frac{B\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{B\log(\tan(c+dx))}{d} & \text{for } d \neq 0 \\ \frac{x(Ba+Bb\tan(c))\cot(c)}{a+b\tan(c)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((-B*log(tan(c + d*x)**2 + 1)/(2*d) + B*log(tan(c + d*x))/d, Ne(d,
 0)), (x*(B*a + B*b*tan(c))*cot(c)/(a + b*tan(c)), True))
```

Giac [B] time = 1.27845, size = 80, normalized size = 6.67

$$\frac{B\log\left(\frac{|-\cos(dx+c)+1|}{|\cos(dx+c)+1|}\right) - 2B\log\left(\left|-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}+1\right|\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] 1/2*(B*log(abs(-cos(d*x + c) + 1)/abs(cos(d*x + c) + 1)) - 2*B*log(abs(-(co
s(d*x + c) - 1)/(cos(d*x + c) + 1) + 1)))/d
```

3.303 $\int \frac{\cot^2(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=17

$$-\frac{B\cot(c+dx)}{d}-Bx$$

```
[Out] -(B*x) - (B*Cot[c + d*x])/d
```

Rubi [A] time = 0.0114034, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 3473, 8}

$$-\frac{B\cot(c+dx)}{d}-Bx$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(B*x) - (B*Cot[c + d*x])/d
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \cot^2(c+dx)\,dx$$
$$= -\frac{B\cot(c+dx)}{d} - B\int 1\,dx$$
$$= -Bx - \frac{B\cot(c+dx)}{d}$$

Mathematica [C] time = 0.0143815, size = 30, normalized size = 1.76

$$-\frac{B\cot(c+dx)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},-\tan^2(c+dx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -((B*Cot[c + d*x]*Hypergeometric2F1[-1/2, 1, 1/2, -Tan[c + d*x]^2])/d)
```

Maple [A] time = 0.041, size = 22, normalized size = 1.3

$$\frac{B\left(-\cot(dx+c)-dx-c\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/d*B*(-cot(d*x+c)-d*x-c)
```

Maxima [A] time = 1.77949, size = 31, normalized size = 1.82

$$-\frac{(dx+c)B + \frac{B}{\tan(dx+c)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -((d*x + c)*B + B/tan(d*x + c))/d
```

Fricas [B] time = 1.89937, size = 99, normalized size = 5.82

$$-\frac{Bdx\sin(2\,dx+2\,c)+B\cos(2\,dx+2\,c)+B}{d\sin(2\,dx+2\,c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -(B*d*x*sin(2*d*x + 2*c) + B*cos(2*d*x + 2*c) + B)/(d*sin(2*d*x + 2*c))
```

Sympy [A] time = 33.2055, size = 37, normalized size = 2.18

$$\begin{cases} -Bx - \frac{B\cot(c+dx)}{d} & \text{for } d \neq 0 \\ \frac{x(Ba+Bb\tan(c))\cot^2(c)}{a+b\tan(c)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((-B*x - B*cot(c + d*x)/d, Ne(d, 0)), (x*(B*a + B*b*tan(c))*cot(c)
**2/(a + b*tan(c)), True))
```

Giac [B] time = 1.25318, size = 53, normalized size = 3.12

$$-\frac{2\,(dx+c)B-B\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+\frac{B}{\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/2*(2*(d*x + c)*B - B*tan(1/2*d*x + 1/2*c) + B/tan(1/2*d*x + 1/2*c))/d
```

3.304 $\int \frac{\cot^3(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=30

$$-\frac{B\cot^2(c+dx)}{2d}-\frac{B\log(\sin(c+dx))}{d}$$

```
[Out] -(B*Cot[c + d*x]^2)/(2*d) - (B*Log[Sin[c + d*x]])/d
```

Rubi [A] time = 0.0162874, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 3473, 3475}

$$-\frac{B\cot^2(c+dx)}{2d}-\frac{B\log(\sin(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(B*Cot[c + d*x]^2)/(2*d) - (B*Log[Sin[c + d*x]])/d
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \cot^3(c+dx)\,dx$$
$$= -\frac{B\cot^2(c+dx)}{2d} - B\int \cot(c+dx)\,dx$$
$$= -\frac{B\cot^2(c+dx)}{2d} - \frac{B\log(\sin(c+dx))}{d}$$

Mathematica [A] time = 0.0746224, size = 35, normalized size = 1.17

$$-\frac{B\left(\cot^2(c+dx)+2\log(\tan(c+dx))+2\log(\cos(c+dx))\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(B*(Cot[c + d*x]^2 + 2*Log[Cos[c + d*x]] + 2*Log[Tan[c + d*x]]))/(2*d)
```

Maple [A] time = 0.048, size = 29, normalized size = 1.

$$-\frac{B(\cot(dx+c))^2}{2d} - \frac{B\ln(\sin(dx+c))}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2*B*cot(d*x+c)^2/d-B*ln(sin(d*x+c))/d
```

Maxima [A] time = 1.8192, size = 54, normalized size = 1.8

$$\frac{B\log\left(\tan(dx+c)^2+1\right) - 2B\log(\tan(dx+c)) - \frac{B}{\tan(dx+c)^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/2*(B*log(tan(d*x + c)^2 + 1) - 2*B*log(tan(d*x + c)) - B/tan(d*x + c)^2)/
d
```

Fricas [A] time = 1.73243, size = 131, normalized size = 4.37

$$-\frac{(B\cos(2\,dx+2\,c)-B)\log\left(-\frac{1}{2}\,\cos(2\,dx+2\,c)+\frac{1}{2}\right)-2\,B}{2\,(d\cos(2\,dx+2\,c)-d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/2*((B*cos(2*d*x + 2*c) - B)*log(-1/2*cos(2*d*x + 2*c) + 1/2) - 2*B)/(d*c
os(2*d*x + 2*c) - d)
```

Sympy [A] time = 27.3717, size = 80, normalized size = 2.67

$$\begin{cases} \tilde{\infty}Bx & \text{for } (c=0 \vee c=-dx) \wedge (c=-dx \vee d=0) \\ \frac{x(Ba+Bb\tan(c))\cot^3(c)}{a+b\tan(c)} & \text{for } d=0 \\ \frac{B\log\left(\tan^2(c+dx)+1\right)}{2d} - \frac{B\log(\tan(c+dx))}{d} - \frac{B}{2d\tan^2(c+dx)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((zoo*B*x, (Eq(c, 0) | Eq(c, -d*x)) & (Eq(d, 0) | Eq(c, -d*x))), (
x*(B*a + B*b*tan(c))*cot(c)**3/(a + b*tan(c)), Eq(d, 0)), (B*log(tan(c + d*
x)**2 + 1)/(2*d) - B*log(tan(c + d*x))/d - B/(2*d*tan(c + d*x)**2), True))
```

Giac [B] time = 1.40382, size = 167, normalized size = 5.57

$$-\frac{4\,B\log\left(\frac{|-\cos(dx+c)+1|}{|\cos(dx+c)+1|}\right)-8\,B\log\left(\left|-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}+1\right|\right)-\frac{\left(B+\frac{4\,B(\cos(dx+c)-1)}{\cos(dx+c)+1}\right)(\cos(dx+c)+1)}{\cos(dx+c)-1}-\frac{B(\cos(dx+c)-1)}{\cos(dx+c)+1}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/8*(4*B*log(abs(-cos(d*x + c) + 1)/abs(cos(d*x + c) + 1)) - 8*B*log(abs(-
(cos(d*x + c) - 1)/(cos(d*x + c) + 1) + 1)) - (B + 4*B*(cos(d*x + c) - 1)/(
cos(d*x + c) + 1))*(cos(d*x + c) + 1)/(cos(d*x + c) - 1) - B*(cos(d*x + c)
- 1)/(cos(d*x + c) + 1))/d
```

3.305 $\int \frac{\cot^4(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=31

$$-\frac{B\cot^3(c+dx)}{3d}+\frac{B\cot(c+dx)}{d}+Bx$$

```
[Out] B*x + (B*Cot[c + d*x])/d - (B*Cot[c + d*x]^3)/(3*d)
```

Rubi [A] time = 0.0257432, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {21, 3473, 8}

$$-\frac{B\cot^3(c+dx)}{3d}+\frac{B\cot(c+dx)}{d}+Bx$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^4*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] B*x + (B*Cot[c + d*x])/d - (B*Cot[c + d*x]^3)/(3*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{\cot^4(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \cot^4(c+dx)\,dx$$
$$= -\frac{B\cot^3(c+dx)}{3d} - B\int \cot^2(c+dx)\,dx$$
$$= \frac{B\cot(c+dx)}{d} - \frac{B\cot^3(c+dx)}{3d} + B\int 1\,dx$$
$$= Bx + \frac{B\cot(c+dx)}{d} - \frac{B\cot^3(c+dx)}{3d}$$

Mathematica [C] time = 0.0152082, size = 34, normalized size = 1.1

$$-\frac{B\cot^3(c+dx)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},-\tan^2(c+dx)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^4*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(B*Cot[c + d*x]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[c + d*x]^2])/(3*d)
```

Maple [A] time = 0.044, size = 27, normalized size = 0.9

$$\frac{B}{d}\left(-\frac{(\cot(dx+c))^3}{3} + \cot(dx+c) + dx + c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/d*B*(-1/3*cot(d*x+c)^3+cot(d*x+c)+d*x+c)
```

Maxima [A] time = 1.80508, size = 51, normalized size = 1.65

$$\frac{3(dx+c)B + \frac{3B\tan(dx+c)^2 - B}{\tan(dx+c)^3}}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/3*(3*(d*x + c)*B + (3*B*tan(d*x + c)^2 - B)/tan(d*x + c)^3)/d
```

Fricas [B] time = 1.67942, size = 212, normalized size = 6.84

$$\frac{4\,B\cos\left(2\,dx+2\,c\right)^2+2\,B\cos\left(2\,dx+2\,c\right)+3\,\left(Bdx\cos\left(2\,dx+2\,c\right)-Bdx\right)\sin\left(2\,dx+2\,c\right)-2\,B}{3\,\left(d\cos\left(2\,dx+2\,c\right)-d\right)\sin\left(2\,dx+2\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/3*(4*B*cos(2*d*x + 2*c)^2 + 2*B*cos(2*d*x + 2*c) + 3*(B*d*x*cos(2*d*x + 2
*c) - B*d*x)*sin(2*d*x + 2*c) - 2*B)/((d*cos(2*d*x + 2*c) - d)*sin(2*d*x +
2*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [B] time = 1.32903, size = 93, normalized size = 3.

$$\frac{B\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3+24\,(dx+c)B-15\,B\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+\frac{15\,B\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-B}{\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3}}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/24*(B*tan(1/2*d*x + 1/2*c)^3 + 24*(d*x + c)*B - 15*B*tan(1/2*d*x + 1/2*c)
 + (15*B*tan(1/2*d*x + 1/2*c)^2 - B)/tan(1/2*d*x + 1/2*c)^3)/d
```

3.306 $\int \frac{\tan^4(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=102

$$\frac{a^4B\log(a+b\tan(c+dx))}{b^3d\left(a^2+b^2\right)}+\frac{bB\log(\cos(c+dx))}{d\left(a^2+b^2\right)}+\frac{aBx}{a^2+b^2}-\frac{aB\tan(c+dx)}{b^2d}+\frac{B\tan^2(c+dx)}{2bd}$$

```
[Out] (a*B*x)/(a^2 + b^2) + (b*B*Log[Cos[c + d*x]])/((a^2 + b^2)*d) + (a^4*B*Log[
a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)*d) - (a*B*Tan[c + d*x])/(b^2*d) + (B*
Tan[c + d*x]^2)/(2*b*d)
```

Rubi [A] time = 0.290616, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {21, 3566, 3647, 3627, 3617, 31, 3475}

$$\frac{a^4B\log(a+b\tan(c+dx))}{b^3d\left(a^2+b^2\right)}+\frac{bB\log(\cos(c+dx))}{d\left(a^2+b^2\right)}+\frac{aBx}{a^2+b^2}-\frac{aB\tan(c+dx)}{b^2d}+\frac{B\tan^2(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] (a*B*x)/(a^2 + b^2) + (b*B*Log[Cos[c + d*x]])/((a^2 + b^2)*d) + (a^4*B*Log[
a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)*d) - (a*B*Tan[c + d*x])/(b^2*d) + (B*
Tan[c + d*x]^2)/(2*b*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3566

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m - 2)*(c
+ d*Tan[e + f*x])^(n + 1))/(d*f*(m + n - 1)), x] + Dist[1/(d*(m + n - 1)),
Int[(a + b*Tan[e + f*x])^(m - 3)*(c + d*Tan[e + f*x])^n*Simp[a^3*d*(m + n -
 1) - b^2*(b*c*(m - 2) + a*d*(1 + n)) + b*d*(m + n - 1)*(3*a^2 - b^2)*Tan[e
```

```
 + f*x] - b^2*(b*c*(m - 2) - a*d*(3*m + 2*n - 4))*Tan[e + f*x]^2, x], x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && GtQ[m, 2] && (GeQ[n, -1] || In
tegerQ[m]) &&  !(IGtQ[n, 2] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3627

```
Int[((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2)/((a_) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(a*(A - C)*x)/(a^2 + b^2), x] + (Dist[(a^2*C +
A*b^2)/(a^2 + b^2), Int[(1 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] -
 Dist[(b*(A - C))/(a^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e,
 f, A, C}, x] && NeQ[a^2*C + A*b^2, 0] && NeQ[a^2 + b^2, 0] && NeQ[A, C]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = B\int \frac{\tan^4(c+dx)}{a+b\tan(c+dx)}\,dx$$

$$= \frac{B\tan^2(c+dx)}{2bd} + \frac{B\int \frac{\tan(c+dx)\left(-2a-2b\tan(c+dx)-2a\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{2b}$$

$$= -\frac{aB\tan(c+dx)}{b^2d} + \frac{B\tan^2(c+dx)}{2bd} + \frac{B\int \frac{2a^2+2\left(a^2-b^2\right)\tan^2(c+dx)}{a+b\tan(c+dx)}\,dx}{2b^2}$$

$$= \frac{aBx}{a^2+b^2} - \frac{aB\tan(c+dx)}{b^2d} + \frac{B\tan^2(c+dx)}{2bd} + \frac{\left(a^4B\right)\int \frac{1+\tan^2(c+dx)}{a+b\tan(c+dx)}\,dx}{b^2\left(a^2+b^2\right)} - (b$$

$$= \frac{aBx}{a^2+b^2} + \frac{bB\log(\cos(c+dx))}{\left(a^2+b^2\right)d} - \frac{aB\tan(c+dx)}{b^2d} + \frac{B\tan^2(c+dx)}{2bd} + \frac{\left(a^4B\right)}{}$$

$$= \frac{aBx}{a^2+b^2} + \frac{bB\log(\cos(c+dx))}{\left(a^2+b^2\right)d} + \frac{a^4B\log(a+b\tan(c+dx))}{b^3\left(a^2+b^2\right)d} - \frac{aB\tan(c+}{b^2d}$$

Mathematica [C] time = 0.412395, size = 108, normalized size = 1.06

$$\frac{B\left(\frac{2a^4\log(a+b\tan(c+dx))}{b^3\left(a^2+b^2\right)} - \frac{2a\tan(c+dx)}{b^2} + \frac{\log(-\tan(c+dx)+i)}{-b+ia} - \frac{\log(\tan(c+dx)+i)}{b+ia} + \frac{\tan^2(c+dx)}{b}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] (B*(Log[I - Tan[c + d*x]]/(I*a - b) - Log[I + Tan[c + d*x]]/(I*a + b) + (2*
a^4*Log[a + b*Tan[c + d*x]])/(b^3*(a^2 + b^2)) - (2*a*Tan[c + d*x])/b^2 + T
an[c + d*x]^2/b))/(2*d)
```

Maple [A] time = 0.034, size = 115, normalized size = 1.1

$$\frac{B(\tan(dx+c))^2}{2bd} - \frac{aB\tan(dx+c)}{b^2d} - \frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d\left(a^2+b^2\right)} + \frac{B\arctan(\tan(dx+c))a}{d\left(a^2+b^2\right)} + \frac{a^4B\ln(a+b\tan(dx+}{b^3\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2*B*tan(d*x+c)^2/b/d-a*B*tan(d*x+c)/b^2/d-1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)
^2)*B*b+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*a+a^4*B*ln(a+b*tan(d*x+c))/b^3/(
a^2+b^2)/d
```

Maxima [A] time = 1.75869, size = 140, normalized size = 1.37

$$\frac{\frac{2\,Ba^4\log(b\tan(dx+c)+a)}{a^2b^3+b^5}+\frac{2\,(dx+c)Ba}{a^2+b^2}-\frac{Bb\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{Bb\tan(dx+c)^2-2\,Ba\tan(dx+c)}{b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] 1/2*(2*B*a^4*log(b*tan(d*x + c) + a)/(a^2*b^3 + b^5) + 2*(d*x + c)*B*a/(a^2
 + b^2) - B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) + (B*b*tan(d*x + c)^2 - 2
*B*a*tan(d*x + c))/b^2)/d
```

Fricas [A] time = 1.90752, size = 328, normalized size = 3.22

$$\frac{2\,Bab^3dx+Ba^4\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)+\left(Ba^2b^2+Bb^4\right)\tan\left(dx+c\right)^2-\left(Ba^4-Bb^4\right)\log\left(\frac{1}{\tan(dx+c)^2+1}\right)-2\left(Ba^3\right.}{2\left(a^2b^3+b^5\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] 1/2*(2*B*a*b^3*d*x + B*a^4*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a
^2)/(tan(d*x + c)^2 + 1)) + (B*a^2*b^2 + B*b^4)*tan(d*x + c)^2 - (B*a^4 - B
*b^4)*log(1/(tan(d*x + c)^2 + 1)) - 2*(B*a^3*b + B*a*b^3)*tan(d*x + c))/((a
^2*b^3 + b^5)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 2.39502, size = 142, normalized size = 1.39

$$\frac{\frac{2\,Ba^{4}\log\left(|b\tan\left(dx+c\right)+a|\right)}{a^{2}b^{3}+b^{5}}+\frac{2\,(dx+c)Ba}{a^{2}+b^{2}}-\frac{Bb\log\left(\tan\left(dx+c\right)^{2}+1\right)}{a^{2}+b^{2}}+\frac{Bb\tan\left(dx+c\right)^{2}-2\,Ba\tan\left(dx+c\right)}{b^{2}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] 1/2*(2*B*a^4*log(abs(b*tan(d*x + c) + a))/(a^2*b^3 + b^5) + 2*(d*x + c)*B*a
/(a^2 + b^2) - B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) + (B*b*tan(d*x + c)^
2 - 2*B*a*tan(d*x + c))/b^2)/d
```

3.307 $\int \frac{\tan^3(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2} dx$

Optimal. Leaf size=83

$$-\frac{a^3B\log(a+b\tan(c+dx))}{b^2d\left(a^2+b^2\right)}+\frac{aB\log(\cos(c+dx))}{d\left(a^2+b^2\right)}-\frac{bBx}{a^2+b^2}+\frac{B\tan(c+dx)}{bd}$$

```
[Out] -((b*B*x)/(a^2 + b^2)) + (a*B*Log[Cos[c + d*x]])/((a^2 + b^2)*d) - (a^3*B*L
og[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)*d) + (B*Tan[c + d*x])/(b*d)
```

Rubi [A] time = 0.174478, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {21, 3566, 3626, 3617, 31, 3475}

$$-\frac{a^3B\log(a+b\tan(c+dx))}{b^2d\left(a^2+b^2\right)}+\frac{aB\log(\cos(c+dx))}{d\left(a^2+b^2\right)}-\frac{bBx}{a^2+b^2}+\frac{B\tan(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -((b*B*x)/(a^2 + b^2)) + (a*B*Log[Cos[c + d*x]])/((a^2 + b^2)*d) - (a^3*B*L
og[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)*d) + (B*Tan[c + d*x])/(b*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3566

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m - 2)*(c
+ d*Tan[e + f*x])^(n + 1))/(d*f*(m + n - 1)), x] + Dist[1/(d*(m + n - 1)),
Int[(a + b*Tan[e + f*x])^(m - 3)*(c + d*Tan[e + f*x])^n*Simp[a^3*d*(m + n -
 1) - b^2*(b*c*(m - 2) + a*d*(1 + n)) + b*d*(m + n - 1)*(3*a^2 - b^2)*Tan[e
 + f*x] - b^2*(b*c*(m - 2) - a*d*(3*m + 2*n - 4))*Tan[e + f*x]^2, x], x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
```

```
 0] && NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && GtQ[m, 2] && (GeQ[n, -1] || In
tegerQ[m]) &&  !(IGtQ[n, 2] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3626

```
Int[((A_) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2
)/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((a*A + b*B -
a*C)*x)/(a^2 + b^2), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[(1
 + Tan[e + f*x]^2)/(a + b*Tan[e + f*x]), x], x] - Dist[(A*b - a*B - b*C)/(a
^2 + b^2), Int[Tan[e + f*x], x], x]) /; FreeQ[{a, b, e, f, A, B, C}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && NeQ[a^2 + b^2, 0] && NeQ[A*b - a*B - b*C,
0]
```

Rule 3617

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_) + (C_.)*tan[(e_.) +
 (f_.)*(x_)]^2), x_Symbol] :> Dist[A/(b*f), Subst[Int[(a + x)^m, x], x, b*T
an[e + f*x]], x] /; FreeQ[{a, b, e, f, A, C, m}, x] && EqQ[A, C]
```

Rule 31

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

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = B\int \frac{\tan^3(c+dx)}{a+b\tan(c+dx)}\,dx$$
$$= \frac{B\tan(c+dx)}{bd} + \frac{B\int \frac{-a-b\tan(c+dx)-a\tan^2(c+dx)}{a+b\tan(c+dx)}\,dx}{b}$$
$$= -\frac{bBx}{a^2+b^2} + \frac{B\tan(c+dx)}{bd} - \frac{(aB)\int \tan(c+dx)\,dx}{a^2+b^2} - \frac{\left(a^3B\right)\int \frac{1+\tan^2(c+dx)}{a+b\tan(c+dx)}\,dx}{b\left(a^2+b^2\right)}$$
$$= -\frac{bBx}{a^2+b^2} + \frac{aB\log(\cos(c+dx))}{\left(a^2+b^2\right)d} + \frac{B\tan(c+dx)}{bd} - \frac{\left(a^3B\right)\text{Subst}\left(\int \frac{1}{a+x}\,dx, x\right.}{b^2\left(a^2+b^2\right)}$$
$$= -\frac{bBx}{a^2+b^2} + \frac{aB\log(\cos(c+dx))}{\left(a^2+b^2\right)d} - \frac{a^3B\log(a+b\tan(c+dx))}{b^2\left(a^2+b^2\right)d} + \frac{B\tan(c+d}{bd}$$

Mathematica [C] time = 0.381524, size = 92, normalized size = 1.11

$$-\frac{B\left(\frac{2a^3\log(a+b\tan(c+dx))}{b^2\left(a^2+b^2\right)} + \frac{\log(-\tan(c+dx)+i)}{a+ib} + \frac{\log(\tan(c+dx)+i)}{a-ib} - \frac{2\tan(c+dx)}{b}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] -(B*(Log[I - Tan[c + d*x]]/(a + I*b) + Log[I + Tan[c + d*x]]/(a - I*b) + (2
*a^3*Log[a + b*Tan[c + d*x]])/(b^2*(a^2 + b^2)) - (2*Tan[c + d*x])/b))/(2*d
)
```

Maple [A] time = 0.033, size = 98, normalized size = 1.2

$$\frac{B\tan(dx+c)}{bd} - \frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)} - \frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)} - \frac{a^3B\ln(a+b\tan(dx+c))}{\left(a^2+b^2\right)b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] B*tan(d*x+c)/b/d-1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*a*B-1/d/(a^2+b^2)*B*arc
tan(tan(d*x+c))*b-a^3*B*ln(a+b*tan(d*x+c))/b^2/(a^2+b^2)/d
```

Maxima [A] time = 1.72996, size = 120, normalized size = 1.45

$$-\frac{\frac{2\,Ba^3\log\left(b\tan\left(dx+c\right)+a\right)}{a^2b^2+b^4}+\frac{2\,(dx+c)Bb}{a^2+b^2}+\frac{Ba\log\left(\tan\left(dx+c\right)^2+1\right)}{a^2+b^2}-\frac{2\,B\tan\left(dx+c\right)}{b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] -1/2*(2*B*a^3*log(b*tan(d*x + c) + a)/(a^2*b^2 + b^4) + 2*(d*x + c)*B*b/(a^
2 + b^2) + B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) - 2*B*tan(d*x + c)/b)/d
```

Fricas [A] time = 1.87438, size = 277, normalized size = 3.34

$$-\frac{2\,Bb^3dx+Ba^3\log\left(\frac{b^2\tan\left(dx+c\right)^2+2\,ab\tan\left(dx+c\right)+a^2}{\tan\left(dx+c\right)^2+1}\right)-\left(Ba^3+Bab^2\right)\log\left(\frac{1}{\tan\left(dx+c\right)^2+1}\right)-2\left(Ba^2b+Bb^3\right)\tan\left(dx+c\right)}{2\left(a^2b^2+b^4\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] -1/2*(2*B*b^3*d*x + B*a^3*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^
2)/(tan(d*x + c)^2 + 1)) - (B*a^3 + B*a*b^2)*log(1/(tan(d*x + c)^2 + 1)) -
2*(B*a^2*b + B*b^3)*tan(d*x + c))/((a^2*b^2 + b^4)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.78158, size = 122, normalized size = 1.47

$$-\frac{\frac{2\,Ba^3\log\left(|b\tan\left(dx+c\right)+a|\right)}{a^2b^2+b^4}+\frac{2\,(dx+c)Bb}{a^2+b^2}+\frac{Ba\log\left(\tan\left(dx+c\right)^2+1\right)}{a^2+b^2}-\frac{2\,B\tan\left(dx+c\right)}{b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] -1/2*(2*B*a^3*log(abs(b*tan(d*x + c) + a))/(a^2*b^2 + b^4) + 2*(d*x + c)*B*
b/(a^2 + b^2) + B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) - 2*B*tan(d*x + c)/
b)/d
```

3.308 $\int \frac{\tan^2(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=81

$$\frac{a^2B\log(a\cos(c+dx)+b\sin(c+dx))}{bd\left(a^2+b^2\right)}+\frac{a^3Bx}{b^2\left(a^2+b^2\right)}-\frac{aBx}{b^2}-\frac{B\log(\cos(c+dx))}{bd}$$

```
[Out] -((a*B*x)/b^2) + (a^3*B*x)/(b^2*(a^2 + b^2)) - (B*Log[Cos[c + d*x]])/(b*d)
+ (a^2*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(b*(a^2 + b^2)*d)
```

Rubi [A] time = 0.115725, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {21, 3541, 3475, 3484, 3530}

$$\frac{a^2B\log(a\cos(c+dx)+b\sin(c+dx))}{bd\left(a^2+b^2\right)}+\frac{a^3Bx}{b^2\left(a^2+b^2\right)}-\frac{aBx}{b^2}-\frac{B\log(\cos(c+dx))}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -((a*B*x)/b^2) + (a^3*B*x)/(b^2*(a^2 + b^2)) - (B*Log[Cos[c + d*x]])/(b*d)
+ (a^2*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(b*(a^2 + b^2)*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3541

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^2/((a_.) + (b_.)*tan[(e_.) + (f
_.)*(x_)]), x_Symbol] :> Simp[(d*(2*b*c - a*d)*x)/b^2, x] + (Dist[d^2/b, In
t[Tan[e + f*x], x], x] + Dist[(b*c - a*d)^2/b^2, Int[1/(a + b*Tan[e + f*x])
, x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 +
 b^2, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3484

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> Simp[(a*x)/(a
^2 + b^2), x] + Dist[b/(a^2 + b^2), Int[(b - a*Tan[c + d*x])/(a + b*Tan[c +
 d*x]), x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 + b^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\tan^2(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx &= B\int \frac{\tan^2(c+dx)}{a+b\tan(c+dx)}\,dx \\
&= -\frac{aBx}{b^2}+\frac{\left(a^2B\right)\int \frac{1}{a+b\tan(c+dx)}\,dx}{b^2}+\frac{B\int \tan(c+dx)\,dx}{b} \\
&= -\frac{aBx}{b^2}+\frac{a^3Bx}{b^2\left(a^2+b^2\right)}-\frac{B\log(\cos(c+dx))}{bd}+\frac{\left(a^2B\right)\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{b\left(a^2+b^2\right)} \\
&= -\frac{aBx}{b^2}+\frac{a^3Bx}{b^2\left(a^2+b^2\right)}-\frac{B\log(\cos(c+dx))}{bd}+\frac{a^2B\log(a\cos(c+dx)+b\sin(c}{b\left(a^2+b^2\right)d}
\end{aligned}
$$

Mathematica [C] time = 0.082385, size = 79, normalized size = 0.98

$$
\frac{B\left(2a^2\log(a+b\tan(c+dx))+b(b+ia)\log(-\tan(c+dx)+i)+b(b-ia)\log(\tan(c+dx)+i)\right)}{2bd\left(a^2+b^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] (B*(b*(I*a + b)*Log[I - Tan[c + d*x]] + b*((-I)*a + b)*Log[I + Tan[c + d*x]
] + 2*a^2*Log[a + b*Tan[c + d*x]]))/(2*b*(a^2 + b^2)*d)
```

Maple [A] time = 0.032, size = 83, normalized size = 1.

$$\frac{\ln\left(1+(\tan(dx+c))^{2}\right)Bb}{2d\left(a^{2}+b^{2}\right)}-\frac{B\arctan(\tan(dx+c))\,a}{d\left(a^{2}+b^{2}\right)}+\frac{a^{2}B\ln(a+b\tan(dx+c))}{d\left(a^{2}+b^{2}\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*B*b-1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*a
+1/d*B*a^2/(a^2+b^2)/b*ln(a+b*tan(d*x+c))
```

Maxima [A] time = 1.7828, size = 101, normalized size = 1.25

$$\frac{\frac{2\,Ba^{2}\log(b\tan(dx+c)+a)}{a^{2}b+b^{3}}-\frac{2\,(dx+c)Ba}{a^{2}+b^{2}}+\frac{Bb\log\left(\tan(dx+c)^{2}+1\right)}{a^{2}+b^{2}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] 1/2*(2*B*a^2*log(b*tan(d*x + c) + a)/(a^2*b + b^3) - 2*(d*x + c)*B*a/(a^2 +
 b^2) + B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

Fricas [A] time = 1.76961, size = 224, normalized size = 2.77

$$-\frac{2\,Babdx-Ba^{2}\log\left(\frac{b^{2}\tan(dx+c)^{2}+2\,ab\tan(dx+c)+a^{2}}{\tan(dx+c)^{2}+1}\right)+\left(Ba^{2}+Bb^{2}\right)\log\left(\frac{1}{\tan(dx+c)^{2}+1}\right)}{2\left(a^{2}b+b^{3}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] -1/2*(2*B*a*b*d*x - B*a^2*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^
2)/(tan(d*x + c)^2 + 1)) + (B*a^2 + B*b^2)*log(1/(tan(d*x + c)^2 + 1)))/((a
^2*b + b^3)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.47351, size = 103, normalized size = 1.27

$$\frac{\frac{2 Ba^2 \log(|b\tan(dx+c)+a|)}{a^2b+b^3} - \frac{2(dx+c)Ba}{a^2+b^2} + \frac{Bb\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] 1/2*(2*B*a^2*log(abs(b*tan(d*x + c) + a))/(a^2*b + b^3) - 2*(d*x + c)*B*a/(
a^2 + b^2) + B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

3.309 $\int \frac{\tan(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=48

$$\frac{bBx}{a^2+b^2}-\frac{aB\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}$$

```
[Out] (b*B*x)/(a^2 + b^2) - (a*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^
2)*d)
```

Rubi [A] time = 0.0666127, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.094, Rules used = {21, 3531, 3530}

$$\frac{bBx}{a^2+b^2}-\frac{aB\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (b*B*x)/(a^2 + b^2) - (a*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^
2)*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\tan(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx &= B\int \frac{\tan(c+dx)}{a+b\tan(c+dx)}\,dx\\ &= \frac{bBx}{a^2+b^2}-\frac{(aB)\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2+b^2}\\ &= \frac{bBx}{a^2+b^2}-\frac{aB\log(a\cos(c+dx)+b\sin(c+dx))}{\left(a^2+b^2\right)d}\end{aligned}$$

Mathematica [C] time = 0.107548, size = 67, normalized size = 1.4

$$\frac{B\left(2(b-ia)(c+dx)-a\log\left((a\cos(c+dx)+b\sin(c+dx))^2\right)+2ia\tan^{-1}(\tan(c+dx))\right)}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (B*(2*((-I)*a + b)*(c + d*x) + (2*I)*a*ArcTan[Tan[c + d*x]] - a*Log[(a*Cos[
c + d*x] + b*Sin[c + d*x])^2]))/(2*(a^2 + b^2)*d)
```

Maple [A] time = 0.029, size = 78, normalized size = 1.6

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)}+\frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)}-\frac{\ln(a+b\tan(dx+c))\,aB}{d\left(a^2+b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*a*B+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*b
-1/d/(a^2+b^2)*ln(a+b*tan(d*x+c))*a*B
```

Maxima [A] time = 1.72114, size = 96, normalized size = 2.

$$\frac{\frac{2\,(dx+c)Bb}{a^2+b^2} - \frac{2\,Ba\log(b\tan(dx+c)+a)}{a^2+b^2} + \frac{Ba\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] 1/2*(2*(d*x + c)*B*b/(a^2 + b^2) - 2*B*a*log(b*tan(d*x + c) + a)/(a^2 + b^2
) + B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

Fricas [A] time = 1.63656, size = 153, normalized size = 3.19

$$\frac{2\,Bbdx - Ba\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)}{2\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] 1/2*(2*B*b*d*x - B*a*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(t
an(d*x + c)^2 + 1)))/((a^2 + b^2)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.23563, size = 103, normalized size = 2.15

$$-\frac{\frac{2\,Bab\log\left(|b\tan\left(dx+c\right)+a|\right)}{a^{2}b+b^{3}}-\frac{2\,\left(dx+c\right)Bb}{a^{2}+b^{2}}-\frac{Ba\log\left(\tan\left(dx+c\right)^{2}+1\right)}{a^{2}+b^{2}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] -1/2*(2*B*a*b*log(abs(b*tan(d*x + c) + a))/(a^2*b + b^3) - 2*(d*x + c)*B*b/
(a^2 + b^2) - B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

3.310 $\int \frac{aB+bB\tan(c+dx)}{(a+b\tan(c+dx))^2} dx$

Optimal. Leaf size=47

$$\frac{bB\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}+\frac{aBx}{a^2+b^2}$$

```
[Out] (a*B*x)/(a^2 + b^2) + (b*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^
2)*d)
```

Rubi [A] time = 0.0540156, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {21, 3484, 3530}

$$\frac{bB\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}+\frac{aBx}{a^2+b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (a*B*x)/(a^2 + b^2) + (b*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/((a^2 + b^
2)*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3484

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> Simp[(a*x)/(a
^2 + b^2), x] + Dist[b/(a^2 + b^2), Int[(b - a*Tan[c + d*x])/(a + b*Tan[c +
 d*x]), x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 + b^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
```

```
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{aB+bB\tan(c+dx)}{(a+b\tan(c+dx))^2}\,dx &= B\int \frac{1}{a+b\tan(c+dx)}\,dx\\ &= \frac{aBx}{a^2+b^2}+\frac{(bB)\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2+b^2}\\ &= \frac{aBx}{a^2+b^2}+\frac{bB\log(a\cos(c+dx)+b\sin(c+dx))}{(a^2+b^2)\,d}\end{aligned}$$

Mathematica [C] time = 0.0630232, size = 77, normalized size = 1.64

$$\frac{B((-b-ia)\log(-\tan(c+dx)+i)+i(a+ib)\log(\tan(c+dx)+i)+2b\log(a+b\tan(c+dx)))}{2d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (B*(((-I)*a - b)*Log[I - Tan[c + d*x]] + I*(a + I*b)*Log[I + Tan[c + d*x]]
+ 2*b*Log[a + b*Tan[c + d*x]]))/(2*(a^2 + b^2)*d)
```

Maple [A] time = 0.029, size = 77, normalized size = 1.6

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2\,d\left(a^2+b^2\right)}+\frac{B\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)}+\frac{b\ln(a+b\tan(dx+c))\,B}{d\left(a^2+b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*B*b+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*
a+1/d*b/(a^2+b^2)*ln(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.73875, size = 97, normalized size = 2.06

$$\frac{\frac{2\,(dx+c)Ba}{a^2+b^2}+\frac{2\,Bb\log(b\tan(dx+c)+a)}{a^2+b^2}-\frac{Bb\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*(d*x + c)*B*a/(a^2 + b^2) + 2*B*b*log(b*tan(d*x + c) + a)/(a^2 + b^2
) - B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

Fricas [A] time = 1.75063, size = 153, normalized size = 3.26

$$\frac{2\,Badx+Bb\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)}{2\left(a^2+b^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*a*d*x + B*b*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(t
an(d*x + c)^2 + 1)))/((a^2 + b^2)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.2621, size = 104, normalized size = 2.21

$$\frac{\frac{2\,Bb^2\log\left(|b\tan\left(dx+c\right)+a|\right)}{a^2b+b^3}+\frac{2\,(dx+c)Ba}{a^2+b^2}-\frac{Bb\log\left(\tan\left(dx+c\right)^2+1\right)}{a^2+b^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*B*b^2*log(abs(b*tan(d*x + c) + a))/(a^2*b + b^3) + 2*(d*x + c)*B*a/(
a^2 + b^2) - B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2))/d
```

3.311 $\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2} dx$

Optimal. Leaf size=69

$$-\frac{b^2B\log(a\cos(c+dx)+b\sin(c+dx))}{ad\left(a^2+b^2\right)}-\frac{bBx}{a^2+b^2}+\frac{B\log(\sin(c+dx))}{ad}$$

```
[Out] -((b*B*x)/(a^2 + b^2)) + (B*Log[Sin[c + d*x]])/(a*d) - (b^2*B*Log[a*Cos[c +
 d*x] + b*Sin[c + d*x]])/(a*(a^2 + b^2)*d)
```

Rubi [A] time = 0.0854284, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {21, 3571, 3530, 3475}

$$-\frac{b^2B\log(a\cos(c+dx)+b\sin(c+dx))}{ad\left(a^2+b^2\right)}-\frac{bBx}{a^2+b^2}+\frac{B\log(\sin(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -((b*B*x)/(a^2 + b^2)) + (B*Log[Sin[c + d*x]])/(a*d) - (b^2*B*Log[a*Cos[c +
 d*x] + b*Sin[c + d*x]])/(a*(a^2 + b^2)*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3571

```
Int[1/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f
_.)*(x_)])), x_Symbol] :> Simp[((a*c - b*d)*x)/((a^2 + b^2)*(c^2 + d^2)), x
] + (Dist[b^2/((b*c - a*d)*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Ta
n[e + f*x]), x], x] - Dist[d^2/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e
+ f*x])/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && Ne
Q[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx &= B\int \frac{\cot(c+dx)}{a+b\tan(c+dx)}\,dx\\ &= -\frac{bBx}{a^2+b^2}+\frac{B\int \cot(c+dx)\,dx}{a}-\frac{\left(b^2B\right)\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a\left(a^2+b^2\right)}\\ &= -\frac{bBx}{a^2+b^2}+\frac{B\log(\sin(c+dx))}{ad}-\frac{b^2B\log(a\cos(c+dx)+b\sin(c+dx))}{a\left(a^2+b^2\right)d}\end{aligned}$$

Mathematica [C] time = 0.113865, size = 79, normalized size = 1.14

$$-\frac{B\left(2b^2\log(a\cot(c+dx)+b)+a(a+ib)\log(-\cot(c+dx)+i)+a(a-ib)\log(\cot(c+dx)+i)\right)}{2ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -(B*(a*(a + I*b)*Log[I - Cot[c + d*x]] + a*(a - I*b)*Log[I + Cot[c + d*x]]
+ 2*b^2*Log[b + a*Cot[c + d*x]]))/(2*a*(a^2 + b^2)*d)
```

Maple [A] time = 0.089, size = 99, normalized size = 1.4

$$-\frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)}-\frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)}+\frac{B\ln(\tan(dx+c))}{ad}-\frac{b^2\ln(a+b\tan(dx+c))\,B}{ad\left(a^2+b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*a*B-1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*
b+1/d/a*B*ln(tan(d*x+c))-1/d*b^2/a/(a^2+b^2)*ln(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.52219, size = 119, normalized size = 1.72

$$-\frac{\frac{2\,Bb^2\log\left(b\tan\left(dx+c\right)+a\right)}{a^3+ab^2}+\frac{2\,(dx+c)Bb}{a^2+b^2}+\frac{Ba\log\left(\tan\left(dx+c\right)^2+1\right)}{a^2+b^2}-\frac{2\,B\log\left(\tan\left(dx+c\right)\right)}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="
maxima")
```

```
[Out] -1/2*(2*B*b^2*log(b*tan(d*x + c) + a)/(a^3 + a*b^2) + 2*(d*x + c)*B*b/(a^2
+ b^2) + B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) - 2*B*log(tan(d*x + c))/a)
/d
```

Fricas [A] time = 1.78834, size = 242, normalized size = 3.51

$$-\frac{2\,Babdx+Bb^2\log\left(\frac{b^2\tan\left(dx+c\right)^2+2\,ab\tan\left(dx+c\right)+a^2}{\tan\left(dx+c\right)^2+1}\right)-\left(Ba^2+Bb^2\right)\log\left(\frac{\tan\left(dx+c\right)^2}{\tan\left(dx+c\right)^2+1}\right)}{2\left(a^3+ab^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="
fricas")
```

```
[Out] -1/2*(2*B*a*b*d*x + B*b^2*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^
2)/(tan(d*x + c)^2 + 1)) - (B*a^2 + B*b^2)*log(tan(d*x + c)^2/(tan(d*x + c)
^2 + 1)))/((a^3 + a*b^2)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.24427, size = 124, normalized size = 1.8

$$-\frac{\frac{2\,Bb^3\log(|b\tan(dx+c)+a|)}{a^3b+ab^3}+\frac{2\,(dx+c)Bb}{a^2+b^2}+\frac{Ba\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2\,B\log(|\tan(dx+c)|)}{a}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="
giac")
```

```
[Out] -1/2*(2*B*b^3*log(abs(b*tan(d*x + c) + a))/(a^3*b + a*b^3) + 2*(d*x + c)*B*
b/(a^2 + b^2) + B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) - 2*B*log(abs(tan(d
*x + c)))/a)/d
```

3.312 $\int \frac{\cot^2(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=85

$$\frac{b^3B\log(a\cos(c+dx)+b\sin(c+dx))}{a^2d\left(a^2+b^2\right)}-\frac{aBx}{a^2+b^2}-\frac{bB\log(\sin(c+dx))}{a^2d}-\frac{B\cot(c+dx)}{ad}$$

```
[Out] -((a*B*x)/(a^2 + b^2)) - (B*Cot[c + d*x])/(a*d) - (b*B*Log[Sin[c + d*x]])/(
a^2*d) + (b^3*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^2*(a^2 + b^2)*d)
```

Rubi [A] time = 0.182393, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {21, 3569, 3651, 3530, 3475}

$$\frac{b^3B\log(a\cos(c+dx)+b\sin(c+dx))}{a^2d\left(a^2+b^2\right)}-\frac{aBx}{a^2+b^2}-\frac{bB\log(\sin(c+dx))}{a^2d}-\frac{B\cot(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```



```
[Out] -((a*B*x)/(a^2 + b^2)) - (B*Cot[c + d*x])/(a*d) - (b*B*Log[Sin[c + d*x]])/(
a^2*d) + (b^3*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]])/(a^2*(a^2 + b^2)*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3569

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m + 1)*(c
+ d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(a^2 + b^2)*(b*c - a*d)), x] + Dist[1
/((m + 1)*(a^2 + b^2)*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d
*Tan[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2) - b*(b*c -
a*d)*(m + 1)*Tan[e + f*x] - b^2*d*(m + n + 2)*Tan[e + f*x]^2, x], x], x] /;
 FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
```

```
&& NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && LtQ[m, -1] && (LtQ[n, 0] || Intege
rQ[m]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3651

```
Int[((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[((a*(A*c - c*C + B*d) + b*(B*c - A*d + C*d))*x)
/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^2 - a*b*B + a^2*C)/((b*c - a*d)
*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] - Dist
[(c^2*C - B*c*d + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d - c*Tan[e + f*x]
)/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\cot^2(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx &= B\int \frac{\cot^2(c+dx)}{a+b\tan(c+dx)}\,dx \\
&= -\frac{B\cot(c+dx)}{ad} - \frac{B\int \frac{\cot(c+dx)\left(b+a\tan(c+dx)+b\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{a} \\
&= -\frac{aBx}{a^2+b^2} - \frac{B\cot(c+dx)}{ad} - \frac{(bB)\int \cot(c+dx)\,dx}{a^2} + \frac{\left(b^3B\right)\int \frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2\left(a^2+b^2\right)} \\
&= -\frac{aBx}{a^2+b^2} - \frac{B\cot(c+dx)}{ad} - \frac{bB\log(\sin(c+dx))}{a^2d} + \frac{b^3B\log(a\cos(c+dx)+b\,\mathrm{s}}{a^2\left(a^2+b^2\right)d}
\end{aligned}
$$

Mathematica [C] time = 0.387123, size = 97, normalized size = 1.14

$$-\frac{B\left(-\frac{b^3\log(a\cot(c+dx)+b)}{a^2(a^2+b^2)}-\frac{\log(-\cot(c+dx)+i)}{2(b+ia)}+\frac{\log(\cot(c+dx)+i)}{2(-b+ia)}+\frac{\cot(c+dx)}{a}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] -((B*(Cot[c + d*x]/a - Log[I - Cot[c + d*x]]/(2*(I*a + b)) + Log[I + Cot[c
+ d*x]]/(2*(I*a - b)) - (b^3*Log[b + a*Cot[c + d*x]])/(a^2*(a^2 + b^2))))/d
)
```

Maple [A] time = 0.081, size = 117, normalized size = 1.4

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)Bb}{2d\left(a^2+b^2\right)}-\frac{B\arctan(\tan(dx+c))\,a}{d\left(a^2+b^2\right)}-\frac{B}{ad\tan(dx+c)}-\frac{\ln(\tan(dx+c))\,Bb}{a^2d}+\frac{b^3\ln(a+b\tan(dx-}{a^2d\left(a^2+b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*B*b-1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*a
-1/d/a/tan(d*x+c)*B-1/d/a^2*ln(tan(d*x+c))*B*b+1/d*b^3/a^2/(a^2+b^2)*ln(a+b
*tan(d*x+c))*B
```

Maxima [A] time = 1.75692, size = 142, normalized size = 1.67

$$\frac{\frac{2\,Bb^3\log(b\tan(dx+c)+a)}{a^4+a^2b^2}-\frac{2\,(dx+c)Ba}{a^2+b^2}+\frac{Bb\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2\,Bb\log(\tan(dx+c))}{a^2}-\frac{2\,B}{a\tan(dx+c)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] 1/2*(2*B*b^3*log(b*tan(d*x + c) + a)/(a^4 + a^2*b^2) - 2*(d*x + c)*B*a/(a^2
 + b^2) + B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) - 2*B*b*log(tan(d*x + c))
/a^2 - 2*B/(a*tan(d*x + c)))/d
```

Fricas [A] time = 1.84326, size = 347, normalized size = 4.08

$$-\frac{2\,Ba^3dx\tan\left(dx+c\right)-Bb^3\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)+2\,Ba^3+2\,Bab^2+\left(Ba^2b+Bb^3\right)\log\left(\frac{\tan(dx+c}{\tan(dx+c)}\right.}{2\left(a^4+a^2b^2\right)d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] -1/2*(2*B*a^3*d*x*tan(d*x + c) - B*b^3*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(
d*x + c) + a^2)/(tan(d*x + c)^2 + 1))*tan(d*x + c) + 2*B*a^3 + 2*B*a*b^2 +
(B*a^2*b + B*b^3)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c))/((
a^4 + a^2*b^2)*d*tan(d*x + c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.28116, size = 165, normalized size = 1.94

$$\frac{\frac{2\,Bb^4\log\left(|b\tan(dx+c)+a|\right)}{a^4b+a^2b^3}-\frac{2\,(dx+c)Ba}{a^2+b^2}+\frac{Bb\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}-\frac{2\,Bb\log\left(|\tan(dx+c)|\right)}{a^2}+\frac{2\,(Bb\tan(dx+c)-Ba)}{a^2\tan(dx+c)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] 1/2*(2*B*b^4*log(abs(b*tan(d*x + c) + a))/(a^4*b + a^2*b^3) - 2*(d*x + c)*B
*a/(a^2 + b^2) + B*b*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) - 2*B*b*log(abs(ta
n(d*x + c)))/a^2 + 2*(B*b*tan(d*x + c) - B*a)/(a^2*tan(d*x + c)))/d
```

3.313 $\int \frac{\cot^3(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=112

$$-\frac{B\left(a^2-b^2\right)\log(\sin(c+dx))}{a^3d}-\frac{b^4B\log(a\cos(c+dx)+b\sin(c+dx))}{a^3d\left(a^2+b^2\right)}+\frac{bBx}{a^2+b^2}+\frac{bB\cot(c+dx)}{a^2d}-\frac{B\cot^2(c+dx)}{2ad}$$

```
[Out] (b*B*x)/(a^2 + b^2) + (b*B*Cot[c + d*x])/(a^2*d) - (B*Cot[c + d*x]^2)/(2*a*
d) - ((a^2 - b^2)*B*Log[Sin[c + d*x]])/(a^3*d) - (b^4*B*Log[a*Cos[c + d*x]
+ b*Sin[c + d*x]])/(a^3*(a^2 + b^2)*d)
```

Rubi [A] time = 0.324771, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {21, 3569, 3649, 3652, 3530, 3475}

$$-\frac{B\left(a^2-b^2\right)\log(\sin(c+dx))}{a^3d}-\frac{b^4B\log(a\cos(c+dx)+b\sin(c+dx))}{a^3d\left(a^2+b^2\right)}+\frac{bBx}{a^2+b^2}+\frac{bB\cot(c+dx)}{a^2d}-\frac{B\cot^2(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (b*B*x)/(a^2 + b^2) + (b*B*Cot[c + d*x])/(a^2*d) - (B*Cot[c + d*x]^2)/(2*a*
d) - ((a^2 - b^2)*B*Log[Sin[c + d*x]])/(a^3*d) - (b^4*B*Log[a*Cos[c + d*x]
+ b*Sin[c + d*x]])/(a^3*(a^2 + b^2)*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3569

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m + 1)*(c
+ d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(a^2 + b^2)*(b*c - a*d)), x] + Dist[1
/((m + 1)*(a^2 + b^2)*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d
*Tan[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2) - b*(b*c -
```

```
a*d)*(m + 1)*Tan[e + f*x] - b^2*d*(m + n + 2)*Tan[e + f*x]^2, x], x], x] /;
 FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
&& NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && LtQ[m, -1] && (LtQ[n, 0] || Intege
rQ[m]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3652

```
Int[((A_.) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2)/(((a_) + (b_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])), x_Symbol] :> Simp[((a*
(A*c - c*C) - b*(A*d - C*d))*x)/((a^2 + b^2)*(c^2 + d^2)), x] + (Dist[(A*b^
2 + a^2*C)/((b*c - a*d)*(a^2 + b^2)), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e
 + f*x]), x], x] - Dist[(c^2*C + A*d^2)/((b*c - a*d)*(c^2 + d^2)), Int[(d -
 c*Tan[e + f*x])/(c + d*Tan[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f,
A, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = B\int \frac{\cot^3(c+dx)}{a+b\tan(c+dx)}\,dx$$
$$= -\frac{B\cot^2(c+dx)}{2ad} - \frac{B\int \frac{\cot^2(c+dx)\left(2b+2a\tan(c+dx)+2b\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{2a}$$
$$= \frac{bB\cot(c+dx)}{a^2d} - \frac{B\cot^2(c+dx)}{2ad} + \frac{B\int \frac{\cot(c+dx)\left(-2\left(a^2-b^2\right)+2b^2\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{2a^2}$$
$$= \frac{bBx}{a^2+b^2} + \frac{bB\cot(c+dx)}{a^2d} - \frac{B\cot^2(c+dx)}{2ad} - \frac{\left(\left(a^2-b^2\right)B\right)\int \cot(c+dx)\,dx}{a^3}$$
$$= \frac{bBx}{a^2+b^2} + \frac{bB\cot(c+dx)}{a^2d} - \frac{B\cot^2(c+dx)}{2ad} - \frac{\left(a^2-b^2\right)B\log(\sin(c+dx))}{a^3d}$$

Mathematica [C] time = 0.621862, size = 107, normalized size = 0.96

$$-\frac{B\left(\frac{2b^4\log(a\cot(c+dx)+b)}{a^3\left(a^2+b^2\right)} - \frac{2b\cot(c+dx)}{a^2} - \frac{\log(-\cot(c+dx)+i)}{a-ib} - \frac{\log(\cot(c+dx)+i)}{a+ib} + \frac{\cot^2(c+dx)}{a}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] -(B*((-2*b*Cot[c + d*x])/a^2 + Cot[c + d*x]^2/a - Log[I - Cot[c + d*x]]/(a
- I*b) - Log[I + Cot[c + d*x]]/(a + I*b) + (2*b^4*Log[b + a*Cot[c + d*x]])/
(a^3*(a^2 + b^2))))/(2*d)
```

Maple [A] time = 0.095, size = 151, normalized size = 1.4

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)} + \frac{B\arctan(\tan(dx+c))\,b}{d\left(a^2+b^2\right)} - \frac{B}{2ad(\tan(dx+c))^2} - \frac{B\ln(\tan(dx+c))}{ad} + \frac{B\ln(\tan(dx+c))}{a^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*a*B+1/d/(a^2+b^2)*B*arctan(tan(d*x+c))*b
-1/2/d/a/tan(d*x+c)^2*B-1/d/a*B*ln(tan(d*x+c))+1/d/a^3*ln(tan(d*x+c))*B*b^2
+1/d/a^2/tan(d*x+c)*B*b-1/d*b^4/a^3/(a^2+b^2)*ln(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.59219, size = 176, normalized size = 1.57

$$-\frac{\frac{2\,Bb^4\log(b\tan(dx+c)+a)}{a^5+a^3b^2}-\frac{2\,(dx+c)Bb}{a^2+b^2}-\frac{Ba\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Ba^2-Bb^2\right)\log(\tan(dx+c))}{a^3}-\frac{2\,Bb\tan(dx+c)-Ba}{a^2\tan(dx+c)^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] -1/2*(2*B*b^4*log(b*tan(d*x + c) + a)/(a^5 + a^3*b^2) - 2*(d*x + c)*B*b/(a^
2 + b^2) - B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) + 2*(B*a^2 - B*b^2)*log(
tan(d*x + c))/a^3 - (2*B*b*tan(d*x + c) - B*a)/(a^2*tan(d*x + c)^2))/d
```

Fricas [A] time = 1.90301, size = 435, normalized size = 3.88

$$-\frac{Bb^4\log\left(\frac{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^2+Ba^4+Ba^2b^2+\left(Ba^4-Bb^4\right)\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^2-\left(2\,B\right.}{2\left(a^5+a^3b^2\right)d\tan\left(dx+c\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] -1/2*(B*b^4*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2)/(tan(d*x +
c)^2 + 1))*tan(d*x + c)^2 + B*a^4 + B*a^2*b^2 + (B*a^4 - B*b^4)*log(tan(d*x
 + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^2 - (2*B*a^3*b*d*x - B*a^4 - B*a
^2*b^2)*tan(d*x + c)^2 - 2*(B*a^3*b + B*a*b^3)*tan(d*x + c))/((a^5 + a^3*b^
2)*d*tan(d*x + c)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.32287, size = 223, normalized size = 1.99

$$-\frac{\frac{2\,Bb^5\log(|b\tan(dx+c)+a|)}{a^5b+a^3b^3}-\frac{2\,(dx+c)Bb}{a^2+b^2}-\frac{Ba\log\left(\tan(dx+c)^2+1\right)}{a^2+b^2}+\frac{2\left(Ba^2-Bb^2\right)\log(|\tan(dx+c)|)}{a^3}-\frac{3\,Ba^2\tan(dx+c)^2-3\,Bb^2\tan(dx+c)^2+2\,Bab\tan(dx+}{a^3\tan(dx+c)^2}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] -1/2*(2*B*b^5*log(abs(b*tan(d*x + c) + a))/(a^5*b + a^3*b^3) - 2*(d*x + c)*
B*b/(a^2 + b^2) - B*a*log(tan(d*x + c)^2 + 1)/(a^2 + b^2) + 2*(B*a^2 - B*b^
2)*log(abs(tan(d*x + c)))/a^3 - (3*B*a^2*tan(d*x + c)^2 - 3*B*b^2*tan(d*x +
 c)^2 + 2*B*a*b*tan(d*x + c) - B*a^2)/(a^3*tan(d*x + c)^2))/d
```

3.314 $\int \frac{3+\tan(c+dx)}{2-\tan(c+dx)}\,dx$

Optimal. Leaf size=25

$$x-\frac{\log(2\cos(c+dx)-\sin(c+dx))}{d}$$

```
[Out] x - Log[2*Cos[c + d*x] - Sin[c + d*x]]/d
```

Rubi [A] time = 0.0483056, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {3531, 3530}

$$x-\frac{\log(2\cos(c+dx)-\sin(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(3 + Tan[c + d*x])/(2 - Tan[c + d*x]),x]
```

```
[Out] x - Log[2*Cos[c + d*x] - Sin[c + d*x]]/d
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{3+\tan(c+dx)}{2-\tan(c+dx)}\,dx = x - \int \frac{-1-2\tan(c+dx)}{2-\tan(c+dx)}\,dx$$
$$= x - \frac{\log(2\cos(c+dx)-\sin(c+dx))}{d}$$

Mathematica [B] time = 0.0416813, size = 62, normalized size = 2.48

$$\frac{\tan^{-1}(\tan(c+dx))}{d} + \frac{\log\left((2-\tan(c+dx))^2-4(2-\tan(c+dx))+5\right)}{2d} - \frac{\log(2-\tan(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + Tan[c + d*x])/(2 - Tan[c + d*x]),x]
```

```
[Out] ArcTan[Tan[c + d*x]]/d + Log[5 - 4*(2 - Tan[c + d*x]) + (2 - Tan[c + d*x])^
2]/(2*d) - Log[2 - Tan[c + d*x]]/d
```

Maple [A] time = 0.024, size = 41, normalized size = 1.6

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)}{2d} - \frac{\ln(-2+\tan(dx+c))}{d} + \frac{dx+c}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3+tan(d*x+c))/(2-tan(d*x+c)),x)
```

```
[Out] 1/2/d*ln(1+tan(d*x+c)^2)-1/d*ln(-2+tan(d*x+c))+1/d*(d*x+c)
```

Maxima [A] time = 1.80106, size = 47, normalized size = 1.88

$$\frac{2\,dx + 2\,c + \log\left(\tan(dx+c)^2+1\right) - 2\,\log(\tan(dx+c)-2)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(d*x+c))/(2-tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(2*d*x + 2*c + log(tan(d*x + c)^2 + 1) - 2*log(tan(d*x + c) - 2))/d
```

Fricas [A] time = 1.64685, size = 109, normalized size = 4.36

$$\frac{2\,dx-\log\left(\frac{\tan(dx+c)^2-4\,\tan(dx+c)+4}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(d*x+c))/(2-tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*d*x - log((tan(d*x + c)^2 - 4*tan(d*x + c) + 4)/(tan(d*x + c)^2 + 1)
))/d
```

Sympy [A] time = 0.406301, size = 39, normalized size = 1.56

$$\begin{cases} x - \frac{\log\left(\tan\left(c+dx\right)-2\right)}{d} + \frac{\log\left(\tan^2\left(c+dx\right)+1\right)}{2d} & \text{for}\ d\neq 0 \\ \frac{x(\tan\left(c\right)+3)}{2-\tan\left(c\right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(d*x+c))/(2-tan(d*x+c)),x)
```

```
[Out] Piecewise((x - log(tan(c + d*x) - 2)/d + log(tan(c + d*x)**2 + 1)/(2*d), Ne
(d, 0)), (x*(tan(c) + 3)/(2 - tan(c)), True))
```

Giac [A] time = 1.20173, size = 49, normalized size = 1.96

$$\frac{2\,dx+2\,c+\log\left(\tan\left(dx+c\right)^2+1\right)-2\,\log\left(|\tan\left(dx+c\right)-2|\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(d*x+c))/(2-tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*d*x + 2*c + log(tan(d*x + c)^2 + 1) - 2*log(abs(tan(d*x + c) - 2)))/
d
```

3.315 $\int \frac{\frac{bB}{a}+B\tan(c+dx)}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=58

$$\frac{2bBx}{a^2+b^2}-\frac{B\left(a-\frac{b^2}{a}\right)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}$$

```
[Out] (2*b*B*x)/(a^2 + b^2) - ((a - b^2/a)*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]]
)/((a^2 + b^2)*d)
```

Rubi [A] time = 0.0776258, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {3531, 3530}

$$\frac{2bBx}{a^2+b^2}-\frac{B\left(a-\frac{b^2}{a}\right)\log(a\cos(c+dx)+b\sin(c+dx))}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b*B)/a + B*Tan[c + d*x])/(a + b*Tan[c + d*x]),x]
```

```
[Out] (2*b*B*x)/(a^2 + b^2) - ((a - b^2/a)*B*Log[a*Cos[c + d*x] + b*Sin[c + d*x]]
)/((a^2 + b^2)*d)
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{\frac{bB}{a}+B\tan(c+dx)}{a+b\tan(c+dx)}\,dx=\frac{2bBx}{a^2+b^2}-\frac{\left(\left(a-\frac{b^2}{a}\right)B\right)\int\frac{b-a\tan(c+dx)}{a+b\tan(c+dx)}\,dx}{a^2+b^2}$$
$$=\frac{2bBx}{a^2+b^2}-\frac{\left(a-\frac{b^2}{a}\right)B\log(a\cos(c+dx)+b\sin(c+dx))}{\left(a^2+b^2\right)d}$$

Mathematica [A] time = 0.0969963, size = 65, normalized size = 1.12

$$\frac{B\left(\left(a^2-b^2\right)\left(\log\left(\sec^2(c+dx)\right)-2\log(a+b\tan(c+dx))\right)+4ab\tan^{-1}(\tan(c+dx))\right)}{2ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b*B)/a + B*Tan[c + d*x])/(a + b*Tan[c + d*x]),x]
```

```
[Out] (B*(4*a*b*ArcTan[Tan[c + d*x]] + (a^2 - b^2)*(Log[Sec[c + d*x]^2] - 2*Log[a
 + b*Tan[c + d*x]])))/(2*a*(a^2 + b^2)*d)
```

Maple [B] time = 0.033, size = 142, normalized size = 2.5

$$\frac{\ln\left(1+(\tan(dx+c))^2\right)aB}{2d\left(a^2+b^2\right)}-\frac{B\ln\left(1+(\tan(dx+c))^2\right)b^2}{2ad\left(a^2+b^2\right)}+2\frac{B\arctan(\tan(dx+c))b}{d\left(a^2+b^2\right)}-\frac{\ln(a+b\tan(dx+c))aB}{d\left(a^2+b^2\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*B/a+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d/(a^2+b^2)*ln(1+tan(d*x+c)^2)*a*B-1/2/d*B/a/(a^2+b^2)*ln(1+tan(d*x+c)^
2)*b^2+2/d/(a^2+b^2)*B*arctan(tan(d*x+c))*b-1/d/(a^2+b^2)*ln(a+b*tan(d*x+c)
)*a*B+1/d*b^2/a/(a^2+b^2)*ln(a+b*tan(d*x+c))*B
```

Maxima [A] time = 1.71733, size = 128, normalized size = 2.21

$$\frac{\frac{4(dx+c)Bb}{a^2+b^2}-\frac{2\left(Ba^2-Bb^2\right)\log(b\tan(dx+c)+a)}{a^3+ab^2}+\frac{\left(Ba^2-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^3+ab^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*B/a+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(4*(d*x + c)*B*b/(a^2 + b^2) - 2*(B*a^2 - B*b^2)*log(b*tan(d*x + c) + a
)/(a^3 + a*b^2) + (B*a^2 - B*b^2)*log(tan(d*x + c)^2 + 1)/(a^3 + a*b^2))/d
```

Fricas [A] time = 1.73846, size = 174, normalized size = 3.

$$\frac{4\,Babdx - \left(Ba^2 - Bb^2\right)\log\left(\frac{b^2\tan(dx+c)^2 + 2\,ab\tan(dx+c) + a^2}{\tan(dx+c)^2 + 1}\right)}{2\left(a^3 + ab^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*B/a+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(4*B*a*b*d*x - (B*a^2 - B*b^2)*log((b^2*tan(d*x + c)^2 + 2*a*b*tan(d*x
+ c) + a^2)/(tan(d*x + c)^2 + 1)))/((a^3 + a*b^2)*d)
```

Sympy [A] time = 2.40913, size = 233, normalized size = 4.02

$$\begin{cases} \text{NaN} & \text{for}\ a = 0 \wedge b = 0 \\ \frac{B\log\left(\tan^2(c+dx)+1\right)}{2ad} & \text{for}\ b = 0 \\ \frac{B}{-bd\tan(c+dx)+ibd} & \text{for}\ a = -ib \\ -\frac{B}{bd\tan(c+dx)+ibd} & \text{for}\ a = ib \\ \frac{x\left(B\tan(c)+\frac{Bb}{a}\right)}{a+b\tan(c)} & \text{for}\ d = 0 \\ -\frac{2Ba^2\log\left(\frac{a}{b}+\tan(c+dx)\right)}{2a^3d+2ab^2d} + \frac{Ba^2\log\left(\tan^2(c+dx)+1\right)}{2a^3d+2ab^2d} + \frac{4Babdx}{2a^3d+2ab^2d} + \frac{2Bb^2\log\left(\frac{a}{b}+\tan(c+dx)\right)}{2a^3d+2ab^2d} - \frac{Bb^2\log\left(\tan^2(c+dx)+1\right)}{2a^3d+2ab^2d} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*B/a+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Piecewise((nan, Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), (B*log(tan(c + d*x)**2 + 1
)/(2*a*d), Eq(b, 0)), (B/(-b*d*tan(c + d*x) + I*b*d), Eq(a, -I*b)), (-B/(b*
d*tan(c + d*x) + I*b*d), Eq(a, I*b)), (x*(B*tan(c) + B*b/a)/(a + b*tan(c)),
```

```
Eq(d, 0)), (-2*B*a**2*log(a/b + tan(c + d*x))/(2*a**3*d + 2*a*b**2*d) + B*
a**2*log(tan(c + d*x)**2 + 1)/(2*a**3*d + 2*a*b**2*d) + 4*B*a*b*d*x/(2*a**3
*d + 2*a*b**2*d) + 2*B*b**2*log(a/b + tan(c + d*x))/(2*a**3*d + 2*a*b**2*d)
 - B*b**2*log(tan(c + d*x)**2 + 1)/(2*a**3*d + 2*a*b**2*d), True))
```

Giac [A] time = 1.16534, size = 134, normalized size = 2.31

$$\frac{\frac{4\,(dx+c)Bb}{a^2+b^2}+\frac{\left(Ba^2-Bb^2\right)\log\left(\tan(dx+c)^2+1\right)}{a^3+ab^2}-\frac{2\left(Ba^2b-Bb^3\right)\log(|b\tan(dx+c)+a|)}{a^3b+ab^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*B/a+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(4*(d*x + c)*B*b/(a^2 + b^2) + (B*a^2 - B*b^2)*log(tan(d*x + c)^2 + 1)/
(a^3 + a*b^2) - 2*(B*a^2*b - B*b^3)*log(abs(b*tan(d*x + c) + a))/(a^3*b + a
*b^3))/d
```

3.316 $\int \frac{a+b\tan(c+dx)}{(b+a\tan(c+dx))^2} dx$

Optimal. Leaf size=101

$$-\frac{a^2-b^2}{d\left(a^2+b^2\right)(a\tan(c+dx)+b)}+\frac{b\left(3a^2-b^2\right)\log(a\sin(c+dx)+b\cos(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{ax\left(a^2-3b^2\right)}{\left(a^2+b^2\right)^2}$$

```
[Out] -((a*(a^2 - 3*b^2)*x)/(a^2 + b^2)^2) + (b*(3*a^2 - b^2)*Log[b*Cos[c + d*x]
+ a*Sin[c + d*x]])/((a^2 + b^2)^2*d) - (a^2 - b^2)/((a^2 + b^2)*d*(b + a*Ta
n[c + d*x]))
```

Rubi [A] time = 0.127962, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3529, 3531, 3530}

$$-\frac{a^2-b^2}{d\left(a^2+b^2\right)(a\tan(c+dx)+b)}+\frac{b\left(3a^2-b^2\right)\log(a\sin(c+dx)+b\cos(c+dx))}{d\left(a^2+b^2\right)^2}-\frac{ax\left(a^2-3b^2\right)}{\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])/(b + a*Tan[c + d*x])^2,x]
```

```
[Out] -((a*(a^2 - 3*b^2)*x)/(a^2 + b^2)^2) + (b*(3*a^2 - b^2)*Log[b*Cos[c + d*x]
+ a*Sin[c + d*x]])/((a^2 + b^2)^2*d) - (a^2 - b^2)/((a^2 + b^2)*d*(b + a*Ta
n[c + d*x]))
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3531

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_.) + (b_.)*tan[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[((a*c + b*d)*x)/(a^2 + b^2), x] + Dist[(b*c - a
*d)/(a^2 + b^2), Int[(b - a*Tan[e + f*x])/(a + b*Tan[e + f*x]), x], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && Ne
```

```
Q[a*c + b*d, 0]
```

Rule 3530

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/((a_) + (b_.)*tan[(e_.) + (f_.)*
(x_)]), x_Symbol] :> Simp[(c*Log[RemoveContent[a*Cos[e + f*x] + b*Sin[e + f
*x], x]])/(b*f), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 + b^2, 0] && EqQ[a*c + b*d, 0]
```

Rubi steps

$$\int \frac{a+b\tan(c+dx)}{(b+a\tan(c+dx))^2}\,dx = -\frac{a^2-b^2}{\left(a^2+b^2\right)d(b+a\tan(c+dx))} + \frac{\int \frac{2ab-\left(a^2-b^2\right)\tan(c+dx)}{b+a\tan(c+dx)}\,dx}{a^2+b^2}$$

$$= -\frac{a\left(a^2-3b^2\right)x}{\left(a^2+b^2\right)^2} - \frac{a^2-b^2}{\left(a^2+b^2\right)d(b+a\tan(c+dx))} + \frac{\left(b\left(3a^2-b^2\right)\right)\int \frac{a-b\tan(c+dx)}{b+a\tan(c+dx)}\,dx}{\left(a^2+b^2\right)^2}$$

$$= -\frac{a\left(a^2-3b^2\right)x}{\left(a^2+b^2\right)^2} + \frac{b\left(3a^2-b^2\right)\log(b\cos(c+dx)+a\sin(c+dx))}{\left(a^2+b^2\right)^2 d} - \frac{a^2-b^2}{\left(a^2+b^2\right)d(b+a\tan(c$$

Mathematica [C] time = 1.94609, size = 187, normalized size = 1.85

$$\frac{\frac{b(-(a+ib)\log(-\tan(c+dx)+i)-(a-ib)\log(\tan(c+dx)+i)+2a\log(a\tan(c+dx)+b))}{a^2+b^2} + (a-b)(a+b)\left(\frac{2a\left(2b\log(a\tan(c+dx)+b)-\frac{a^2+b^2}{a\tan(c+dx)+b}\right)}{\left(a^2+b^2\right)^2} + \frac{i\log(-}{(}\right.}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])/(b + a*Tan[c + d*x])^2,x]
```

```
[Out] ((b*(-((a + I*b)*Log[I - Tan[c + d*x]]) - (a - I*b)*Log[I + Tan[c + d*x]] +
 2*a*Log[b + a*Tan[c + d*x]]))/(a^2 + b^2) + (a - b)*(a + b)*((I*Log[I - Ta
n[c + d*x]])/(a - I*b)^2 - (I*Log[I + Tan[c + d*x]])/(a + I*b)^2 + (2*a*(2*
b*Log[b + a*Tan[c + d*x]] - (a^2 + b^2)/(b + a*Tan[c + d*x])))/(a^2 + b^2)^
2))/(2*a*d)
```

Maple [B] time = 0.039, size = 222, normalized size = 2.2

$$-\frac{3\ln\left(1+(\tan(dx+c))^2\right)ba^2}{2d\left(a^2+b^2\right)^2}+\frac{\ln\left(1+(\tan(dx+c))^2\right)b^3}{2d\left(a^2+b^2\right)^2}-\frac{\arctan(\tan(dx+c))\,a^3}{d\left(a^2+b^2\right)^2}+3\,\frac{\arctan(\tan(dx+c))\,ab^2}{d\left(a^2+b^2\right)^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))/(b+a*tan(d*x+c))^2,x)
```

```
[Out] -3/2/d/(a^2+b^2)^2*ln(1+tan(d*x+c)^2)*b*a^2+1/2/d/(a^2+b^2)^2*ln(1+tan(d*x+
c)^2)*b^3-1/d/(a^2+b^2)^2*arctan(tan(d*x+c))*a^3+3/d/(a^2+b^2)^2*arctan(tan
(d*x+c))*a*b^2-1/d/(a^2+b^2)/(b+a*tan(d*x+c))*a^2+1/d/(a^2+b^2)/(b+a*tan(d*
x+c))*b^2+3/d*b/(a^2+b^2)^2*ln(b+a*tan(d*x+c))*a^2-1/d*b^3/(a^2+b^2)^2*ln(b
+a*tan(d*x+c))
```

Maxima [A] time = 1.7985, size = 217, normalized size = 2.15

$$-\frac{\frac{2\left(a^3-3\,ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(3\,a^2b-b^3\right)\log(a\tan(dx+c)+b)}{a^4+2\,a^2b^2+b^4}+\frac{\left(3\,a^2b-b^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}+\frac{2\left(a^2-b^2\right)}{a^2b+b^3+\left(a^3+ab^2\right)\tan(dx+c)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))/(b+a*tan(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*(a^3 - 3*a*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) - 2*(3*a^2*b - b^
3)*log(a*tan(d*x + c) + b)/(a^4 + 2*a^2*b^2 + b^4) + (3*a^2*b - b^3)*log(ta
n(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) + 2*(a^2 - b^2)/(a^2*b + b^3 + (a
^3 + a*b^2)*tan(d*x + c)))/d
```

Fricas [A] time = 1.71119, size = 417, normalized size = 4.13

$$-\frac{2\,a^4-2\,a^2b^2+2\left(a^3b-3\,ab^3\right)dx-\left(3\,a^2b^2-b^4+\left(3\,a^3b-ab^3\right)\tan(dx+c)\right)\log\left(\frac{a^2\tan(dx+c)^2+2\,ab\tan(dx+c)+b^2}{\tan(dx+c)^2+1}\right)-2\left(a^3b-\right.}{2\left(\left(a^5+2\,a^3b^2+ab^4\right)d\tan(dx+c)+\left(a^4b+2\,a^2b^3+b^5\right)d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))/(b+a*tan(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*a^4 - 2*a^2*b^2 + 2*(a^3*b - 3*a*b^3)*d*x - (3*a^2*b^2 - b^4 + (3*a
^3*b - a*b^3)*tan(d*x + c))*log((a^2*tan(d*x + c)^2 + 2*a*b*tan(d*x + c) +
b^2)/(tan(d*x + c)^2 + 1)) - 2*(a^3*b - a*b^3 - (a^4 - 3*a^2*b^2)*d*x)*tan(
d*x + c))/((a^5 + 2*a^3*b^2 + a*b^4)*d*tan(d*x + c) + (a^4*b + 2*a^2*b^3 +
b^5)*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))/(b+a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [A] time = 1.23514, size = 269, normalized size = 2.66

$$-\frac{\frac{2\left(a^3-3\,ab^2\right)(dx+c)}{a^4+2\,a^2b^2+b^4}+\frac{\left(3\,a^2b-b^3\right)\log\left(\tan(dx+c)^2+1\right)}{a^4+2\,a^2b^2+b^4}-\frac{2\left(3\,a^3b-ab^3\right)\log(|a\tan(dx+c)+b|)}{a^5+2\,a^3b^2+ab^4}+\frac{2\left(3\,a^3b\tan(dx+c)-ab^3\tan(dx+c)+a^4+3\,a^2b^2-2\,b^4\right)}{\left(a^4+2\,a^2b^2+b^4\right)(a\tan(dx+c)+b)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))/(b+a*tan(d*x+c))^2,x, algorithm="giac")
```

```
[Out] -1/2*(2*(a^3 - 3*a*b^2)*(d*x + c)/(a^4 + 2*a^2*b^2 + b^4) + (3*a^2*b - b^3)
*log(tan(d*x + c)^2 + 1)/(a^4 + 2*a^2*b^2 + b^4) - 2*(3*a^3*b - a*b^3)*log(
abs(a*tan(d*x + c) + b))/(a^5 + 2*a^3*b^2 + a*b^4) + 2*(3*a^3*b*tan(d*x + c
) - a*b^3*tan(d*x + c) + a^4 + 3*a^2*b^2 - 2*b^4)/((a^4 + 2*a^2*b^2 + b^4)*
(a*tan(d*x + c) + b)))/d
```

3.317 $\int \tan^3(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=233

$$-\frac{2\left(-8a^2B+14aAb+35b^2B\right)(a+b\tan(c+dx))^{3/2}}{105b^3d}+\frac{2(7Ab-4aB)\tan(c+dx)(a+b\tan(c+dx))^{3/2}}{35b^2d}+\frac{\sqrt{a-ib}(A-iB}{}$$

```
[Out] (Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 + (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d - (2*A*Sqrt[a + b*Tan[c + d*x]])/d - (2*(14*a*A*b - 8*a^2*B + 35*b^2*B)
*(a + b*Tan[c + d*x])^(3/2))/(105*b^3*d) + (2*(7*A*b - 4*a*B)*Tan[c + d*x]*
(a + b*Tan[c + d*x])^(3/2))/(35*b^2*d) + (2*B*Tan[c + d*x]^2*(a + b*Tan[c +
 d*x])^(3/2))/(7*b*d)
```

Rubi [A] time = 0.629595, antiderivative size = 233, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3607, 3647, 3630, 3528, 3539, 3537, 63, 208}

$$-\frac{2\left(-8a^2B+14aAb+35b^2B\right)(a+b\tan(c+dx))^{3/2}}{105b^3d}+\frac{2(7Ab-4aB)\tan(c+dx)(a+b\tan(c+dx))^{3/2}}{35b^2d}+\frac{\sqrt{a-ib}(A-iB}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 + (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d - (2*A*Sqrt[a + b*Tan[c + d*x]])/d - (2*(14*a*A*b - 8*a^2*B + 35*b^2*B)
*(a + b*Tan[c + d*x])^(3/2))/(105*b^3*d) + (2*(7*A*b - 4*a*B)*Tan[c + d*x]*
(a + b*Tan[c + d*x])^(3/2))/(35*b^2*d) + (2*B*Tan[c + d*x]^2*(a + b*Tan[c +
 d*x])^(3/2))/(7*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
```

```
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^3(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{2B\tan^2(c+dx)(a+b\tan(c+dx))^{3/2}}{7bd} + \frac{2\int \tan(c+dx)\sqrt{a}}{}$$

$$= \frac{2(7Ab-4aB)\tan(c+dx)(a+b\tan(c+dx))^{3/2}}{35b^2d} + \frac{2B\tan^2(}{}$$

$$= -\frac{2\left(14aAb-8a^2B+35b^2B\right)(a+b\tan(c+dx))^{3/2}}{105b^3d} + \frac{2(7Ab}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d} - \frac{2\left(14aAb-8a^2B+35b^2B\right)(a+b}{105b^3d}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d} - \frac{2\left(14aAb-8a^2B+35b^2B\right)(a+b}{105b^3d}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d} - \frac{2\left(14aAb-8a^2B+35b^2B\right)(a+b}{105b^3d}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d} - \frac{2\left(14aAb-8a^2B+35b^2B\right)(a+b}{105b^3d}$$

$$= \frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} + \frac{\sqrt{a+ib}(A+iB)\,\mathrm{t}}{}$$

Mathematica [A] time = 2.66653, size = 212, normalized size = 0.91

$$\frac{2\sqrt{a+b\tan(c+dx)}\left(-b\left(4a^2B-7aAb+35b^2B\right)\tan(c+dx)-14a^2Ab+8a^3B+3b^2(aB+7Ab)\tan^2(c+dx)-35ab^2B\right.}{105b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 + (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d + (2*Sqrt[a + b*Tan[c + d*x]]*(-14*a^2*A*b - 105*A*b^3 + 8*a^3*B - 35*a
*b^2*B - b*(-7*a*A*b + 4*a^2*B + 35*b^2*B)*Tan[c + d*x] + 3*b^2*(7*A*b + a*
B)*Tan[c + d*x]^2 + 15*b^3*B*Tan[c + d*x]^3))/(105*b^3*d)
```

Maple [B] time = 0.121, size = 1099, normalized size = 4.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/7/d/b^3*B*(a+b*tan(d*x+c))^(7/2)+2/5/d/b^2*A*(a+b*tan(d*x+c))^(5/2)-4/5/d
/b^3*B*(a+b*tan(d*x+c))^(5/2)*a-2/3/d/b^2*A*(a+b*tan(d*x+c))^(3/2)*a+2/3/d/
b^3*a^2*B*(a+b*tan(d*x+c))^(3/2)-2/3*B*(a+b*tan(d*x+c))^(3/2)/b/d-2*A*(a+b*
tan(d*x+c))^(1/2)/d+1/4/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/
d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+
(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)+1/4/d/b*ln
(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b
^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*A*a+1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b
*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*B-1/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan
(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/d/b*ln((a+b*
tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1
/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-1/4/d/b*ln((a+b*tan(d*
```

```
x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B
*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2))*A*(a^2+b^2)^(1/2)+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*
(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a
)^(1/2))*A*a-1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)
+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 72.8826, size = 18625, normalized size = 79.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/420*(420*sqrt(2)*b^3*d^5*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 +
 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^
2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B
^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(((2*(A^7*B + 3*A^5*B^3 + 3
*A^3*B^5 + A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*
B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B
^8)*b^3)*d^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^2)/d^4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 +
 (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A
```

^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B
^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a
^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) + sqrt(2)*((
2*(A^4*B + A^2*B^3)*a + (A^5 - A*B^4)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B
 - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^6*B + 2*A^4*B^3 + A^2*
B^5)*a^2 + (A^7 - A^5*B^2 - 5*A^3*B^4 - 3*A*B^6)*a*b - (A^6*B + A^4*B^3 - A
^2*B^5 - B^7)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 -
 2*A^2*B^2 + B^4)*b^2)/d^4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4
 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*
B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A
*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x
+ c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)
b^2)/d^4)^(3/4) + sqrt(2)(A*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a
*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
(A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^3 + A*B^2)*a - (A^2*B + B^3)*b)*d^5
*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)
/d^4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A
^2*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^
3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3
 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^3*B^2*a
^3 + 4*(A^4*B - 2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4
*B - 2*A^2*B^3 + B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^
6*B - A^2*B^5)*a^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A
^6*B - A^2*B^5)*a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x +
c))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*
B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^
4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^
6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^
4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B +
A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x
 + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3
*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2
b^3 + 4(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8
)*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*
a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6
*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5
- 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4
 + 20*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9

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*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B
^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5))*cos(d*x + c)^
3 + 420*sqrt(2)*b^3*d^5*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*
A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 +
 B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)
*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3
)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(-((2*(A^7*B + 3*A^5*B^3 + 3*A
^3*B^5 + A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*B
+ 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8
)*b^3)*d^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 +
 B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)
*b^2)/d^4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 + (
A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9
*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B^2
 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2
 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) - sqrt(2)*((2*
(A^4*B + A^2*B^3)*a + (A^5 - A*B^4)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B -
 A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^
4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^6*B + 2*A^4*B^3 + A^2*B^
5)*a^2 + (A^7 - A^5*B^2 - 5*A^3*B^4 - 3*A*B^6)*a*b - (A^6*B + A^4*B^3 - A^2
*B^5 - B^7)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2
*A^2*B^2 + B^4)*b^2)/d^4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 +
 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^
2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B
^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x +
c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^2)/d^4)^(3/4) - sqrt(2)*(A*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b
 + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^3 + A*B^2)*a - (A^2*B + B^3)*b)*d^5*s
qrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d
^4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 +
2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2
*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*
b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 +
 (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^3
 + 4*(A^4*B - 2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4*B
 - 2*A^2*B^3 + B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^6*
B - A^2*B^5)*a^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A^6
*B - A^2*B^5)*a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x + c)
)*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A
```

^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^
2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4
+ 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*
B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*
b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^
5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x +
c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B
^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b
^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*
b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*a^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A
^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 -
2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4 +
20*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9*B
^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B^2
- A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5))*cos(d*x + c)^3
- 105*sqrt(2)*((2*A*B*b^4 - (A^2 - B^2)*a*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c)^3 - ((A^4 + 2*A^
2*B^2 + B^4)*a^2*b^3 + (A^4 + 2*A^2*B^2 + B^4)*b^5)*d*cos(d*x + c)^3)*sqrt(
((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4
)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(
1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A
^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^
2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^3*B^2*a^3 + 4*(A^4*B -
2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4*B - 2*A^2*B^3 +
B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^6*B - A^2*B^5)*a
^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A^6*B - A^2*B^5)*
a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x + c))*sqrt(((2*A*B
*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^
2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))
*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 +
B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^
4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A
^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*
B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^
3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B
+ A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x +
c))/((a^2 + b^2)*cos(d*x + c))) + 105*sqrt(2)*((2*A*B*b^4 - (A^2 - B^2)*a*
b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d

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^4)*cos(d*x + c)^3 - ((A^4 + 2*A^2*B^2 + B^4)*a^2*b^3 + (A^4 + 2*A^2*B^2 +
B^4)*b^5)*d*cos(d*x + c)^3)*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4
+ 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B
^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(
A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5
*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - sqrt
(2)*((4*A^3*B^2*a^3 + 4*(A^4*B - 2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*
B^4)*a*b^2 - (A^4*B - 2*A^2*B^3 + B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^
4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3
*B^4)*a^4 + 4*(A^6*B - A^2*B^5)*a^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^
6)*a^2*b^2 + 4*(A^6*B - A^2*B^5)*a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*
b^4)*d*cos(d*x + c))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2
*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^
4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*
b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/co
s(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^
4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^
3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*
b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^
8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*
B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A
^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8
- 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c))) + 8*(2*(4
*(A^4*B + 2*A^2*B^3 + B^5)*a^5 - 7*(A^5 + 2*A^3*B^2 + A*B^4)*a^4*b - 15*(A^
4*B + 2*A^2*B^3 + B^5)*a^3*b^2 - 70*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^3 - 19*
(A^4*B + 2*A^2*B^3 + B^5)*a*b^4 - 63*(A^5 + 2*A^3*B^2 + A*B^4)*b^5)*cos(d*x
 + c)^3 + 3*((A^4*B + 2*A^2*B^3 + B^5)*a^3*b^2 + 7*(A^5 + 2*A^3*B^2 + A*B^4
)*a^2*b^3 + (A^4*B + 2*A^2*B^3 + B^5)*a*b^4 + 7*(A^5 + 2*A^3*B^2 + A*B^4)*b
^5)*cos(d*x + c) + (15*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + 15*(A^4*B + 2*A^
2*B^3 + B^5)*b^5 - (4*(A^4*B + 2*A^2*B^3 + B^5)*a^4*b - 7*(A^5 + 2*A^3*B^2
+ A*B^4)*a^3*b^2 + 54*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 - 7*(A^5 + 2*A^3*B^
2 + A*B^4)*a*b^4 + 50*(A^4*B + 2*A^2*B^3 + B^5)*b^5)*cos(d*x + c)^2)*sin(d*
x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/(((A^4 + 2*A^
2*B^2 + B^4)*a^2*b^3 + (A^4 + 2*A^2*B^2 + B^4)*b^5)*d*cos(d*x + c)^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan{(c + dx)}) \sqrt{a + b\tan{(c + dx)}} \tan^3{(c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*tan(d*x+c)**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*tan(c + d*x)**3, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.318 $\int \tan^2(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=186

$$\frac{2(5Ab-2aB)(a+b\tan(c+dx))^{3/2}}{15b^2d}+\frac{\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right.}{d}$$

```
[Out] (Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 - (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d - (2*B*Sqrt[a + b*Tan[c + d*x]])/d + (2*(5*A*b - 2*a*B)*(a + b*Tan[c +
d*x])^(3/2))/(15*b^2*d) + (2*B*Tan[c + d*x]*(a + b*Tan[c + d*x])^(3/2))/(5*
b*d)
```

Rubi [A] time = 0.455403, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3607, 3630, 3528, 3539, 3537, 63, 208}

$$\frac{2(5Ab-2aB)(a+b\tan(c+dx))^{3/2}}{15b^2d}+\frac{\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 - (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d - (2*B*Sqrt[a + b*Tan[c + d*x]])/d + (2*(5*A*b - 2*a*B)*(a + b*Tan[c +
d*x])^(3/2))/(15*b^2*d) + (2*B*Tan[c + d*x]*(a + b*Tan[c + d*x])^(3/2))/(5*
b*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^2(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{2B\tan(c+dx)(a+b\tan(c+dx))^{3/2}}{5bd} + \frac{2\int \sqrt{a+b\tan(c+}}{}$$

$$= \frac{2(5Ab-2aB)(a+b\tan(c+dx))^{3/2}}{15b^2d} + \frac{2B\tan(c+dx)(a+b}{5bd}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(5Ab-2aB)(a+b\tan(c+dx))^{}}{15b^2d}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(5Ab-2aB)(a+b\tan(c+dx))^{}}{15b^2d}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(5Ab-2aB)(a+b\tan(c+dx))^{}}{15b^2d}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(5Ab-2aB)(a+b\tan(c+dx))^{}}{15b^2d}$$

$$= \frac{\sqrt{a-ib}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{\sqrt{a+ib}(iA-B)\,t}{}$$

Mathematica [A] time = 1.84079, size = 169, normalized size = 0.91

$$\frac{\frac{2\sqrt{a+b\tan(c+dx)}\left(-2a^2B+b(aB+5Ab)\tan(c+dx)+5aAb+3b^2B\tan^2(c+dx)-15b^2B\right)}{b^2}+15\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)+15\sqrt{a+ib}(}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (15*Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]
 + 15*Sqrt[a + I*b]*((-I)*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a +
I*b]] + (2*Sqrt[a + b*Tan[c + d*x]]*(5*a*A*b - 2*a^2*B - 15*b^2*B + b*(5*A*
b + a*B)*Tan[c + d*x] + 3*b^2*B*Tan[c + d*x]^2))/b^2)/(15*d)
```

Maple [B] time = 0.125, size = 1032, normalized size = 5.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/5/d/b^2*B*(a+b*tan(d*x+c))^(5/2)+2/3/d/b*A*(a+b*tan(d*x+c))^(3/2)-2/3/d/b
^2*B*(a+b*tan(d*x+c))^(3/2)*a-2*B*(a+b*tan(d*x+c))^(1/2)/d+1/4/d/b*ln(b*tan
(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1
/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-1/4/d/b*ln(b*tan(d*x+c
)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A
*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(
1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/
2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1/d/(2*(
a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/
2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)-1/d/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+
2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a-1/4/d/b*ln((a+b*tan(d*x+c))^
(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a
^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)+1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2
)^(1/2)+2*a)^(1/2)*a-1/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/d
*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a
+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/d/(2*(a^2+b^2)^(1/
2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2
))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)+1/d/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/
(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\tan(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^2, x)
```

Fricas [B] time = 76.0758, size = 18297, normalized size = 98.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/60*(60*sqrt(2)*b^2*d^5*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 +
 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^
2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B
^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(((2*(A^7*B + 3*A^5*B^3 + 3
*A^3*B^5 + A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*
B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B
^8)*b^3)*d^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^2)/d^4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 +
 (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A
^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B
^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a
^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) + sqrt(2)*((
2*(A^3*B^2 + A*B^4)*a + (A^4*B - B^5)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B
 - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^5*B^2 + 2*A^3*B^4 + A*
B^6)*a^2 + (3*A^6*B + 5*A^4*B^3 + A^2*B^5 - B^7)*a*b + (A^7 + A^5*B^2 - A^3
*B^4 - A*B^6)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 -
 2*A^2*B^2 + B^4)*b^2)/d^4))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^
4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2
*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B -
A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x
 + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^2)/d^4)^(3/4) + sqrt(2)*(B*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*
a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^2*B + B^3)*a + (A^3 + A*B^2)*b)*d^
5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2
)/d^4))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*
a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^
```

4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2
*A^2*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*
a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b
^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)
*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^2*B^3
a^3 + 4(2*A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A
^5 - 2*A^3*B^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 +
2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(
A^5*B^2 - A*B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*
(A^5*B^2 - A*B^6)*a*b^3 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x
+ c))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4
+ 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A
^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((
(A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*
(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a^4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B
+ A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(
d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*
a^2*b^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 +
B^8)*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^
4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4
+ 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B
^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*
B^4 + 20*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*
A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^1
0*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5))*cos(d*x +
c)^2 + 60*sqrt(2)*b^2*d^5*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 +
2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^
2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B
^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(-((2*(A^7*B + 3*A^5*B^3 +
3*A^3*B^5 + A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7
*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 -
B^8)*b^3)*d^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^
2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B
^4)*b^2)/d^4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4
+ (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(
A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*
B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*
a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) - sqrt(2)*(
(2*(A^3*B^2 + A*B^4)*a + (A^4*B - B^5)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*
B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 +

B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a^2 + (3*A^6*B + 5*A^4*B^3 + A^2*B^5 - B^7)*a*b + (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4) - sqrt(2)*(B*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^2*B + B^3)*a + (A^3 + A*B^2)*b)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - sqrt(2)*((4*A^2*B^3*a^3 + 4*(2*A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A^5 - 2*A^3*B^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(A^5*B^2 - A*B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*(A^5*B^2 - A*B^6)*a*b^3 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x + c))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4 + 20*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5))*cos(d*x + c)^2 - 15*sqrt(2)*((2*A*B*b^3 - (A^2 - B^2)*a*b^2)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c)^2 + ((A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2)*

sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^
2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/
d^4)^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6
 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 -
A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^2*B^3*a^3 + 4*(2*
A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A^5 - 2*A^3*B
^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 +
 B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(A^5*B^2 - A*
B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*(A^5*B^2 - A
*B^6)*a*b^3 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x + c))*sqrt(-
((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2
+ B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4
)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2
*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2
*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^
8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 -
 A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (
4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*
B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*
(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*si
n(d*x + c))/((a^2 + b^2)*cos(d*x + c))) + 15*sqrt(2)*((2*A*B*b^3 - (A^2 - B
^2)*a*b^2)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^2)/d^4)*cos(d*x + c)^2 + ((A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*
B^2 + B^4)*b^4)*d*cos(d*x + c)^2)*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt
(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 +
2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3
*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^
4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 +
 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((
A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c)
 - sqrt(2)*((4*A^2*B^3*a^3 + 4*(2*A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2
*B^3 + B^5)*a*b^2 + (A^5 - 2*A^3*B^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B
^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^
3 + A^2*B^5)*a^4 + 4*(A^5*B^2 - A*B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B
^5 + B^7)*a^2*b^2 + 4*(A^5*B^2 - A*B^6)*a*b^3 + (A^6*B - A^4*B^3 - A^2*B^5
+ B^7)*b^4)*d*cos(d*x + c))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4
 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*
B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A
*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x
+ c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)

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*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*
B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B
^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*
B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b +
 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B
^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4
 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c))) -
 8*(3*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^2 + 3*(A^4*B + 2*A^2*B^3 + B^5)*b^4 -
 (2*(A^4*B + 2*A^2*B^3 + B^5)*a^4 - 5*(A^5 + 2*A^3*B^2 + A*B^4)*a^3*b + 20*
(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^2 - 5*(A^5 + 2*A^3*B^2 + A*B^4)*a*b^3 + 18*
(A^4*B + 2*A^2*B^3 + B^5)*b^4)*cos(d*x + c)^2 + ((A^4*B + 2*A^2*B^3 + B^5)*
a^3*b + 5*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^2 + (A^4*B + 2*A^2*B^3 + B^5)*a*b
^3 + 5*(A^5 + 2*A^3*B^2 + A*B^4)*b^4)*cos(d*x + c)*sin(d*x + c))*sqrt((a*co
s(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\tan^2(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*tan(d*x+c)**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*tan(c + d*x)**2, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.319 $\int \tan(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=146

$$-\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}+\frac{2A\sqrt{a+b\tan(c+dx)}}{d}+\frac{2B(a+$$

```
[Out] -((Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d) - (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]])/d + (2*A*Sqrt[a + b*Tan[c + d*x]])/d + (2*B*(a + b*Tan[c + d*x])^(3/2)
)/(3*b*d)
```

Rubi [A] time = 0.27856, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3592, 3528, 3539, 3537, 63, 208}

$$-\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}+\frac{2A\sqrt{a+b\tan(c+dx)}}{d}+\frac{2B(a+$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d) - (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]])/d + (2*A*Sqrt[a + b*Tan[c + d*x]])/d + (2*B*(a + b*Tan[c + d*x])^(3/2)
)/(3*b*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
```

```
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{2B(a+b\tan(c+dx))^{3/2}}{3bd} + \int(-B+A\tan(c+dx))\sqrt{a+b\,t}$$

$$= \frac{2A\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3bd} + \int \frac{-A}{}$$

$$= \frac{2A\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3bd} + \frac{1}{2}((ia$$

$$= \frac{2A\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3bd} + \frac{((a-i}{}$$

$$= \frac{2A\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3bd} + \frac{((ia+}{}$$

$$= -\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{\sqrt{a+ib}(A+iB}{}$$

Mathematica [A] time = 0.45248, size = 140, normalized size = 0.96

$$\frac{2\sqrt{a+b\tan(c+dx)}(aB+3Ab+bB\tan(c+dx)) - 3b\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right) - 3b\sqrt{a+ib}(A+iB)\tan}{3bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-3*Sqrt[a - I*b]*b*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b
]] - 3*Sqrt[a + I*b]*b*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a +
I*b]] + 2*Sqrt[a + b*Tan[c + d*x]]*(3*A*b + a*B + b*B*Tan[c + d*x]))/(3*b*d
)
```

Maple [B] time = 0.105, size = 989, normalized size = 6.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/3*B*(a+b*tan(d*x+c))^(3/2)/b/d+2*A*(a+b*tan(d*x+c))^(1/2)/d-1/4/d*ln(b*ta
n(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(
1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*
x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^
(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2
*a)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1
/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^
2)^(1/2)+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)
+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a-1/d*b/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(
1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/4/d*ln((a+b*tan(d*x+c))
^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(
a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1
/2)*(a^2+b^2)^(1/2)+1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+
1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(
a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)-1/d
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b
*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a+1/d*b/(2*(a^2+b^2)^(
1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1
/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\tan(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c), x)
```

Fricas [B] time = 62.5664, size = 17963, normalized size = 123.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/12*(12*sqrt(2)*b*d^5*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*
A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 +
 B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)
*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3
)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(((2*(A^7*B + 3*A^5*B^3 + 3*A^
3*B^5 + A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*B +
 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)
*b^3)*d^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 +
B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^2)/d^4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 + (A
^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*
B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B^2
+ 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2
+ 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) + sqrt(2)*((2*(
A^4*B + A^2*B^3)*a + (A^5 - A*B^4)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B -
A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4
)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^6*B + 2*A^4*B^3 + A^2*B^5
)*a^2 + (A^7 - A^5*B^2 - 5*A^3*B^4 - 3*A*B^6)*a*b - (A^6*B + A^4*B^3 - A^2*
B^5 - B^7)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*
A^2*B^2 + B^4)*b^2)/d^4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 +
2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2
 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^
3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c
))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^
2)/d^4)^(3/4) + sqrt(2)*(A*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b
+ (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^
4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^3 + A*B^2)*a - (A^2*B + B^3)*b)*d^5*sq
rt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^
4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*
B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b
 + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 +
(A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^3*B^2*a^3
+ 4*(A^4*B - 2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4*B
- 2*A^2*B^3 + B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^6*B
 - A^2*B^5)*a^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A^6*
B - A^2*B^5)*a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x + c))
```

```
*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 +
 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B
^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b
 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5
*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x +
c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^
3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b
^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*a^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^
6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2
*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4 +
20*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9*B^
3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B^2
- A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5))*cos(d*x + c) + 1
2*sqrt(2)*b*d^5*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2
+ B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (
A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b +
(A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(-((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 +
 A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*B + 3*A^5*
B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^3)*d
^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^
2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^
4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 + (A^10 + 3
*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A
^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B^2 + 2*A^6
*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 + 4*(A^
3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) - sqrt(2)*((2*(A^4*B +
 A^2*B^3)*a + (A^5 - A*B^4)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*
a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^6*B + 2*A^4*B^3 + A^2*B^5)*a^2 +
 (A^7 - A^5*B^2 - 5*A^3*B^4 - 3*A*B^6)*a*b - (A^6*B + A^4*B^3 - A^2*B^5 - B
^7)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2)/d^4))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B
^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)
*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b
+ (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(
d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)
^(3/4) - sqrt(2)*(A*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4
- 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A
```

```
^2*B^2 + B^4)*b^2)/d^4) + ((A^3 + A*B^2)*a - (A^2*B + B^3)*b)*d^5*sqrt((4*A
^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4))*sqr
t(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 +
 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^
2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B
^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6
 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 -
A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^3 + 4*(A^
4*B - 2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4*B - 2*A^2
*B^3 + B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 +
 B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^6*B - A^2*
B^5)*a^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A^6*B - A^2
*B^5)*a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x + c))*sqrt((
(2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 +
 B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)
*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*
B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*
A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8
 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4
*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B
^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(
A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin
(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4
 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 +
 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^
7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4 + 20*A^6*
B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9*B^3 + 2*A
^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B^2 - A^8*B
^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5))*cos(d*x + c) - 3*sqrt(2
)*((2*A*B*b^2 - (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - ((A^4 + 2*A^2*B^2 + B^4)*a^2
*b + (A^4 + 2*A^2*B^2 + B^4)*b^3)*d*cos(d*x + c))*sqrt(((2*A*B*b - (A^2 - B
^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)
/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B
^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(((A^4 + 2*A
^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4)*log(((4*(A^4*B^
2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 +
 B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b
^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^
4)*cos(d*x + c) + sqrt(2)*((4*A^3*B^2*a^3 + 4*(A^4*B - 2*A^2*B^3)*a^2*b + (
A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4*B - 2*A^2*B^3 + B^5)*b^3)*d^3*sqrt(
((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x +
```

c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^6*B - A^2*B^5)*a^3*b + (A^7 + 3*A^5*
B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A^6*B - A^2*B^5)*a*b^3 + (A^7 - A^5*B
^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x + c))*sqrt(((2*A*B*b - (A^2 - B^2)*a)*
d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) +
 (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2
+ 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c
) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4
*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 +
 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 +
 (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^
2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6
*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5
- A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((a^2 + b^2)*co
s(d*x + c))) + 3*sqrt(2)*((2*A*B*b^2 - (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*
A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - ((A^4
 + 2*A^2*B^2 + B^4)*a^2*b + (A^4 + 2*A^2*B^2 + B^4)*b^3)*d*cos(d*x + c))*sq
rt(((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B
^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 +
B^4)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4
)^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 +
3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4
*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^3 + 4*(A^4*B
 - 2*A^2*B^3)*a^2*b + (A^5 - 6*A^3*B^2 + 5*A*B^4)*a*b^2 - (A^4*B - 2*A^2*B^
3 + B^5)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^2)/d^4)*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^4 + 4*(A^6*B - A^2*B^5
)*a^3*b + (A^7 + 3*A^5*B^2 + 3*A^3*B^4 + A*B^6)*a^2*b^2 + 4*(A^6*B - A^2*B^
5)*a*b^3 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^4)*d*cos(d*x + c))*sqrt(((2*
A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2
*B^2 + B^4)*b^2)/d^4) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^
2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2
 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4
*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 +
4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3
*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A
^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7
*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*
x + c))/((a^2 + b^2)*cos(d*x + c))) - 8*(((A^4*B + 2*A^2*B^3 + B^5)*a^3 + 3
*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b + (A^4*B + 2*A^2*B^3 + B^5)*a*b^2 + 3*(A^5
 + 2*A^3*B^2 + A*B^4)*b^3)*cos(d*x + c) + ((A^4*B + 2*A^2*B^3 + B^5)*a^2*b
+ (A^4*B + 2*A^2*B^3 + B^5)*b^3)*sin(d*x + c))*sqrt((a*cos(d*x + c) + b*sin

```
(d*x + c))/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^2*b + (A^4 + 2*A^2*B^
2 + B^4)*b^3)*d*cos(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan{(c + dx)})\sqrt{a + b\tan{(c + dx)}}\tan{(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*tan(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.320 $\int \sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=122

$$-\frac{\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{\sqrt{a+ib}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}+\frac{2B\sqrt{a+b\tan(c+dx)}}{d}$$

```
[Out] -((Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d) + (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]])/d + (2*B*Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 0.212357, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3528, 3539, 3537, 63, 208}

$$-\frac{\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{\sqrt{a+ib}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}+\frac{2B\sqrt{a+b\tan(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```



```
[Out] -((Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d) + (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]])/d + (2*B*Sqrt[a + b*Tan[c + d*x]])/d
```


Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
```

```
a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \int \frac{aA-bB+(Ab+aB)\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \frac{1}{2}((a-ib)(A-iB))\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{2B\sqrt{a+b\tan(c+dx)}}{d} + \frac{(i(a-ib)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x,\right.}{2d}$$

$$= \frac{2B\sqrt{a+b\tan(c+dx)}}{d} - \frac{((a-ib)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{-1-\frac{ia}{b}+\frac{ix^2}{b}}\,dx, x, \right.}{bd}$$

$$= -\frac{\sqrt{a-ib}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} + \frac{\sqrt{a+ib}(iA-B)\tanh^{-1}\left(\right.}{d}$$

Mathematica [A] time = 0.120205, size = 120, normalized size = 0.98

$$\frac{-i\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)+i\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)+2B\sqrt{a+b\tan(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-I)*Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b
]] + I*Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]] + 2*B*Sqrt[a + b*Tan[c + d*x]])/d
```

Maple [B] time = 0.084, size = 968, normalized size = 7.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2*B*(a+b*tan(d*x+c))^(1/2)/d-1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/
2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)
^(1/2)*(a^2+b^2)^(1/2)+1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*
(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
*a-1/4/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/d*b/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/
2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arct
an((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
(2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*B*a+1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+
b^2)^(1/2)-1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-
b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/d*ln(
(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^
2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2))*A+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+
b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2))*B*(a^2+b^2)^(1/2)-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2
)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*B*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 60.8192, size = 17595, normalized size = 144.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*d^5*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*
B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4
)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b
 + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*
b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4)*arctan(((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^
5 + A*B^7)*a^3 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*B + 3*A
^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^3
)*d^4*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)
*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)
/d^4) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 + (A^10
+ 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B +
4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B^2 + 2*
A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 + 4*
(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) + sqrt(2)*((2*(A^3*
B^2 + A*B^4)*a + (A^4*B - B^5)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^
3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a^
2 + (3*A^6*B + 5*A^4*B^3 + A^2*B^5 - B^7)*a*b + (A^7 + A^5*B^2 - A^3*B^4 -
A*B^6)*b^2)*d^5*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*
B^2 + B^4)*b^2)/d^4))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A
^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 +
B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*
a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/
```

cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/
d^4)^(3/4) + sqrt(2)*(B*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (
A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 +
 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^2*B + B^3)*a + (A^3 + A*B^2)*b)*d^5*sqrt(
(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4))
*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A
^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^
2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b +
 (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A
^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
(A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^2*B^3*a^3 +
4*(2*A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A^5 - 2*
A^3*B^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*
B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(A^5*B^2
 - A*B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*(A^5*B^
2 - A*B^6)*a*b^3 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x + c))*s
qrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^
4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2
*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
+ B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 +
2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^
2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b
+ (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*
B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c
) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5
 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3
 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^
5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6
*B^6 + 4*A^4*B^8 + A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*
A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4 + 2
0*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9*B^3
 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B^2 -
 A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5)) + 4*sqrt(2)*d^5*s
qrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^
4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2
*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
+ B^4)*b^2))*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2)/d^4)*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^2)/d^4)^(3/4)*arctan(-((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3 + (A
^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b + 2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5
+ A*B^7)*a*b^2 + (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^3)*d^4*sqrt((4*A^2*B
^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A
^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + (2*(A^9*B +

4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 + (A^10 + 3*A^8*B^2 + 2*A^6
*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B
^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 + (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6
 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b
 + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4) - sqrt(2)*((2*(A^3*B^2 + A*B^4)*a + (A
^4*B - B^5)*b)*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A
^2*B^2 + B^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^
2 + B^4)*b^2)/d^4) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a^2 + (3*A^6*B + 5*A^
4*B^3 + A^2*B^5 - B^7)*a*b + (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^2)*d^5*sqr
t((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4
))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2
*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*
B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^
4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(3/4) - sqrt(2
)*(B*d^7*sqrt((4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B
^4)*b^2)/d^4)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^2)/d^4) + ((A^2*B + B^3)*a + (A^3 + A*B^2)*b)*d^5*sqrt((4*A^2*B^2*a^2 + 4*
(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/d^4))*sqrt(-((2*A*B*b -
(A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B
^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/
(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt
(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 +
 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*
B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 +
B^4)*b^2)/d^4)*cos(d*x + c) - sqrt(2)*((4*A^2*B^3*a^3 + 4*(2*A^3*B^2 - A*B^
4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A^5 - 2*A^3*B^2 + A*B^4)*b^
3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4
)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(A^5*B^2 - A*B^6)*a^3*b + (
A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*(A^5*B^2 - A*B^6)*a*b^3 +
(A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x + c))*sqrt(-((2*A*B*b - (A
^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4
*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((
a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2
*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2
+ 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B
^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2
*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 +
 (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B
^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((
a^2 + b^2)*cos(d*x + c)))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^2)/d^4)^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 +
A^2*B^10)*a^4*b + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9

- A*B^11)*a^3*b^2 + (A^12 + 6*A^10*B^2 + 15*A^8*B^4 + 20*A^6*B^6 + 15*A^4*B^8 + 6*A^2*B^10 + B^12)*a^2*b^3 + 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^4 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^5)) - sqrt(2)*((2*A*B*b - (A^2 - B^2)*a)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)*d)*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + sqrt(2)*((4*A^2*B^3*a^3 + 4*(2*A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A^5 - 2*A^3*B^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(A^5*B^2 - A*B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*(A^5*B^2 - A*B^6)*a*b^3 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x + c))*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 + (A^8 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c))) + sqrt(2)*((2*A*B*b - (A^2 - B^2)*a)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) + ((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)*d)*sqrt(-((2*A*B*b - (A^2 - B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 + 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 + 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) - sqrt(2)*((4*A^2*B^3*a^3 + 4*(2*A^3*B^2 - A*B^4)*a^2*b + (5*A^4*B - 6*A^2*B^3 + B^5)*a*b^2 + (A^5 - 2*A^3*B^2 + A*B^4)*b^3)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^4 + 4*(A^5*B^2 - A*B^6)*a^3*b + (A^6*B + 3*A^4*B^3 + 3*A^2*B^5 + B^7)*a^2*b^2 + 4*(A^5*B^2 - A*B^6)*a*b^3 + (A^6*

```
B - A^4*B^3 - A^2*B^5 + B^7)*b^4)*d*cos(d*x + c))*sqrt(-((2*A*B*b - (A^2 -
B^2)*a)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2
)/d^4) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*
B^2*a^2 + 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos
(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^2)/d^4)^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)
*a^5 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^4*b + (A^8 + 4*A^6*B^2 + 6*A
^4*B^4 + 4*A^2*B^6 + B^8)*a^3*b^2 + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a
^2*b^3 + (A^8 - 2*A^4*B^4 + B^8)*a*b^4)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*
B^4 + A^2*B^6)*a^4*b + 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^2 + (A^8
 + 4*A^6*B^2 + 6*A^4*B^4 + 4*A^2*B^6 + B^8)*a^2*b^3 + 4*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a*b^4 + (A^8 - 2*A^4*B^4 + B^8)*b^5)*sin(d*x + c))/((a^2 +
 b^2)*cos(d*x + c))) + 8*((A^4*B + 2*A^2*B^3 + B^5)*a^2 + (A^4*B + 2*A^2*B^
3 + B^5)*b^2)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/(((A^4
+ 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.321 $\int \cot(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=131

$$\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}-\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}$$

```
[Out] (-2*Sqrt[a]*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d + (Sqrt[a - I*b]
*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + (Sqrt[a + I
*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d
```

Rubi [A] time = 0.360248, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3612, 3539, 3537, 63, 208, 3634}

$$\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}-\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*Sqrt[a]*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d + (Sqrt[a - I*b]
*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + (Sqrt[a + I
*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d
```


Rule 3612

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*Sqrt[(c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]])/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[1
/(a^2 + b^2), Int[Simp[A*(a*c + b*d) + B*(b*c - a*d) - (A*(b*c - a*d) - B*(
a*c + b*d))*Tan[e + f*x], x]/Sqrt[c + d*Tan[e + f*x]], x], x] - Dist[((b*c
- a*d)*(B*a - A*b))/(a^2 + b^2), Int[(1 + Tan[e + f*x]^2)/((a + b*Tan[e + f
*x])*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x
] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
```

```
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = (aA)\int \frac{\cot(c+dx)\left(1+\tan^2(c+dx)\right)}{\sqrt{a+b\tan(c+dx)}}\,dx + \int \frac{Ab+aB-(a}{\sqrt{a+b}}$$

$$= \frac{1}{2}(Ab+aB-i(-aA+bB))\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(Ab$$

$$= \frac{(2aA)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{b}+\frac{x^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{bd} - \frac{((a-ib)(}{}$$

$$= -\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} - \frac{((ia+b)(A-iB))\,\text{Subst}\left(\int\right.}{}$$

$$= -\frac{2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\sqrt{\right.}}{d}$$

Mathematica [A] time = 0.556041, size = 219, normalized size = 1.67

$$-\frac{-\frac{\left(A\left(a\sqrt{-b^2}+b^2\right)+bB\left(a-\sqrt{-b^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{-b^2}\sqrt{a-\sqrt{-b^2}}} + \frac{\left(A\left(b^2-a\sqrt{-b^2}\right)+bB\left(a+\sqrt{-b^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+\sqrt{-b^2}}}\right)}{\sqrt{-b^2}\sqrt{a+\sqrt{-b^2}}} + 2\sqrt{a}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx}}{\sqrt{a}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((2*Sqrt[a]*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]] - ((A*(b^2 + a*Sqr
t[-b^2]) + b*(a - Sqrt[-b^2])*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a -
Sqrt[-b^2]]])/(Sqrt[-b^2]*Sqrt[a - Sqrt[-b^2]]) + ((A*(b^2 - a*Sqrt[-b^2])
+ b*(a + Sqrt[-b^2])*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + Sqrt[-b^2
]]])/(Sqrt[-b^2]*Sqrt[a + Sqrt[-b^2]]))/d)
```

Maple [C] time = 1.433, size = 29038, normalized size = 221.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\cot(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*cot(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.322 $\int \cot^2(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=167

$$-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}+\frac{\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

```
[Out] -(((A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d)) +
(Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 - (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d - (A*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 0.51638, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3608, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}+\frac{\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d)) +
(Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d
 - (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]
)/d - (A*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/d
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
```

```
[2*m, 2*n])
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
```

```
Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^2(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d} - \int \frac{\cot(c+dx)\left(\frac{1}{2}(-A\right.}{}$$

$$= -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d} - \frac{1}{2}(-Ab-2aB)\int \frac{\cot}{}$$

$$= -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d} - \frac{1}{2}((a-ib)(A-iB))\int$$

$$= -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d} - \frac{(i(a-ib)(A-iB))\,\mathrm{Su}}{}$$

$$= -\frac{(Ab+2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} - \frac{A\cot(c+dx)\sqrt{a+}}{d}$$

$$= -\frac{(Ab+2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{\sqrt{a-ib}(iA+B)\,\mathrm{ta}}{}$$

Mathematica [A] time = 2.33061, size = 235, normalized size = 1.41

$$\frac{\frac{\frac{\left(A\left(a\sqrt{-b^2}+b^2\right)+bB\left(a-\sqrt{-b^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{a-\sqrt{-b^2}}}+\frac{\left(A\left(b^2-a\sqrt{-b^2}\right)+bB\left(a+\sqrt{-b^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+\sqrt{-b^2}}}\right)}{\sqrt{a+\sqrt{-b^2}}}-Ab\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{b}-\frac{(2aB+Ab)\tanh^{-1}\left(\right.}{\sqrt{a}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-(((A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a]) + (((
A*(b^2 + a*Sqrt[-b^2]) + b*(a - Sqrt[-b^2])*B)*ArcTanh[Sqrt[a + b*Tan[c + d
*x]]/Sqrt[a - Sqrt[-b^2]]])/Sqrt[a - Sqrt[-b^2]] + ((A*(b^2 - a*Sqrt[-b^2])
 + b*(a + Sqrt[-b^2])*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + Sqrt[-b^
2]]])/Sqrt[a + Sqrt[-b^2]] - A*b*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/b)/
```

d

Maple [C] time = 1.578, size = 50548, normalized size = 302.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\cot^2(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*cot(c + d*x)**2, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.323 $\int \cot^3(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=219

$$\frac{\left(8a^2A-4abB+Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d}-\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

```
[Out] ((8*a^2*A + A*b^2 - 4*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(4*
a^(3/2)*d) - (Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt
[a - I*b]])/d - (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a + I*b]])/d - ((A*b + 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(4
*a*d) - (A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(2*d)
```

Rubi [A] time = 0.861336, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3608, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{\left(8a^2A-4abB+Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d}-\frac{\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a+ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((8*a^2*A + A*b^2 - 4*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(4*
a^(3/2)*d) - (Sqrt[a - I*b]*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt
[a - I*b]])/d - (Sqrt[a + I*b]*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a + I*b]])/d - ((A*b + 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(4
*a*d) - (A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(2*d)
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
```

```
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^3(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{A\cot^2(c+dx)\sqrt{a+b\tan(c+dx)}}{2d} - \frac{1}{2}\int \frac{\cot^2(c+dx)\left(\frac{1}{2}\right.}{}$$

$$= -\frac{(Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4ad} - \frac{A\cot^2(c+}{}$$

$$= -\frac{(Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4ad} - \frac{A\cot^2(c+}{}$$

$$= -\frac{(Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4ad} - \frac{A\cot^2(c+}{}$$

$$= -\frac{(Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4ad} - \frac{A\cot^2(c+}{}$$

$$= \frac{\left(8a^2A+Ab^2-4abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d} - \frac{(Ab+4aB}{}$$

$$= \frac{\left(8a^2A+Ab^2-4abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}d} - \frac{\sqrt{a-ib}(A}{}$$

Mathematica [A] time = 4.6523, size = 271, normalized size = 1.24

$$\frac{\frac{\left(8a^2A-4abB+Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}} + \frac{\frac{4\left(-aAb+a\sqrt{-b^2}B+A\sqrt{-b^2}b+b^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{a-\sqrt{-b^2}}} - \frac{4\left(aAb+a\sqrt{-b^2}B+A\sqrt{-b^2}b+b^2(-B)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+\sqrt{-b^2}}}\right)}{\sqrt{a+\sqrt{-b^2}}}}{b}}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (((8*a^2*A + A*b^2 - 4*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/a^
(3/2) + ((4*(-(a*A*b) + A*b*Sqrt[-b^2] + b^2*B + a*Sqrt[-b^2]*B)*ArcTanh[Sq
rt[a + b*Tan[c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/Sqrt[a - Sqrt[-b^2]] - (4*(a*
A*b + A*b*Sqrt[-b^2] - b^2*B + a*Sqrt[-b^2]*B)*ArcTanh[Sqrt[a + b*Tan[c + d
*x]]/Sqrt[a + Sqrt[-b^2]]])/Sqrt[a + Sqrt[-b^2]] - (b*Cot[c + d*x]*(A*b + 4
*a*B + 2*a*A*Cot[c + d*x])*Sqrt[a + b*Tan[c + d*x]])/a)/b)/(4*d)
```

Maple [C] time = 1.935, size = 81276, normalized size = 371.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\cot^3(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*cot(c + d*x)**3, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.324 $\int \cot^4(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=279

$$\frac{(8a^2Ab+16a^3B+2ab^2B-Ab^3)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{5/2}d}+\frac{(8a^2A-2abB+Ab^2)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8a^2d}-\frac{\sqrt{a-}}{}$$

```
[Out] ((8*a^2*A*b - A*b^3 + 16*a^3*B + 2*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]
]/Sqrt[a]])/(8*a^(5/2)*d) - (Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan
[c + d*x]]/Sqrt[a - I*b]])/d + (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*
Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((8*a^2*A + A*b^2 - 2*a*b*B)*Cot[c + d*x]
*Sqrt[a + b*Tan[c + d*x]])/(8*a^2*d) - ((A*b + 6*a*B)*Cot[c + d*x]^2*Sqrt[a
 + b*Tan[c + d*x]])/(12*a*d) - (A*Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]])/
(3*d)
```

Rubi [A] time = 1.16793, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3608, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{(8a^2Ab+16a^3B+2ab^2B-Ab^3)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{5/2}d}+\frac{(8a^2A-2abB+Ab^2)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8a^2d}-\frac{\sqrt{a-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((8*a^2*A*b - A*b^3 + 16*a^3*B + 2*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]
]/Sqrt[a]])/(8*a^(5/2)*d) - (Sqrt[a - I*b]*(I*A + B)*ArcTanh[Sqrt[a + b*Tan
[c + d*x]]/Sqrt[a - I*b]])/d + (Sqrt[a + I*b]*(I*A - B)*ArcTanh[Sqrt[a + b*
Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((8*a^2*A + A*b^2 - 2*a*b*B)*Cot[c + d*x]
*Sqrt[a + b*Tan[c + d*x]])/(8*a^2*d) - ((A*b + 6*a*B)*Cot[c + d*x]^2*Sqrt[a
 + b*Tan[c + d*x]])/(12*a*d) - (A*Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]])/
(3*d)
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
```

```
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
```

```
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^4(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = -\frac{A\cot^3(c+dx)\sqrt{a+b\tan(c+dx)}}{3d} - \frac{1}{3}\int \frac{\cot^3(c+dx)\left(\frac{1}{2}\right.}{}$$

$$= -\frac{(Ab+6aB)\cot^2(c+dx)\sqrt{a+b\tan(c+dx)}}{12ad} - \frac{A\cot^3(c+}{}$$

$$= \frac{\left(8a^2A+Ab^2-2abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8a^2d} - \frac{(A}{}$$

$$= \frac{\left(8a^2A+Ab^2-2abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8a^2d} - \frac{(A}{}$$

$$= \frac{\left(8a^2A+Ab^2-2abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8a^2d} - \frac{(A}{}$$

$$= \frac{\left(8a^2A+Ab^2-2abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8a^2d} - \frac{(A}{}$$

$$= \frac{\left(8a^2Ab-Ab^3+16a^3B+2ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{5/2}d} +$$

$$= \frac{\left(8a^2Ab-Ab^3+16a^3B+2ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{5/2}d} -$$

Mathematica [B] time = 6.39186, size = 564, normalized size = 2.02

$$2b^4\left(-\frac{(aA-bB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{2a^{3/2}b^3} - \frac{3(aB+Ab)\left(\frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}} - \frac{\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ab}\right)}{8ab^2} + \frac{5A\left(\frac{3\left(\frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}} - \frac{\cot(c+dx)\sqrt{a+b}}{ab}\right.}{a}\right.}{48b}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*b^4*(((A*b + a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*b^
4) - ((a*A - b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(2*a^(3/2)*b^3
) + ((a*A*b - A*b*Sqrt[-b^2] - b^2*B - a*Sqrt[-b^2]*B)*ArcTanh[Sqrt[a + b*T
an[c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/(2*b^4*Sqrt[-b^2]*Sqrt[a - Sqrt[-b^2]])
 - ((a*A*b + A*b*Sqrt[-b^2] - b^2*B + a*Sqrt[-b^2]*B)*ArcTanh[Sqrt[a + b*Ta
n[c + d*x]]/Sqrt[a + Sqrt[-b^2]]])/(2*(-b^2)^(5/2)*Sqrt[a + Sqrt[-b^2]]) +
((a*A - b*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(2*a*b^4) - ((A*b + a*B
)*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(4*a*b^4) - (A*Cot[c + d*x]^3*Sq
rt[a + b*Tan[c + d*x]])/(6*b^4) - (3*(A*b + a*B)*(ArcTanh[Sqrt[a + b*Tan[c
+ d*x]]/Sqrt[a]]/a^(3/2) - (Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(a*b)))/
(8*a*b^2) + (5*A*((2*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(a*b^2) + (3*
(ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]]/a^(3/2) - (Cot[c + d*x]*Sqrt[a +
 b*Tan[c + d*x]])/(a*b)))/a))/(48*b)))/d
```

Maple [C] time = 2.46, size = 118304, normalized size = 424.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B \tan (c + dx)) \sqrt{a + b \tan (c + dx)} \cot^4 (c + dx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*cot(c + d*x)**4, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.325 $\int \tan^2(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=214

$$\frac{2(7Ab-2aB)(a+b\tan(c+dx))^{5/2}}{35b^2d}-\frac{2(aB+Ab)\sqrt{a+b\tan(c+dx)}}{d}+\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+\cdots}{\cdots}$$

```
[Out] ((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (2*(A*b + a*B)*Sqrt[a + b*Tan[c + d*x]])/d - (2*B*(a + b*Tan[c +
d*x])^(3/2))/(3*d) + (2*(7*A*b - 2*a*B)*(a + b*Tan[c + d*x])^(5/2))/(35*b^2
*d) + (2*B*Tan[c + d*x]*(a + b*Tan[c + d*x])^(5/2))/(7*b*d)
```

Rubi [A] time = 0.623399, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3607, 3630, 3528, 3539, 3537, 63, 208}

$$\frac{2(7Ab-2aB)(a+b\tan(c+dx))^{5/2}}{35b^2d}-\frac{2(aB+Ab)\sqrt{a+b\tan(c+dx)}}{d}+\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (2*(A*b + a*B)*Sqrt[a + b*Tan[c + d*x]])/d - (2*B*(a + b*Tan[c +
d*x])^(3/2))/(3*d) + (2*(7*A*b - 2*a*B)*(a + b*Tan[c + d*x])^(5/2))/(35*b^2
*d) + (2*B*Tan[c + d*x]*(a + b*Tan[c + d*x])^(5/2))/(7*b*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2B\tan(c+dx)(a+b\tan(c+dx))^{5/2}}{7bd} + \frac{2\int(a+b\tan(c+$$

$$= \frac{2(7Ab-2aB)(a+b\tan(c+dx))^{5/2}}{35b^2d} + \frac{2B\tan(c+dx)(a+}{7bd}$$

$$= -\frac{2B(a+b\tan(c+dx))^{3/2}}{3d} + \frac{2(7Ab-2aB)(a+b\tan(c+}{35b^2d}$$

$$= -\frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2B(a+b\tan(c+dx))^3}{3d}$$

$$= -\frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2B(a+b\tan(c+dx))^3}{3d}$$

$$= -\frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2B(a+b\tan(c+dx))^3}{3d}$$

$$= -\frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2B(a+b\tan(c+dx))^3}{3d}$$

$$= \frac{(a-ib)^{3/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{(a+ib)^{3/2}(iA}{}$$

Mathematica [A] time = 2.38791, size = 252, normalized size = 1.18

$$\frac{\frac{2(7Ab-2aB)(a+b\tan(c+dx))^{5/2}}{b} + \frac{35}{3}b(A-iB)\left(3\sqrt{a-ib}(b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right) - i\sqrt{a+b\tan(c+dx)}(4a+b\tan(c+dx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((2*(7*A*b - 2*a*B)*(a + b*Tan[c + d*x])^(5/2))/b + 10*B*Tan[c + d*x]*(a +
b*Tan[c + d*x])^(5/2) + (35*b*(A - I*B)*(3*Sqrt[a - I*b]*(I*a + b)*ArcTanh[
Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] - I*Sqrt[a + b*Tan[c + d*x]]*(4*a -
```

```
(3*I)*b + b*Tan[c + d*x]))/3 + (35*b*(A + I*B)*(3*Sqrt[a + I*b]*((-I)*a +
b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + I*Sqrt[a + b*Tan[c +
d*x]]*(4*a + (3*I)*b + b*Tan[c + d*x])))/3)/(35*b*d)
```

Maple [B] time = 0.111, size = 1729, normalized size = 8.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+
c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a-1/4
/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(
a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)+1/2/d*ln(b*
tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)
^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*B*a^2+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*B*a^2+1/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b
*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1
/2)-1/2/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x
+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-2/5/d/b^2*B*(a+b*t
an(d*x+c))^(5/2)*a-1/4/d*b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4
/d*b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/d*b^2/(2*(a^2+b^2)^(1/2
)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/d*b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*ar
ctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^
(1/2)-2*a)^(1/2))*B+2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2
)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*A*a-1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1
/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1
/2)-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)
*a+1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*
x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/d/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)
^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a-1/4/d/b*ln(b*tan
```

```
(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1
/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)-2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*A*a+2/7/d/b^2*B*(a+b*tan(d*x+c))^(7/2)-2/d*B*a*(a+b*ta
n(d*x+c))^(1/2)+2/5/d/b*A*(a+b*tan(d*x+c))^(5/2)-2/d*b*A*(a+b*tan(d*x+c))^(
1/2)+1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a
-2/3*B*(a+b*tan(d*x+c))^(3/2)/d
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B \tan (c + dx)) (a + b \tan (c + dx))^{\frac{3}{2}} \tan^2 (c + dx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(3/2)*tan(c + d*x)**2,
x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.326 $\int \tan(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=175

$$\frac{2(aA-bB)\sqrt{a+b\tan(c+dx)}}{d}-\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

```
[Out] -(((a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) - ((a + I*b)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(a*A - b*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*A*(a + b*Tan[c
 + d*x])^(3/2))/(3*d) + (2*B*(a + b*Tan[c + d*x])^(5/2))/(5*b*d)
```

Rubi [A] time = 0.377947, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3592, 3528, 3539, 3537, 63, 208}

$$\frac{2(aA-bB)\sqrt{a+b\tan(c+dx)}}{d}-\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) - ((a + I*b)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(a*A - b*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*A*(a + b*Tan[c
 + d*x])^(3/2))/(3*d) + (2*B*(a + b*Tan[c + d*x])^(5/2))/(5*b*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
```

```
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2B(a+b\tan(c+dx))^{5/2}}{5bd} + \int(-B+A\tan(c+dx))(a+b\,\mathrm{t}$$

$$= \frac{2A(a+b\tan(c+dx))^{3/2}}{3d} + \frac{2B(a+b\tan(c+dx))^{5/2}}{5bd} + \int$$

$$= \frac{2(aA-bB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2A(a+b\tan(c+dx))^{3/2}}{3d}$$

$$= \frac{2(aA-bB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2A(a+b\tan(c+dx))^{3/2}}{3d}$$

$$= \frac{2(aA-bB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2A(a+b\tan(c+dx))^{3/2}}{3d}$$

$$= \frac{2(aA-bB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2A(a+b\tan(c+dx))^{3/2}}{3d}$$

$$= -\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{(a+ib)^{3/2}(A}{}$$

Mathematica [A] time = 1.28854, size = 192, normalized size = 1.1

$$\frac{5(A-iB)\left(\sqrt{a+b\tan(c+dx)}(4a+b\tan(c+dx)-3ib)-3(a-ib)^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)\right)+5(A+iB)\left(\sqrt{a+b\tan(}\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((6*B*(a + b*Tan[c + d*x])^(5/2))/b + 5*(A - I*B)*(-3*(a - I*b)^(3/2)*ArcTa
nh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] + Sqrt[a + b*Tan[c + d*x]]*(4*a
- (3*I)*b + b*Tan[c + d*x])) + 5*(A + I*B)*(-3*(a + I*b)^(3/2)*ArcTanh[Sqrt
[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + Sqrt[a + b*Tan[c + d*x]]*(4*a + (3*I)
*b + b*Tan[c + d*x])))/(15*d)
```

Maple [B] time = 0.107, size = 1686, normalized size = 9.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/5*B*(a+b*tan(d*x+c))^(5/2)/b/d+2/3*A*(a+b*tan(d*x+c))^(3/2)/d+2/d*A*(a+b*
tan(d*x+c))^(1/2)*a-2*b*B*(a+b*tan(d*x+c))^(1/2)/d+1/4*b/d*ln(b*tan(d*x+c)+
a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(
2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)*(a^2+b^2)^(1/2)+1/2/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1
/4/b/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)
-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/d/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/
2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2-b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)+2*b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*a
rctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)
^(1/2)-2*a)^(1/2))*B*a-b^2/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*t
an(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2))*A+b^2/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(
1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/4*b/d*ln(
(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^
2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/b/d*ln(b*tan(d*x+c)+a+(a+b*ta
n(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arc
tan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(
1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)*a+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arct
an((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2))*A*a^2+b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(
d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*B*(a^2+b^2)^(1/2)-2*b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d
*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
B*a+1/4/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-1/2/
d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a
^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/b/d*ln(b*tan(d*x+c)+a+
(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*
(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/4/b/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)*(a^2+b^2)^(1/2)*a+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*A*(a^2+b^2)^(1/2)*a
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\tan(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*tan(d*x + c), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A+B\tan(c+dx))\,(a+b\tan(c+dx))^{\frac{3}{2}}\tan(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(3/2)*tan(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.327 $\int (a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=150

$$\frac{2(aB+Ab)\sqrt{a+b\tan(c+dx)}}{d}-\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{(a+ib)^{3/2}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

```
[Out] -(((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) + ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(A*b + a*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*B*(a + b*Tan[c
 + d*x])^(3/2))/(3*d)
```

Rubi [A] time = 0.312391, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3528, 3539, 3537, 63, 208}

$$\frac{2(aB+Ab)\sqrt{a+b\tan(c+dx)}}{d}-\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{(a+ib)^{3/2}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) + ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(A*b + a*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*B*(a + b*Tan[c
 + d*x])^(3/2))/(3*d)
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
```

```
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int (a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2B(a+b\tan(c+dx))^{3/2}}{3d} + \int \sqrt{a+b\tan(c+dx)}(aA-bB+(Ab+a$$

$$= \frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3d} + \int \frac{a^2A}{}$$

$$= \frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3d} + \frac{1}{2}\Big((a-$$

$$= \frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3d} - \frac{\Big((a+ib)}{}$$

$$= \frac{2(Ab+aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2B(a+b\tan(c+dx))^{3/2}}{3d} - \frac{\Big((a-ib)}{}$$

$$= -\frac{(a-ib)^{3/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} + \frac{(a+ib)^{3/2}(iA-B)\tan}{d}$$

Mathematica [A] time = 0.482307, size = 140, normalized size = 0.93

$$\frac{2\sqrt{a+b\tan(c+dx)}(4aB+3Ab+bB\tan(c+dx))-3i(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)+3i(a+ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-3*I)*(a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a -
 I*b]] + (3*I)*(a + I*b)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a + I*b]] + 2*Sqrt[a + b*Tan[c + d*x]]*(3*A*b + 4*a*B + b*B*Tan[c + d*x
]))/(3*d)
```

Maple [B] time = 0.088, size = 1665, normalized size = 11.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/d*b*A*(a+b*tan(d*x+c))^(1/2)+2/d*B*a*(a+b*tan(d*x+c))^(1/2)-1/d*b^2/(2*(a
^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2
)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/d*b^2/(2*(a^2+b^2)^(1/2)-2
*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(
2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*A*(a^2+b^2)^(1/2)-2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2))*A*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2
)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2
+1/4/d*b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+
c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d*b*ln(b*tan(d*x+
c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*
A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2
*a)^(1/2)*a^2-1/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^
(1/2)+1/2/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d
*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+2/d*b/(2*(a^2+b^
```

```
2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a
)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/
2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)
^(1/2)*a^2+1/4/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2
)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/
2)-1/2/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/d*b/(2*(a^2+b^2)^
(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(
1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)+1/4/d/b*ln((a+b*tan(
d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))
*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a+1/d/(2*(a^2+b^2)^(1/2)-2
*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(
2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a-1/4/d/b*ln(b*tan(d*x+c)+a
+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^
2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a+2/3*B*(a+b*tan(d*x+c))^(3/2)/d
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx)) (a + b\tan(c + dx))^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(3/2), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.328 $\int \cot(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=152

$$-\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{(a+ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

```
[Out] (-2*a^(3/2)*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d + ((a - I*b)^(3/
2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b
)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + (2*b
*B*Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 0.639844, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3607, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{(a+ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^(3/2)*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d + ((a - I*b)^(3/
2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b
)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + (2*b
*B*Sqrt[a + b*Tan[c + d*x]])/d
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
```

```
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
```

```
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{2bB\sqrt{a+b\tan(c+dx)}}{d} + 2\int \frac{\cot(c+dx)\left(\frac{a^2A}{2}+\frac{1}{2}\left(2aA\right.\right.}{}$$

$$= \frac{2bB\sqrt{a+b\tan(c+dx)}}{d} + 2\int \frac{\frac{1}{2}\left(2aAb+a^2B-b^2B\right)-\frac{1}{2}}{\sqrt{a+b}}$$

$$= \frac{2bB\sqrt{a+b\tan(c+dx)}}{d} - \frac{1}{2}\left((a+ib)^2(iA-B)\right)\int \frac{1-i\,t}{\sqrt{a+b}}$$

$$= \frac{2bB\sqrt{a+b\tan(c+dx)}}{d} + \frac{\left(2a^2A\right)\text{Subst}\left(\int \frac{1}{-\frac{a}{b}+\frac{x^2}{b}}\,dx, x,\right.}{bd}$$

$$= -\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{2bB\sqrt{a+b\tan(c+dx}}{d}$$

$$= -\frac{2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{(a-ib)^{3/2}(A-iB)\tan}{d}$$

Mathematica [A] time = 0.334605, size = 144, normalized size = 0.95

$$\frac{-2a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)+(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)+(a+ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a^(3/2)*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]] + (a - I*b)^(3/2)*(
A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] + (a + I*b)^(3/2)*
(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + 2*b*B*Sqrt[a +
b*Tan[c + d*x]])/d
```

Maple [C] time = 1.837, size = 41721, normalized size = 274.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))^{\frac{3}{2}}\cot(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(3/2)*cot(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.329 $\int \cot^2(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=169

$$\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a}(2aB+3Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}-\frac{(a+ib)^{3/2}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

```
[Out] -((Sqrt[a]*(3*A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d) +
((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (a*A*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 0.634864, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3605, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{\sqrt{a}(2aB+3Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}-\frac{(a+ib)^{3/2}(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((Sqrt[a]*(3*A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d) +
((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (a*A*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/d
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
```

```
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d}+\int \frac{\cot(c+dx)\left(\frac{1}{2}a(\right.}{}$$

$$= -\frac{aA\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d}+\frac{1}{2}(a(3Ab+2aB))\int$$

$$= -\frac{aA\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d}-\frac{1}{2}\left((a-ib)^2(A-iB\right.$$

$$= -\frac{aA\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d}+\frac{\left((a+ib)^2(iA-B)\right)}{}$$

$$= -\frac{\sqrt{a}(3Ab+2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}-\frac{aA\cot(c+dx}{}$$

$$= -\frac{\sqrt{a}(3Ab+2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{(a-ib)^{3/2}(iA}{}$$

Mathematica [A] time = 0.551515, size = 282, normalized size = 1.67

$$\frac{(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)-\sqrt{a}(2aB+3Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)+Ab\sqrt{a+ib}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-(Sqrt[a]*(3*A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]]) + (a
- I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] - I*
a*A*Sqrt[a + I*b]*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + A*Sqrt[
a + I*b]*b*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + a*Sqrt[a + I*b
]*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + I*Sqrt[a + I*b]*b*B*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] - a*A*Cot[c + d*x]*Sqrt[a +
```

```
b*Tan[c + d*x]])/d
```

Maple [C] time = 1.714, size = 69532, normalized size = 411.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.330 $\int \cot^3(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=219

$$\frac{(8a^2A-12abB-3Ab^2)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d}-\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{3/2}(A+iB)\tanh}{d}$$

```
[Out] ((8*a^2*A - 3*A*b^2 - 12*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/
(4*Sqrt[a]*d) - ((a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]
/Sqrt[a - I*b]])/d - ((a + I*b)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c +
d*x]]/Sqrt[a + I*b]])/d - ((5*A*b + 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c +
d*x]])/(4*d) - (a*A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(2*d)
```

Rubi [A] time = 0.963541, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3605, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{(8a^2A-12abB-3Ab^2)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d}-\frac{(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{3/2}(A+iB)\tanh}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((8*a^2*A - 3*A*b^2 - 12*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/
(4*Sqrt[a]*d) - ((a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]
/Sqrt[a - I*b]])/d - ((a + I*b)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c +
d*x]]/Sqrt[a + I*b]])/d - ((5*A*b + 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c +
d*x]])/(4*d) - (a*A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(2*d)
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
```

```
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^3(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)\sqrt{a+b\tan(c+dx)}}{2d} + \frac{1}{2}\int \frac{\cot^2(c+dx)}{\ldots}$$

$$= -\frac{(5Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d} - \frac{aA\cot^2(c \ldots}{\ldots}$$

$$= -\frac{(5Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d} - \frac{aA\cot^2(c \ldots}{\ldots}$$

$$= -\frac{(5Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d} - \frac{aA\cot^2(c \ldots}{\ldots}$$

$$= -\frac{(5Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d} - \frac{aA\cot^2(c \ldots}{\ldots}$$

$$= \frac{\left(8a^2A-3Ab^2-12abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d} - \frac{(5Ab+ \ldots}{\ldots}$$

$$= \frac{\left(8a^2A-3Ab^2-12abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}d} - \frac{(a-ib) \ldots}{\ldots}$$

Mathematica [A] time = 2.42674, size = 195, normalized size = 0.89

$$\frac{\left(8a^2A-12abB-3Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)-\sqrt{a}\left(4(a-ib)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)+4(a+ib)^{3/2}(A+iB)\,\mathrm{t}\ldots\right.}{4\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((8*a^2*A - 3*A*b^2 - 12*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]] -
 Sqrt[a]*(4*(a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt
[a - I*b]] + 4*(a + I*b)^(3/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a + I*b]] + Cot[c + d*x]*(5*A*b + 4*a*B + 2*a*A*Cot[c + d*x])*Sqrt[a +
b*Tan[c + d*x]]))/(4*Sqrt[a]*d)
```

Maple [C] time = 2.227, size = 102706, normalized size = 469.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.331 $\int \cot^4(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=278

$$\frac{\left(24a^2Ab+16a^3B-6ab^2B+Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{3/2}d}+\frac{\left(8a^2A-10abB-Ab^2\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8ad}-\ldots$$

```
[Out] ((24*a^2*A*b + A*b^3 + 16*a^3*B - 6*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x
]]/Sqrt[a]])/(8*a^(3/2)*d) - ((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*
Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a
 + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((8*a^2*A - A*b^2 - 10*a*b*B)*Cot[c
+ d*x]*Sqrt[a + b*Tan[c + d*x]])/(8*a*d) - ((7*A*b + 6*a*B)*Cot[c + d*x]^2*
Sqrt[a + b*Tan[c + d*x]])/(12*d) - (a*A*Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d
*x]])/(3*d)
```

Rubi [A] time = 1.31489, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3605, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{\left(24a^2Ab+16a^3B-6ab^2B+Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{3/2}d}+\frac{\left(8a^2A-10abB-Ab^2\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8ad}-\ldots$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((24*a^2*A*b + A*b^3 + 16*a^3*B - 6*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x
]]/Sqrt[a]])/(8*a^(3/2)*d) - ((a - I*b)^(3/2)*(I*A + B)*ArcTanh[Sqrt[a + b*
Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b)^(3/2)*(I*A - B)*ArcTanh[Sqrt[a
 + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((8*a^2*A - A*b^2 - 10*a*b*B)*Cot[c
+ d*x]*Sqrt[a + b*Tan[c + d*x]])/(8*a*d) - ((7*A*b + 6*a*B)*Cot[c + d*x]^2*
Sqrt[a + b*Tan[c + d*x]])/(12*d) - (a*A*Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d
*x]])/(3*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
```

```
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
```

```
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^4(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)\sqrt{a+b\tan(c+dx)}}{3d} + \frac{1}{3}\int \frac{\cot^3(c+dx)}{}$$

$$= -\frac{(7Ab+6aB)\cot^2(c+dx)\sqrt{a+b\tan(c+dx)}}{12d} - \frac{aA\cot^3(}{}$$

$$= \frac{\left(8a^2A-Ab^2-10abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8ad} - \frac{(}{}$$

$$= \frac{\left(8a^2A-Ab^2-10abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8ad} - \frac{(}{}$$

$$= \frac{\left(8a^2A-Ab^2-10abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8ad} - \frac{(}{}$$

$$= \frac{\left(8a^2A-Ab^2-10abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8ad} - \frac{(}{}$$

$$= \frac{\left(24a^2Ab+Ab^3+16a^3B-6ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{3/2}d}$$

$$= \frac{\left(24a^2Ab+Ab^3+16a^3B-6ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8a^{3/2}d}$$

Mathematica [A] time = 5.47373, size = 241, normalized size = 0.87

$$\frac{3\left(24a^2Ab+16a^3B-6ab^2B+Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt{a}\left(-\cot(c+dx)\sqrt{a+b\tan(c+dx)}\left(8a^2A\cot^2(c+dx)-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*(24*a^2*A*b + A*b^3 + 16*a^3*B - 6*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c + d
*x]]/Sqrt[a]] + Sqrt[a]*((-24*I)*a*(a - I*b)^(3/2)*(A - I*B)*ArcTanh[Sqrt[a
 + b*Tan[c + d*x]]/Sqrt[a - I*b]] + (24*I)*a*(a + I*b)^(3/2)*(A + I*B)*ArcT
anh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] - Cot[c + d*x]*(-24*a^2*A + 3*A
*b^2 + 30*a*b*B + 2*a*(7*A*b + 6*a*B)*Cot[c + d*x] + 8*a^2*A*Cot[c + d*x]^2
)*Sqrt[a + b*Tan[c + d*x]]))/(24*a^(3/2)*d)
```

Maple [C] time = 2.825, size = 145176, normalized size = 522.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.332 $\int \tan^2(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=252

$$-\frac{2\left(a^2B+2aAb-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2(9Ab-2aB)(a+b\tan(c+dx))^{7/2}}{63b^2d}-\frac{2(aB+Ab)(a+b\tan(c+dx))^{3/2}}{3d}+$$

```
[Out] ((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (2*(2*a*A*b + a^2*B - b^2*B)*Sqrt[a + b*Tan[c + d*x]])/d - (2*(A*
b + a*B)*(a + b*Tan[c + d*x])^(3/2))/(3*d) - (2*B*(a + b*Tan[c + d*x])^(5/2
))/(5*d) + (2*(9*A*b - 2*a*B)*(a + b*Tan[c + d*x])^(7/2))/(63*b^2*d) + (2*B
*Tan[c + d*x]*(a + b*Tan[c + d*x])^(7/2))/(9*b*d)
```

Rubi [A] time = 0.769154, antiderivative size = 252, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3607, 3630, 3528, 3539, 3537, 63, 208}

$$-\frac{2\left(a^2B+2aAb-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2(9Ab-2aB)(a+b\tan(c+dx))^{7/2}}{63b^2d}-\frac{2(aB+Ab)(a+b\tan(c+dx))^{3/2}}{3d}+$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (2*(2*a*A*b + a^2*B - b^2*B)*Sqrt[a + b*Tan[c + d*x]])/d - (2*(A*
b + a*B)*(a + b*Tan[c + d*x])^(3/2))/(3*d) - (2*B*(a + b*Tan[c + d*x])^(5/2
))/(5*d) + (2*(9*A*b - 2*a*B)*(a + b*Tan[c + d*x])^(7/2))/(63*b^2*d) + (2*B
*Tan[c + d*x]*(a + b*Tan[c + d*x])^(7/2))/(9*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
```

```
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2B\tan(c+dx)(a+b\tan(c+dx))^{7/2}}{9bd} + \frac{2\int(a+b\tan(c\ldots}{}$$

$$= \frac{2(9Ab-2aB)(a+b\tan(c+dx))^{7/2}}{63b^2d} + \frac{2B\tan(c+dx)(a\ldots}{9\ldots}$$

$$= -\frac{2B(a+b\tan(c+dx))^{5/2}}{5d} + \frac{2(9Ab-2aB)(a+b\tan(c\ldots}{63b^2d}$$

$$= -\frac{2(Ab+aB)(a+b\tan(c+dx))^{3/2}}{3d} - \frac{2B(a+b\tan(c+d\ldots}{5d}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2(Ab+aB\ldots}{}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2(Ab+aB\ldots}{}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2(Ab+aB\ldots}{}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} - \frac{2(Ab+aB\ldots}{}$$

$$= \frac{(a-ib)^{5/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{(a+ib)^{5/2}(i\ldots}{}$$

Mathematica [A] time = 4.45579, size = 296, normalized size = 1.17

$$\frac{\frac{2(9Ab-2aB)(a+b\tan(c+dx))^{7/2}}{b} - \frac{63}{2}ib(A-iB)\left(\frac{2}{5}(a+b\tan(c+dx))^{5/2} + \frac{2}{3}(a-ib)\left(\sqrt{a+b\tan(c+dx)}(4a+b\tan(c+dx)-3\ldots\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((2*(9*A*b - 2*a*B)*(a + b*Tan[c + d*x])^(7/2))/b + 14*B*Tan[c + d*x]*(a +
b*Tan[c + d*x])^(7/2) - ((63*I)/2)*b*(A - I*B)*((2*(a + b*Tan[c + d*x])^(5/
2))/5 + (2*(a - I*b)*(-3*(a - I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a - I*b]] + Sqrt[a + b*Tan[c + d*x]]*(4*a - (3*I)*b + b*Tan[c + d*x])))
/3) + ((63*I)/2)*b*(A + I*B)*((2*(a + b*Tan[c + d*x])^(5/2))/5 + (2*(a + I*
b)*(-3*(a + I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + Sq
rt[a + b*Tan[c + d*x]]*(4*a + (3*I)*b + b*Tan[c + d*x])))/3))/(63*b*d)
```

Maple [B] time = 0.12, size = 2469, normalized size = 9.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -2/3/d*B*(a+b*tan(d*x+c))^(3/2)*a-2/d*B*a^2*(a+b*tan(d*x+c))^(1/2)+2/d*b^2*
B*(a+b*tan(d*x+c))^(1/2)+2/7/d/b*A*(a+b*tan(d*x+c))^(7/2)-2/3/d*b*A*(a+b*ta
n(d*x+c))^(3/2)-1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+3/
4/d*b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/d/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a^2+1/4/d/b*ln((a+b*tan(d
*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*
A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+2/9/d/b^2*B*(a+b*tan(d*x+c))^(9/2)-2/d*
b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+
b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)*a+1/4
/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a^2+2/d*b
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2
)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)*a-1/4/
d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-
(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a^2+1/d/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*ta
n(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3+3/4/d*ln(b*tan(d*x+c)
+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-2/7/d/b^2*B*(a+b*tan(d*x+c))^(7/2)*a-4/d*
b*A*a*(a+b*tan(d*x+c))^(1/2)-1/4/d*b^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(
1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)+1/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(
1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1/4/d*
```

```
b^2*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-
(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/d*b^3/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
(2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*B*a^3-3/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1
/4/d*b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)
-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)+3/d*b/(
2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*t
an(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+1/d*b^2/(2*(a^2+b^2)
^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^
(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)-3/d*b^2/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))
^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a+1/2/d*ln((a+b*tan(d*x+c))^(1/2)*
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2
)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arct
an(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a^2-1/4/d*b*ln(b*tan(d*x+c)+a+(a+b*tan(d*
x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-3/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
(2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*A*a^2-3/4/d*b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1
/2/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a-1/d*b^2
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2
)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)+3/d*b^
2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^
2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a-2/5*B*(a+b*tan(d*x+
c))^(5/2)/d
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B \tan (c + dx)) (a + b \tan (c + dx))^{\frac{5}{2}} \tan^2 (c + dx) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(5/2)*tan(c + d*x)**2,
x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.333 $\int \tan(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=213

$$\frac{2\left(a^2A-2abB-Ab^2\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2(aA-bB)(a+b\tan(c+dx))^{3/2}}{3d}-\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+d}}{\sqrt{a-ib}}\right.}{d}$$

```
[Out] -(((a - I*b)^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) - ((a + I*b)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(a^2*A - A*b^2 - 2*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*
(a*A - b*B)*(a + b*Tan[c + d*x])^(3/2))/(3*d) + (2*A*(a + b*Tan[c + d*x])^(
5/2))/(5*d) + (2*B*(a + b*Tan[c + d*x])^(7/2))/(7*b*d)
```

Rubi [A] time = 0.530812, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3592, 3528, 3539, 3537, 63, 208}

$$\frac{2\left(a^2A-2abB-Ab^2\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2(aA-bB)(a+b\tan(c+dx))^{3/2}}{3d}-\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+d}}{\sqrt{a-ib}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((a - I*b)^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) - ((a + I*b)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(a^2*A - A*b^2 - 2*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*
(a*A - b*B)*(a + b*Tan[c + d*x])^(3/2))/(3*d) + (2*A*(a + b*Tan[c + d*x])^(
5/2))/(5*d) + (2*B*(a + b*Tan[c + d*x])^(7/2))/(7*b*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2B(a+b\tan(c+dx))^{7/2}}{7bd} + \int(-B+A\tan(c+dx))(a+b$$

$$= \frac{2A(a+b\tan(c+dx))^{5/2}}{5d} + \frac{2B(a+b\tan(c+dx))^{7/2}}{7bd} + \int$$

$$= \frac{2(aA-bB)(a+b\tan(c+dx))^{3/2}}{3d} + \frac{2A(a+b\tan(c+dx)}{5d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(aA-bB)(}{}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(aA-bB)(}{}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(aA-bB)(}{}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(aA-bB)(}{}$$

$$= -\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{(a+ib)^{5/2}(}{}$$

Mathematica [A] time = 1.58262, size = 258, normalized size = 1.21

$$-7i(B+iA)\left(\frac{2}{5}(a+b\tan(c+dx))^{5/2}+\frac{2}{3}(a-ib)\left(\sqrt{a+b\tan(c+dx)}(4a+b\tan(c+dx)-3ib)-3(a-ib)^{3/2}\tanh^{-1}\left(\sqrt{\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((4*B*(a + b*Tan[c + d*x])^(7/2))/b - (7*I)*(I*A + B)*((2*(a + b*Tan[c + d*
x])^(5/2))/5 + (2*(a - I*b)*(-3*(a - I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c +
d*x]]/Sqrt[a - I*b]] + Sqrt[a + b*Tan[c + d*x]]*(4*a - (3*I)*b + b*Tan[c +
d*x])))/3) - (7*I)*(I*A - B)*((2*(a + b*Tan[c + d*x])^(5/2))/5 + (2*(a + I*
b)*(-3*(a + I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + Sq
rt[a + b*Tan[c + d*x]]*(4*a + (3*I)*b + b*Tan[c + d*x])))/3))/(14*d)
```

Maple [B] time = 0.108, size = 2426, normalized size = 11.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(tan(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)

[Out] -4*b/d*B*a*(a+b*tan(d*x+c))^(1/2)+b^3/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^3+3/4/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-3/4/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^3-1/4*b^2/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4*b^2/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b^3/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+2/d*A*(a+b*tan(d*x+c))^(1/2)*a^2-2*b^2/d*A*(a+b*tan(d*x+c))^(1/2)+2/3/d*A*(a+b*tan(d*x+c))^(3/2)*a+2/7*B*(a+b*tan(d*x+c))^(7/2)/b/d-2/3*b*B*(a+b*tan(d*x+c))^(3/2)/d-2*b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a-1/4/b/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a^2+2*b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)*a+1/4/b/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a^2+1/4/b/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/4*b/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)+3/4*b/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/b/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+3*b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-3*b^2/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a-3*b/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+b^2/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*

```
tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2))*A*(a^2+b^2)^(1/2)*a^2+1/2/d*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(
2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/
2)*(a^2+b^2)^(1/2)*a+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
A*(a^2+b^2)^(1/2)*a^2-1/2/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a
^2+b^2)^(1/2)*a-b^2/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1
/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(
a^2+b^2)^(1/2)+3*b^2/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(
1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*
a+1/4*b/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x
+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-3/4*
b/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-
(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+2/5*A*(a+b*tan(d*x+c))^(
5/2)/d
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))^{\frac{5}{2}}\tan(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(5/2)*tan(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.334 $\int (a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=188

$$\frac{2\left(a^2B+2aAb-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2(aB+Ab)(a+b\tan(c+dx))^{3/2}}{3d}-\frac{(a-ib)^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+}}{\sqrt{a-ib}}\right.}{d}$$

```
[Out] -(((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) + ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(2*a*A*b + a^2*B - b^2*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*
(A*b + a*B)*(a + b*Tan[c + d*x])^(3/2))/(3*d) + (2*B*(a + b*Tan[c + d*x])^(
5/2))/(5*d)
```

Rubi [A] time = 0.424974, antiderivative size = 188, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3528, 3539, 3537, 63, 208}

$$\frac{2\left(a^2B+2aAb-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2(aB+Ab)(a+b\tan(c+dx))^{3/2}}{3d}-\frac{(a-ib)^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+}}{\sqrt{a-ib}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]
])/d) + ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/d + (2*(2*a*A*b + a^2*B - b^2*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*
(A*b + a*B)*(a + b*Tan[c + d*x])^(3/2))/(3*d) + (2*B*(a + b*Tan[c + d*x])^(
5/2))/(5*d)
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
```

```
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int (a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2B(a+b\tan(c+dx))^{5/2}}{5d} + \int (a+b\tan(c+dx))^{3/2}(aA-bB+(Ab+$$

$$= \frac{2(Ab+aB)(a+b\tan(c+dx))^{3/2}}{3d} + \frac{2B(a+b\tan(c+dx))^{5/2}}{5d} + \int \sqrt{a$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(Ab+aB)(a+b\tan(c}{3d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(Ab+aB)(a+b\tan(c}{3d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(Ab+aB)(a+b\tan(c}{3d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2(Ab+aB)(a+b\tan(c}{3d}$$

$$= -\frac{(a-ib)^{5/2}(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} + \frac{(a+ib)^{5/2}(iA-B)\tan}{d}$$

Mathematica [A] time = 1.05411, size = 233, normalized size = 1.24

$$\frac{i\left((A-iB)\left(\frac{2}{5}(a+b\tan(c+dx))^{5/2}+\frac{2}{3}(a-ib)\left(\sqrt{a+b\tan(c+dx)}(4a+b\tan(c+dx)-3ib)-3(a-ib)^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+}}{}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((I/2)*((A - I*B)*((2*(a + b*Tan[c + d*x])^(5/2))/5 + (2*(a - I*b)*(-3*(a -
 I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] + Sqrt[a + b*Ta
n[c + d*x]]*(4*a - (3*I)*b + b*Tan[c + d*x])))/3) - (A + I*B)*((2*(a + b*Ta
n[c + d*x])^(5/2))/5 + (2*(a + I*b)*(-3*(a + I*b)^(3/2)*ArcTanh[Sqrt[a + b*
Tan[c + d*x]]/Sqrt[a + I*b]] + Sqrt[a + b*Tan[c + d*x]]*(4*a + (3*I)*b + b*
Tan[c + d*x])))/3)))/d
```

Maple [B] time = 0.08, size = 2405, normalized size = 12.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)

[Out] 2/3/d*B*(a+b*tan(d*x+c))^(3/2)*a+2/d*B*a^2*(a+b*tan(d*x+c))^(1/2)-2/d*b^2*B
*(a+b*tan(d*x+c))^(1/2)+2/3/d*b*A*(a+b*tan(d*x+c))^(3/2)+1/4/d/b*ln(b*tan(d
*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2
))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-3/4/d*b*ln(b*tan(d*x+c)+a+(a+b*tan(d
x+c))^(1/2)(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^
(1/2)+2*a)^(1/2)*a-1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x
+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*
(a^2+b^2)^(1/2)*a^2-1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^
3+2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)
*a-1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)
^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a^2
-2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a
^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*(a^2+b^2)^(1/2)*
a+1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x
+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a^2-
1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(
a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3-3/4/d*ln(b*tan(
d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/
2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+4/d*b*A*a*(a+b*tan(d*x+c))^(1/2)+1/
4/d*b^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1
/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/d*b^3/(2*(a^2+b^2)^(
1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1
/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/4/d*b^2*ln((a+b*tan(d*x+c))^(1/2)*(
2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)+1/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2
)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
A+1/d/(2(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a
^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3+3/4/d*ln((a+
b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^
(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/4/d*b*ln((a+b*tan(d*x+c))^(1/2
)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-3/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*ar
ctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^
(1/2)-2*a)^(1/2))*A*a^2-1/d*b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a
^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^
(1/2))*B*(a^2+b^2)^(1/2)+3/d*b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(
a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)
^(1/2))*B*a-1/2/d*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b

```
*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1
/2)*a+1/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/
2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/
2)*a^2+1/4/d*b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)
+3/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a
^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+3/4/d*b*ln((
a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2
)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/2/d*ln(b*tan(d*x+c)+a+(a+b*tan
(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2
)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)*a+1/d*b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))*B*(a^2+b^2)^(1/2)-3/d*b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*B*a+2/5*B*(a+b*tan(d*x+c))^(5/2)/d
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan (c + dx)) (a + b\tan (c + dx))^{\frac{5}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(5/2), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.335 $\int \cot(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=182

$$-\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2b(2aB+Ab)\sqrt{a+b\tan(c+dx)}}{d}+\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{(a\ \cdots}{}$$

```
[Out] (-2*a^(5/2)*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d + ((a - I*b)^(5/
2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b
)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + (2*b
*(A*b + 2*a*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*b*B*(a + b*Tan[c + d*x])^(3
/2))/(3*d)
```

Rubi [A] time = 0.84733, antiderivative size = 182, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3607, 3647, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{2b(2aB+Ab)\sqrt{a+b\tan(c+dx)}}{d}+\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}+\frac{(a\ \cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*a^(5/2)*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d + ((a - I*b)^(5/
2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b
)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + (2*b
*(A*b + 2*a*B)*Sqrt[a + b*Tan[c + d*x]])/d + (2*b*B*(a + b*Tan[c + d*x])^(3
/2))/(3*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{2bB(a+b\tan(c+dx))^{3/2}}{3d} + \frac{2}{3}\int \cot(c+dx)\sqrt{a+b\tan(}$$

$$= \frac{2b(Ab+2aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2bB(a+b\tan(c+dx}{3d}$$

$$= \frac{2b(Ab+2aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2bB(a+b\tan(c+dx}{3d}$$

$$= \frac{2b(Ab+2aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2bB(a+b\tan(c+dx}{3d}$$

$$= \frac{2b(Ab+2aB)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2bB(a+b\tan(c+dx}{3d}$$

$$= -\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{2b(Ab+2aB)\sqrt{a+b\,\mathrm{t}}}{d}$$

$$= -\frac{2a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{(a-ib)^{5/2}(A-iB)\tan}{d}$$

Mathematica [A] time = 1.10937, size = 177, normalized size = 0.97

$$\frac{2\left(-3a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)+3b(2aB+Ab)\sqrt{a+b\tan(c+dx)}+\frac{3}{2}(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)+\frac{3}{2}(\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*(-3*a^(5/2)*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]] + (3*(a - I*b)^(
5/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/2 + (3*(a +
 I*b)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/2 +
3*b*(A*b + 2*a*B)*Sqrt[a + b*Tan[c + d*x]] + b*B*(a + b*Tan[c + d*x])^(3/2)
))/(3*d)
```

Maple [C] time = 3.712, size = 55566, normalized size = 305.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.336 $\int \cot^2(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=196

$$-\frac{a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{b(aA+2bB)\sqrt{a+b\tan(c+dx)}}{d}+\frac{(a-ib)^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}$$

```
[Out] -((a^(3/2)*(5*A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d) +
((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d + (b*(a*A + 2*b*B)*Sqrt[a + b*Tan[c + d*x]])/d - (a*A*Cot[c + d*x]*
(a + b*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.882202, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3605, 3647, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d}+\frac{b(aA+2bB)\sqrt{a+b\tan(c+dx)}}{d}+\frac{(a-ib)^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a^(3/2)*(5*A*b + 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/d) +
((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d + (b*(a*A + 2*b*B)*Sqrt[a + b*Tan[c + d*x]])/d - (a*A*Cot[c + d*x]*
(a + b*Tan[c + d*x])^(3/2))/d
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
```

```
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot(c+dx)(a+b\tan(c+dx))^{3/2}}{d} + \int \cot(c+dx)\sqrt{a$$

$$= \frac{b(aA+2bB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+b\,\mathrm{ta}}{d}$$

$$= \frac{b(aA+2bB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+b\,\mathrm{ta}}{d}$$

$$= \frac{b(aA+2bB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+b\,\mathrm{ta}}{d}$$

$$= \frac{b(aA+2bB)\sqrt{a+b\tan(c+dx)}}{d} - \frac{aA\cot(c+dx)(a+b\,\mathrm{ta}}{d}$$

$$= -\frac{a^{3/2}(5Ab+2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{b(aA+2bB)\sqrt{}}{}$$

$$= -\frac{a^{3/2}(5Ab+2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{d} + \frac{(a-ib)^{5/2}(iA}{}$$

Mathematica [B] time = 1.01344, size = 400, normalized size = 2.04

$$\frac{2bB\cot(c+dx)(a+b\tan(c+dx))^{3/2}}{d}+2\left(-\frac{b(4aB+Ab)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{d}-2\left(\frac{\left(a^2A-6abB-2Ab^2\right)\cot\right.}{}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*b*B*Cot[c + d*x]*(a + b*Tan[c + d*x])^(3/2))/d + 2*(-((b*(A*b + 4*a*B)*C
ot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/d) - 2*(-((-(a^(5/2)*(5*A*b + 2*a*B)*
ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(4*d) + (I*Sqrt[a - I*b]*((I/4)*
a*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B) - (a*(a^3*A - 3*a*A*b^2 - 3*a^2*b
*B + b^3*B))/4)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((-a + I*b
)*d) - (I*Sqrt[a + I*b]*((-I/4)*a*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B) -
 (a*(a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B))/4)*ArcTanh[Sqrt[a + b*Tan[c +
d*x]]/Sqrt[a + I*b]])/((-a - I*b)*d))/a) + ((a^2*A - 2*A*b^2 - 6*a*b*B)*Cot
[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(4*d)))
```

Maple [C] time = 2.879, size = 88645, normalized size = 452.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.337 $\int \cot^3(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=220

$$\frac{\sqrt{a}\left(8a^2A-20abB-15Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{5/2}(A+iB)}{}$$

```
[Out] (Sqrt[a]*(8*a^2*A - 15*A*b^2 - 20*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a]])/(4*d) - ((a - I*b)^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]
]/Sqrt[a - I*b]])/d - ((a + I*b)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c +
 d*x]]/Sqrt[a + I*b]])/d - (a*(7*A*b + 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c
 + d*x]])/(4*d) - (a*A*Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(3/2))/(2*d)
```

Rubi [A] time = 0.927036, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3605, 3645, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{\sqrt{a}\left(8a^2A-20abB-15Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{(a-ib)^{5/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{5/2}(A+iB)}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[a]*(8*a^2*A - 15*A*b^2 - 20*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/S
qrt[a]])/(4*d) - ((a - I*b)^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]
]/Sqrt[a - I*b]])/d - ((a + I*b)^(5/2)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c +
 d*x]]/Sqrt[a + I*b]])/d - (a*(7*A*b + 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c
 + d*x]])/(4*d) - (a*A*Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(3/2))/(2*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
```

```
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^3(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^2(c+dx)(a+b\tan(c+dx))^{3/2}}{2d}+\frac{1}{2}\int \cot^2(c+$$

$$= -\frac{a(7Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= -\frac{a(7Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= -\frac{a(7Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= -\frac{a(7Ab+4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4d}-\frac{aA\cot$$

$$= \frac{\sqrt{a}\left(8a^2A-15Ab^2-20abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{a$$

$$= \frac{\sqrt{a}\left(8a^2A-15Ab^2-20abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4d}-\frac{(a$$

Mathematica [B] time = 2.34958, size = 448, normalized size = 2.04

$$-\frac{-\sqrt{a}\left(8a^2A-20abB-15Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)+4a^2A\sqrt{a+ib}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)+2a^2A\cot^2(c+dx)\sqrt{a+\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(-(Sqrt[a]*(8*a^2*A - 15*A*b^2 - 20*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]
]/Sqrt[a]]) + 4*(a - I*b)^(5/2)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/
Sqrt[a - I*b]] + 4*a^2*A*Sqrt[a + I*b]*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqr
t[a + I*b]] + (8*I)*a*A*Sqrt[a + I*b]*b*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sq
rt[a + I*b]] - 4*A*Sqrt[a + I*b]*b^2*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[
a + I*b]] + (4*I)*a^2*Sqrt[a + I*b]*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt
[a + I*b]] - 8*a*Sqrt[a + I*b]*b*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]] - (4*I)*Sqrt[a + I*b]*b^2*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
 + I*b]] + 9*a*A*b*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]] + 4*a^2*B*Cot[c +
d*x]*Sqrt[a + b*Tan[c + d*x]] + 2*a^2*A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d
*x]])/(4*d)
```

Maple [C] time = 2.441, size = 128221, normalized size = 582.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.338 $\int \cot^4(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=277

$$\frac{\left(40a^2Ab+16a^3B-30ab^2B-5Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8\sqrt{a}d}+\frac{\left(8a^2A-18abB-11Ab^2\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8d}$$

```
[Out] ((40*a^2*A*b - 5*A*b^3 + 16*a^3*B - 30*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c +
d*x]]/Sqrt[a]])/(8*Sqrt[a]*d) - ((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a +
 b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqr
t[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((8*a^2*A - 11*A*b^2 - 18*a*b*B)*
Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(8*d) - (a*(3*A*b + 2*a*B)*Cot[c + d
*x]^2*Sqrt[a + b*Tan[c + d*x]])/(4*d) - (a*A*Cot[c + d*x]^3*(a + b*Tan[c +
d*x])^(3/2))/(3*d)
```

Rubi [A] time = 1.3298, antiderivative size = 277, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {3605, 3645, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{\left(40a^2Ab+16a^3B-30ab^2B-5Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{8\sqrt{a}d}+\frac{\left(8a^2A-18abB-11Ab^2\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((40*a^2*A*b - 5*A*b^3 + 16*a^3*B - 30*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c +
d*x]]/Sqrt[a]])/(8*Sqrt[a]*d) - ((a - I*b)^(5/2)*(I*A + B)*ArcTanh[Sqrt[a +
 b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b)^(5/2)*(I*A - B)*ArcTanh[Sqr
t[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((8*a^2*A - 11*A*b^2 - 18*a*b*B)*
Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(8*d) - (a*(3*A*b + 2*a*B)*Cot[c + d
*x]^2*Sqrt[a + b*Tan[c + d*x]])/(4*d) - (a*A*Cot[c + d*x]^3*(a + b*Tan[c +
d*x])^(3/2))/(3*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
```

```
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
```

```
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^4(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^3(c+dx)(a+b\tan(c+dx))^{3/2}}{3d} + \frac{1}{3}\int \cot^3(c+$$

$$= -\frac{a(3Ab+2aB)\cot^2(c+dx)\sqrt{a+b\tan(c+dx)}}{4d} - \frac{aA\,\mathrm{co}}{}$$

$$= \frac{\left(8a^2A-11Ab^2-18abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8d}$$

$$= \frac{\left(8a^2A-11Ab^2-18abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8d}$$

$$= \frac{\left(8a^2A-11Ab^2-18abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8d}$$

$$= \frac{\left(8a^2A-11Ab^2-18abB\right)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{8d}$$

$$= \frac{\left(40a^2Ab-5Ab^3+16a^3B-30ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+}}{\sqrt{a}}\right.}{8\sqrt{a}d}$$

$$= \frac{\left(40a^2Ab-5Ab^3+16a^3B-30ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+}}{\sqrt{a}}\right.}{8\sqrt{a}d}$$

Mathematica [A] time = 6.35253, size = 240, normalized size = 0.87

$$\frac{3\left(40a^2Ab+16a^3B-30ab^2B-5Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt{a}\left(-\cot(c+dx)\sqrt{a+b\tan(c+dx)}\left(8a^2A\cot^2(c+d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*(40*a^2*A*b - 5*A*b^3 + 16*a^3*B - 30*a*b^2*B)*ArcTanh[Sqrt[a + b*Tan[c
+ d*x]]/Sqrt[a]] + Sqrt[a]*((-24*I)*(a - I*b)^(5/2)*(A - I*B)*ArcTanh[Sqrt[
a + b*Tan[c + d*x]]/Sqrt[a - I*b]] + (24*I)*(a + I*b)^(5/2)*(A + I*B)*ArcTa
nh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] - Cot[c + d*x]*(-24*a^2*A + 33*A
*b^2 + 54*a*b*B + 2*a*(13*A*b + 6*a*B)*Cot[c + d*x] + 8*a^2*A*Cot[c + d*x]^
```

```
2)*Sqrt[a + b*Tan[c + d*x]]))/(24*Sqrt[a]*d)
```

Maple [C] time = 3.369, size = 171974, normalized size = 620.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^4*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)

[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")

[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")

[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**4*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^4*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.339 $\int \cot^5(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=342

$$-\frac{(-240a^2Ab^2+128a^4A-320a^3bB+40ab^3B-5Ab^4)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{64a^{3/2}d}+\frac{(48a^2A-104abB-59Ab^2)\cot^2(c+dx}{96d}$$

```
[Out] -((128*a^4*A - 240*a^2*A*b^2 - 5*A*b^4 - 320*a^3*b*B + 40*a*b^3*B)*ArcTanh[
Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(64*a^(3/2)*d) + ((a - I*b)^(5/2)*(A - I
*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b)^(5/2)*(
A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((144*a^2*A*b
 - 5*A*b^3 + 64*a^3*B - 88*a*b^2*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/
(64*a*d) + ((48*a^2*A - 59*A*b^2 - 104*a*b*B)*Cot[c + d*x]^2*Sqrt[a + b*Tan
[c + d*x]])/(96*d) - (a*(11*A*b + 8*a*B)*Cot[c + d*x]^3*Sqrt[a + b*Tan[c +
d*x]])/(24*d) - (a*A*Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(3/2))/(4*d)
```

Rubi [A] time = 1.66868, antiderivative size = 342, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {3605, 3645, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{(-240a^2Ab^2+128a^4A-320a^3bB+40ab^3B-5Ab^4)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{64a^{3/2}d}+\frac{(48a^2A-104abB-59Ab^2)\cot^2(c+dx}{96d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((128*a^4*A - 240*a^2*A*b^2 - 5*A*b^4 - 320*a^3*b*B + 40*a*b^3*B)*ArcTanh[
Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(64*a^(3/2)*d) + ((a - I*b)^(5/2)*(A - I
*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/d + ((a + I*b)^(5/2)*(
A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/d + ((144*a^2*A*b
 - 5*A*b^3 + 64*a^3*B - 88*a*b^2*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/
(64*a*d) + ((48*a^2*A - 59*A*b^2 - 104*a*b*B)*Cot[c + d*x]^2*Sqrt[a + b*Tan
[c + d*x]])/(96*d) - (a*(11*A*b + 8*a*B)*Cot[c + d*x]^3*Sqrt[a + b*Tan[c +
d*x]])/(24*d) - (a*A*Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(3/2))/(4*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
```

```
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \cot^5(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = -\frac{aA\cot^4(c+dx)(a+b\tan(c+dx))^{3/2}}{4d} + \frac{1}{4}\int \cot^4(c+$$

$$= -\frac{a(11Ab+8aB)\cot^3(c+dx)\sqrt{a+b\tan(c+dx)}}{24d} - \frac{aA\,c}{}$$

$$= \frac{\left(48a^2A-59Ab^2-104abB\right)\cot^2(c+dx)\sqrt{a+b\tan(c+}}{96d}$$

$$= \frac{\left(144a^2Ab-5Ab^3+64a^3B-88ab^2B\right)\cot(c+dx)\sqrt{a+b}}{64ad}$$

$$= \frac{\left(144a^2Ab-5Ab^3+64a^3B-88ab^2B\right)\cot(c+dx)\sqrt{a+b}}{64ad}$$

$$= \frac{\left(144a^2Ab-5Ab^3+64a^3B-88ab^2B\right)\cot(c+dx)\sqrt{a+b}}{64ad}$$

$$= \frac{\left(144a^2Ab-5Ab^3+64a^3B-88ab^2B\right)\cot(c+dx)\sqrt{a+b}}{64ad}$$

$$= -\frac{\left(128a^4A-240a^2Ab^2-5Ab^4-320a^3bB+40ab^3B\right)\tan}{64a^{3/2}d}$$

$$= -\frac{\left(128a^4A-240a^2Ab^2-5Ab^4-320a^3bB+40ab^3B\right)\tan}{64a^{3/2}d}$$

Mathematica [A] time = 6.45776, size = 622, normalized size = 1.82

$$-\frac{2bB\cot^4(c+dx)(a+b\tan(c+dx))^{3/2}}{5d} - \frac{2}{5}\left(\frac{b(2aB+5Ab)\cot^4(c+dx)\sqrt{a+b\tan(c+dx)}}{7d} - \frac{2}{7}\left(-\frac{\left(35a^2A-72abB-\right.}{}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^5*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*b*B*Cot[c + d*x]^4*(a + b*Tan[c + d*x])^(3/2))/(5*d) - (2*((b*(5*A*b +
2*a*B)*Cot[c + d*x]^4*Sqrt[a + b*Tan[c + d*x]])/(7*d) - (2*(-((35*a^2*A - 4
0*A*b^2 - 72*a*b*B)*Cot[c + d*x]^4*Sqrt[a + b*Tan[c + d*x]])/(16*d) - ((7*a
*(85*a*A*b + 40*a^2*B - 48*b^2*B)*Cot[c + d*x]^3*Sqrt[a + b*Tan[c + d*x]])/
(24*d) - ((35*a^2*(48*a^2*A - 59*A*b^2 - 104*a*b*B)*Cot[c + d*x]^2*Sqrt[a +
 b*Tan[c + d*x]])/(32*d) - (-(((-105*a^(5/2)*(128*a^4*A - 240*a^2*A*b^2 - 5
*A*b^4 - 320*a^3*b*B + 40*a*b^3*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]
])/(32*d) + (I*Sqrt[a - I*b]*(210*a^4*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*
B) + (210*I)*a^4*(a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B))*ArcTanh[Sqrt[a +
b*Tan[c + d*x]]/Sqrt[a - I*b]])/((-a + I*b)*d) - (I*Sqrt[a + I*b]*(210*a^4*
(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B) - (210*I)*a^4*(a^3*A - 3*a*A*b^2 -
3*a^2*b*B + b^3*B))*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((-a -
 I*b)*d))/a) - (105*a^2*(144*a^2*A*b - 5*A*b^3 + 64*a^3*B - 88*a*b^2*B)*Cot
[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(32*d))/(2*a))/(3*a))/(4*a)))/7))/5
```

Maple [C] time = 4.294, size = 227162, normalized size = 664.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^5*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**5*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^5*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.340 $\int(-a+b\tan(c+dx))(a+b\tan(c+dx))^{5/2}\,dx$

Optimal. Leaf size=151

$$-\frac{2b\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2b(a+b\tan(c+dx))^{5/2}}{5d}+\frac{(-b+ia)(a-ib)^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{5/2}(b$$

```
[Out] ((I*a - b)*(a - I*b)^(5/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(5/2)*(I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (2*b*(a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]])/d + (2*b*(a + b*Tan[c
+ d*x])^(5/2))/(5*d)
```

Rubi [A] time = 0.25285, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {3528, 12, 3482, 3539, 3537, 63, 208}

$$-\frac{2b\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}{d}+\frac{2b(a+b\tan(c+dx))^{5/2}}{5d}+\frac{(-b+ia)(a-ib)^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d}-\frac{(a+ib)^{5/2}(b$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*Tan[c + d*x])*(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((I*a - b)*(a - I*b)^(5/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])
/d - ((a + I*b)^(5/2)*(I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I
*b]])/d - (2*b*(a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]])/d + (2*b*(a + b*Tan[c
+ d*x])^(5/2))/(5*d)
```


Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 12

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

Rule 3482

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Int[(a^2 - b^2 + 2*a*b*Tan[c + d
*x])*(a + b*Tan[c + d*x])^(n - 2), x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2
+ b^2, 0] && GtQ[n, 1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int (-a+b\tan(c+dx))(a+b\tan(c+dx))^{5/2}\,dx = \frac{2b(a+b\tan(c+dx))^{5/2}}{5d} + \int \left(-a^2-b^2\right)(a+b\tan(c+dx))^{3/2}\,dx$$
$$= \frac{2b(a+b\tan(c+dx))^{5/2}}{5d} + \left(-a^2-b^2\right)\int (a+b\tan(c+dx))^{3/2}\,dx$$
$$= -\frac{2b\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2b(a+b\tan(c+dx))^{5/2}}{5d} + \left(-a^2-\right.$$
$$= -\frac{2b\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2b(a+b\tan(c+dx))^{5/2}}{5d} - \frac{1}{2}\left((a-\right.$$
$$= -\frac{2b\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2b(a+b\tan(c+dx))^{5/2}}{5d} + \frac{\left((a+i\right.}{}$$
$$= -\frac{2b\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}{d} + \frac{2b(a+b\tan(c+dx))^{5/2}}{5d} + \frac{\left((a-i\right.}{}$$
$$= \frac{(ia-b)(a-ib)^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d} - \frac{(a+ib)^{5/2}(ia+b)\tanh^{-1}\left(\right.}{d}$$

Mathematica [A] time = 1.25652, size = 193, normalized size = 1.28

$$\frac{\cos(c+dx)(a-b\tan(c+dx))\left(2b\sqrt{a+b\tan(c+dx)}\left(-4a^2+2ab\tan(c+dx)+b^2\tan^2(c+dx)-5b^2\right)+5i(a+ib)(a-i\right.}{5d(a\cos(c+dx)-b\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-a + b*Tan[c + d*x])*(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] (Cos[c + d*x]*(a - b*Tan[c + d*x])*((5*I)*(a - I*b)^(5/2)*(a + I*b)*ArcTanh
[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] - (5*I)*(a - I*b)*(a + I*b)^(5/2)*
ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + 2*b*Sqrt[a + b*Tan[c + d*
x]]*(-4*a^2 - 5*b^2 + 2*a*b*Tan[c + d*x] + b^2*Tan[c + d*x]^2)))/(5*d*(a*Co
s[c + d*x] - b*Sin[c + d*x]))
```

Maple [B] time = 0.104, size = 1375, normalized size = 9.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] 2/5*b*(a+b*tan(d*x+c))^(5/2)/d-2/d*b*a^2*(a+b*tan(d*x+c))^(1/2)-2/d*b^3*(a+
b*tan(d*x+c))^(1/2)+1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2
+b^2)^(1/2)*a^3+1/4/d*b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2
)^(1/2)*a-1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4+1/4/d*b^3*
ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2
+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2))*a^3-2/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2
*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2
*a)^(1/2))*a+1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))
^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*(a^2+b
^2)^(1/2)*a^2+1/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+
c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*(a^
2+b^2)^(1/2)-1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(
1/2)*a^3-1/4/d*b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*
tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)
*a+1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*
x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4-1/4/d*b^3*ln((a+b
*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(
1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+2/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arc
tan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(
1/2)-2*a)^(1/2))*a^3+2/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+
b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2))*a-1/d*b/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(
1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*(a^2+b^2)^(1/
2)*a^2-1/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*(a^2+b^2)^
(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 22.9883, size = 17797, normalized size = 117.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] -1/20*(20*sqrt(2)*d^5*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*
a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4
+ 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^8*b
^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*((a^14 + 7*a^12*b^2 + 21*a
^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)^(
3/4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 -
 2*a^2*b^12 + b^14)/d^4)*arctan(((3*a^22 + 29*a^20*b^2 + 125*a^18*b^4 + 315
*a^16*b^6 + 510*a^14*b^8 + 546*a^12*b^10 + 378*a^10*b^12 + 150*a^8*b^14 + 1
5*a^6*b^16 - 15*a^4*b^18 - 7*a^2*b^20 - b^22)*d^4*sqrt((a^14 + 7*a^12*b^2 +
 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d
^4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 -
2*a^2*b^12 + b^14)/d^4) + (3*a^29 + 38*a^27*b^2 + 221*a^25*b^4 + 780*a^23*b
^6 + 1859*a^21*b^8 + 3146*a^19*b^10 + 3861*a^17*b^12 + 3432*a^15*b^14 + 214
5*a^13*b^16 + 858*a^11*b^18 + 143*a^9*b^20 - 52*a^7*b^22 - 39*a^5*b^24 - 10
*a^3*b^26 - a*b^28)*d^2*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6
*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4) + sqrt(2)*(d^7*sqrt((a^14 + 7*a
^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12
+ b^14)/d^4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^
4*b^10 - 2*a^2*b^12 + b^14)/d^4) + 2*(a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*
d^5*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 -
2*a^2*b^12 + b^14)/d^4))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 +
 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b
^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^
8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*sqrt(((9*a^14*b^2 + 39*
a^12*b^4 + 61*a^10*b^6 + 35*a^8*b^8 - 5*a^6*b^10 - 11*a^4*b^12 - a^2*b^14 +
 b^16)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8
+ 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c) + sqrt(2)*(2*(9*a^9*b^
3 + 12*a^7*b^5 - 2*a^5*b^7 - 4*a^3*b^9 + a*b^11)*d^3*sqrt((a^14 + 7*a^12*b^
2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14
)/d^4)*cos(d*x + c) + (9*a^16*b^3 + 48*a^14*b^5 + 100*a^12*b^7 + 96*a^10*b^
9 + 30*a^8*b^11 - 16*a^6*b^13 - 12*a^4*b^15 + b^19)*d*cos(d*x + c))*sqrt((a
^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b
```

^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 2
1*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 -
 4*a^2*b^8 + b^10))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((
a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7
*a^2*b^12 + b^14)/d^4)^(1/4) + (9*a^21*b^2 + 66*a^19*b^4 + 205*a^17*b^6 + 3
44*a^15*b^8 + 322*a^13*b^10 + 140*a^11*b^12 - 14*a^9*b^14 - 40*a^7*b^16 - 1
1*a^5*b^18 + 2*a^3*b^20 + a*b^22)*cos(d*x + c) + (9*a^20*b^3 + 66*a^18*b^5
 + 205*a^16*b^7 + 344*a^14*b^9 + 322*a^12*b^11 + 140*a^10*b^13 - 14*a^8*b^15
 - 40*a^6*b^17 - 11*a^4*b^19 + 2*a^2*b^21 + b^23)*sin(d*x + c))/cos(d*x + c
))*((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^1
0 + 7*a^2*b^12 + b^14)/d^4)^(3/4) + sqrt(2)*((3*a^10*b + 11*a^8*b^3 + 14*a^
6*b^5 + 6*a^4*b^7 - a^2*b^9 - b^11)*d^7*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b
^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*sqrt((
9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12
 + b^14)/d^4) + 2*(3*a^17*b + 20*a^15*b^3 + 56*a^13*b^5 + 84*a^11*b^7 + 70*
a^9*b^9 + 28*a^7*b^11 - 4*a^3*b^15 - a*b^17)*d^5*sqrt((9*a^12*b^2 + 30*a^10
*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4))*sqrt(
(a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a
*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 +
 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6
 - 4*a^2*b^8 + b^10))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*
((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 +
 7*a^2*b^12 + b^14)/d^4)^(3/4))/(9*a^34*b^2 + 129*a^32*b^4 + 856*a^30*b^6 +
 3480*a^28*b^8 + 9660*a^26*b^10 + 19292*a^24*b^12 + 28392*a^22*b^14 + 30888
*a^20*b^16 + 24310*a^18*b^18 + 12870*a^16*b^20 + 3432*a^14*b^22 - 728*a^12*
b^24 - 1092*a^10*b^26 - 420*a^8*b^28 - 40*a^6*b^30 + 24*a^4*b^32 + 9*a^2*b^
34 + b^36))*cos(d*x + c)^2 + 20*sqrt(2)*d^5*sqrt((a^10 + 5*a^8*b^2 + 10*a^6
*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a
^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12
 + b^14)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*((a^
14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a
^2*b^12 + b^14)/d^4)^(3/4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*
a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4)*arctan(-((3*a^22 + 29*a^20*b
^2 + 125*a^18*b^4 + 315*a^16*b^6 + 510*a^14*b^8 + 546*a^12*b^10 + 378*a^10*
b^12 + 150*a^8*b^14 + 15*a^6*b^16 - 15*a^4*b^18 - 7*a^2*b^20 - b^22)*d^4*sq
rt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10
 + 7*a^2*b^12 + b^14)/d^4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*
a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4) + (3*a^29 + 38*a^27*b^2 + 22
1*a^25*b^4 + 780*a^23*b^6 + 1859*a^21*b^8 + 3146*a^19*b^10 + 3861*a^17*b^12
 + 3432*a^15*b^14 + 2145*a^13*b^16 + 858*a^11*b^18 + 143*a^9*b^20 - 52*a^7*
b^22 - 39*a^5*b^24 - 10*a^3*b^26 - a*b^28)*d^2*sqrt((9*a^12*b^2 + 30*a^10*b
^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4) - sqrt(2
)*(d^7*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21
*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8
*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4) + 2*(a^7 + 3*a^5*b^

2 + 3*a^3*b^4 + a*b^6)*d^5*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*sqrt(((9*a^14*b^2 + 39*a^12*b^4 + 61*a^10*b^6 + 35*a^8*b^8 - 5*a^6*b^10 - 11*a^4*b^12 - a^2*b^14 + b^16)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c) - sqrt(2)*(2*(9*a^9*b^3 + 12*a^7*b^5 - 2*a^5*b^7 - 4*a^3*b^9 + a*b^11)*d^3*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c) + (9*a^16*b^3 + 48*a^14*b^5 + 100*a^12*b^7 + 96*a^10*b^9 + 30*a^8*b^11 - 16*a^6*b^13 - 12*a^4*b^15 + b^19)*d*cos(d*x + c))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)^(1/4) + (9*a^21*b^2 + 66*a^19*b^4 + 205*a^17*b^6 + 344*a^15*b^8 + 322*a^13*b^10 + 140*a^11*b^12 - 14*a^9*b^14 - 40*a^7*b^16 - 11*a^5*b^18 + 2*a^3*b^20 + a*b^22)*cos(d*x + c) + (9*a^20*b^3 + 66*a^18*b^5 + 205*a^16*b^7 + 344*a^14*b^9 + 322*a^12*b^11 + 140*a^10*b^13 - 14*a^8*b^15 - 40*a^6*b^17 - 11*a^4*b^19 + 2*a^2*b^21 + b^23)*sin(d*x + c))/cos(d*x + c))*((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)^(3/4) - sqrt(2)*((3*a^10*b + 11*a^8*b^3 + 14*a^6*b^5 + 6*a^4*b^7 - a^2*b^9 - b^11)*d^7*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4) + 2*(3*a^17*b + 20*a^15*b^3 + 56*a^13*b^5 + 84*a^11*b^7 + 70*a^9*b^9 + 28*a^7*b^11 - 4*a^3*b^15 - a*b^17)*d^5*sqrt((9*a^12*b^2 + 30*a^10*b^4 + 31*a^8*b^6 + 4*a^6*b^8 - 9*a^4*b^10 - 2*a^2*b^12 + b^14)/d^4))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)^(3/4))/(9*a^34*b^2 + 129*a^32*b^4 + 856*a^30*b^6 + 3480*a^28*b^8 + 9660*a^26*b^10 + 19292*a^24*b^12 + 28392*a^22*b^14 + 30888*a^20*b^16 + 24310*a^18*b^18 + 12870*a^16*b^20 + 3432*a^14*b^22 - 728*a^12*b^24 - 1092*a^10*b^26 - 420*a^8*b^28 - 40*a^6*b^30 + 24*a^4*b^32 + 9*a^2*b^34 + b^36))*cos(d*x + c)^2 + 5*sqrt(2)*((a^7 - a^5*b^2 - 5*a^3*b^4 - 3*a*b^6)*d^3*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c)^2 - (a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)*d*cos(d*x + c)^2)*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^

2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14
)/d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*((a^14 + 7
*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^1
2 + b^14)/d^4)^(1/4)*log(((9*a^14*b^2 + 39*a^12*b^4 + 61*a^10*b^6 + 35*a^8*
b^8 - 5*a^6*b^10 - 11*a^4*b^12 - a^2*b^14 + b^16)*d^2*sqrt((a^14 + 7*a^12*b
^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^1
4)/d^4)*cos(d*x + c) + sqrt(2)*(2*(9*a^9*b^3 + 12*a^7*b^5 - 2*a^5*b^7 - 4*a
^3*b^9 + a*b^11)*d^3*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 3
5*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c) + (9*a^16*b^
3 + 48*a^14*b^5 + 100*a^12*b^7 + 96*a^10*b^9 + 30*a^8*b^11 - 16*a^6*b^13 -
12*a^4*b^15 + b^19)*d*cos(d*x + c))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 1
0*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2
+ 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/
d^4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*sqrt((a*cos(
d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^14 + 7*a^12*b^2 + 21*a^10*b^4
+ 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)^(1/4) + (
9*a^21*b^2 + 66*a^19*b^4 + 205*a^17*b^6 + 344*a^15*b^8 + 322*a^13*b^10 + 14
0*a^11*b^12 - 14*a^9*b^14 - 40*a^7*b^16 - 11*a^5*b^18 + 2*a^3*b^20 + a*b^22
)*cos(d*x + c) + (9*a^20*b^3 + 66*a^18*b^5 + 205*a^16*b^7 + 344*a^14*b^9 +
322*a^12*b^11 + 140*a^10*b^13 - 14*a^8*b^15 - 40*a^6*b^17 - 11*a^4*b^19 + 2
*a^2*b^21 + b^23)*sin(d*x + c))/cos(d*x + c)) - 5*sqrt(2)*((a^7 - a^5*b^2 -
5*a^3*b^4 - 3*a*b^6)*d^3*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^
6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c)^2 - (a^
14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a
^2*b^12 + b^14)*d*cos(d*x + c)^2)*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*
a^4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 +
21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^
4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*((a^14 + 7*a^1
2*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 +
b^14)/d^4)^(1/4)*log(((9*a^14*b^2 + 39*a^12*b^4 + 61*a^10*b^6 + 35*a^8*b^8
- 5*a^6*b^10 - 11*a^4*b^12 - a^2*b^14 + b^16)*d^2*sqrt((a^14 + 7*a^12*b^2 +
21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d
^4)*cos(d*x + c) - sqrt(2)*(2*(9*a^9*b^3 + 12*a^7*b^5 - 2*a^5*b^7 - 4*a^3*b
^9 + a*b^11)*d^3*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^
6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)*cos(d*x + c) + (9*a^16*b^3 +
48*a^14*b^5 + 100*a^12*b^7 + 96*a^10*b^9 + 30*a^8*b^11 - 16*a^6*b^13 - 12*a
^4*b^15 + b^19)*d*cos(d*x + c))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^
4*b^6 + 5*a^2*b^8 + b^10 + (a^3 - 3*a*b^2)*d^2*sqrt((a^14 + 7*a^12*b^2 + 21
*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)
)/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10))*sqrt((a*cos(d*x
+ c) + b*sin(d*x + c))/cos(d*x + c))*((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35
*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)/d^4)^(1/4) + (9*a^
21*b^2 + 66*a^19*b^4 + 205*a^17*b^6 + 344*a^15*b^8 + 322*a^13*b^10 + 140*a^
11*b^12 - 14*a^9*b^14 - 40*a^7*b^16 - 11*a^5*b^18 + 2*a^3*b^20 + a*b^22)*co
s(d*x + c) + (9*a^20*b^3 + 66*a^18*b^5 + 205*a^16*b^7 + 344*a^14*b^9 + 322*

```
a^12*b^11 + 140*a^10*b^13 - 14*a^8*b^15 - 40*a^6*b^17 - 11*a^4*b^19 + 2*a^2
*b^21 + b^23)*sin(d*x + c))/cos(d*x + c)) - 8*(a^14*b^3 + 7*a^12*b^5 + 21*a
^10*b^7 + 35*a^8*b^9 + 35*a^6*b^11 + 21*a^4*b^13 + 7*a^2*b^15 + b^17 - 2*(2
*a^16*b + 17*a^14*b^3 + 63*a^12*b^5 + 133*a^10*b^7 + 175*a^8*b^9 + 147*a^6*
b^11 + 77*a^4*b^13 + 23*a^2*b^15 + 3*b^17)*cos(d*x + c)^2 + 2*(a^15*b^2 + 7
*a^13*b^4 + 21*a^11*b^6 + 35*a^9*b^8 + 35*a^7*b^10 + 21*a^5*b^12 + 7*a^3*b^
14 + a*b^16)*cos(d*x + c)*sin(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x +
c))/cos(d*x + c)))/((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*
b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14)*d*cos(d*x + c)^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int a^{3}\sqrt{a+b\tan{(c+dx)}}\,dx-\int -b^{3}\sqrt{a+b\tan{(c+dx)}}\tan^{3}{(c+dx)}\,dx-\int -ab^{2}\sqrt{a+b\tan{(c+dx)}}\tan^{2}{(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] -Integral(a**3*sqrt(a + b*tan(c + d*x)), x) - Integral(-b**3*sqrt(a + b*tan
(c + d*x))*tan(c + d*x)**3, x) - Integral(-a*b**2*sqrt(a + b*tan(c + d*x))*
tan(c + d*x)**2, x) - Integral(a**2*b*sqrt(a + b*tan(c + d*x))*tan(c + d*x)
, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.341 $\int (-a+b\tan(c+dx))(a+b\tan(c+dx))^{3/2}\,dx$

Optimal. Leaf size=408

$$-\frac{b\left(a^2+b^2\right)\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{\sqrt{a^2+b^2}+a}}+\frac{b\left(a^2+b^2\right)\log\left(\sqrt{2}\sqrt{\sqrt{a^2}\right.}{}$$

```
[Out] -((b*(a^2 + b^2)*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a + b*Ta
n[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b^2]]
*d)) + (b*(a^2 + b^2)*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*Sqrt[a +
 b*Tan[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 +
b^2]]*d) - (b*(a^2 + b^2)*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d*x] - Sqrt[2
]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a +
Sqrt[a^2 + b^2]]*d) + (b*(a^2 + b^2)*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d*
x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[2
]*Sqrt[a + Sqrt[a^2 + b^2]]*d) + (2*b*(a + b*Tan[c + d*x])^(3/2))/(3*d)
```

Rubi [A] time = 0.473074, antiderivative size = 408, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3528, 12, 3485, 700, 1129, 634, 618, 206, 628}

$$-\frac{b\left(a^2+b^2\right)\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{\sqrt{a^2+b^2}+a}}+\frac{b\left(a^2+b^2\right)\log\left(\sqrt{2}\sqrt{\sqrt{a^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*Tan[c + d*x])*(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] -((b*(a^2 + b^2)*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a + b*Ta
n[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b^2]]
*d)) + (b*(a^2 + b^2)*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*Sqrt[a +
 b*Tan[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 +
b^2]]*d) - (b*(a^2 + b^2)*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d*x] - Sqrt[2
]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a +
Sqrt[a^2 + b^2]]*d) + (b*(a^2 + b^2)*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d*
x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[2
]*Sqrt[a + Sqrt[a^2 + b^2]]*d) + (2*b*(a + b*Tan[c + d*x])^(3/2))/(3*d)
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 12

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

Rule 3485

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Sub
st[Int[(a + x)^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b, c,
 d, n}, x] && NeQ[a^2 + b^2, 0]
```

Rule 700

```
Int[Sqrt[(d_) + (e_.)*(x_)]/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[2*e, S
ubst[Int[x^2/(c*d^2 + a*e^2 - 2*c*d*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x]
 /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0]
```

Rule 1129

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :> With[{q =
 Rt[a/c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*r), Int[x^(m - 1)/(q
 - r*x + x^2), x], x] - Dist[1/(2*c*r), Int[x^(m - 1)/(q + r*x + x^2), x],
x]]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && GeQ[m, 1] && LtQ[m, 3
] && NegQ[b^2 - 4*a*c]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
```

```
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int (-a+b\tan(c+dx))(a+b\tan(c+dx))^{3/2}\,dx = \frac{2b(a+b\tan(c+dx))^{3/2}}{3d} + \int \left(-a^2-b^2\right)\sqrt{a+b\tan(c+dx)}\,dx$$

$$= \frac{2b(a+b\tan(c+dx))^{3/2}}{3d} + \left(-a^2-b^2\right)\int \sqrt{a+b\tan(c+dx)}\,dx$$

$$= \frac{2b(a+b\tan(c+dx))^{3/2}}{3d} - \frac{\left(b\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{\sqrt{a+x}}{b^2+x^2}\,dx, x, b\tan(c+\right.}{d}$$

$$= \frac{2b(a+b\tan(c+dx))^{3/2}}{3d} - \frac{\left(2b\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{x^2}{a^2+b^2-2ax^2+x^4}\,dx, x,\right.}{d}$$

$$= \frac{2b(a+b\tan(c+dx))^{3/2}}{3d} - \frac{\left(b\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{x}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x}\right.}{\sqrt{2}\sqrt{a+\sqrt{a^2+b}}}$$

$$= \frac{2b(a+b\tan(c+dx))^{3/2}}{3d} - \frac{\left(b\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x}\right.}{2d}$$

$$= -\frac{b\left(a^2+b^2\right)\log\left(a+\sqrt{a^2+b^2}+b\tan(c+dx)-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}\sqrt{a}\right.}{2\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}d}$$

$$= -\frac{b\left(a^2+b^2\right)\tanh^{-1}\left(\frac{\sqrt{a+\sqrt{a^2+b^2}}-\sqrt{2}\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{a^2+b^2}}}\right)}{\sqrt{2}\sqrt{a-\sqrt{a^2+b^2}}d} + \frac{b\left(a^2+b^2\right)\tanh^{-1}}{\sqrt{2}\sqrt{}}$$

Mathematica [C] time = 0.454474, size = 183, normalized size = 0.45

$$\frac{(a-b\tan(c+dx))\left(3i\sqrt{a-ib}\left(a^2+b^2\right)\cos(c+dx)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)-3i\sqrt{a+ib}\left(a^2+b^2\right)\cos(c+dx)\tanh^{-1}\left(\frac{\sqrt{a+}}{}\right.\right.}{3d(a\cos(c+dx)-b\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-a + b*Tan[c + d*x])*(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((a - b*Tan[c + d*x])*((3*I)*Sqrt[a - I*b]*(a^2 + b^2)*ArcTanh[Sqrt[a + b*T
an[c + d*x]]/Sqrt[a - I*b]]*Cos[c + d*x] - (3*I)*Sqrt[a + I*b]*(a^2 + b^2)*
ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]*Cos[c + d*x] + 2*b*(a*Cos[c
```

```
+ d*x] + b*Sin[c + d*x])*Sqrt[a + b*Tan[c + d*x]]))/(3*d*(a*Cos[c + d*x] -
b*Sin[c + d*x]))
```

Maple [B] time = 0.089, size = 986, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] 2/3*b*(a+b*tan(d*x+c))^(3/2)/d-1/4/d/b*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3*ln
(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b
^2)^(1/2))-1/4/d*b*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a*ln(b*tan(d*x+c)+a+(a+b*t
an(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))-1/d*b*a^2/(
2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^
(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+1/4/d/b*(2*(a^2+b^2)^(1/2)
+2*a)^(1/2)*(a^2+b^2)^(1/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*a^2+1/4/d*b*(2*(a^2+b^2)^(1/2)+2*a
)^(1/2)*(a^2+b^2)^(1/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))-1/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))+1/4/d/b*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3*ln((a+b*tan(d
*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))+
1/4/d*b*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))+1/d*b*a^2/(2*(a^2+b^2)
^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^
(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))-1/4/d/b*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
*(a^2+b^2)^(1/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*
tan(d*x+c)-a-(a^2+b^2)^(1/2))*a^2-1/4/d*b*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^
2+b^2)^(1/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(
d*x+c)-a-(a^2+b^2)^(1/2))+1/d*b^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*
(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a
)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 5.17914, size = 9535, normalized size = 23.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*sqrt(2)*d^5*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((
a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b
^2 + 2*a^2*b^4 + b^6))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2
*b^8 + b^10)/d^4)^(3/4)*sqrt((a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 +
 b^10)/d^4)*arctan(-(sqrt(2)*(a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*d^5*sqrt
((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6
*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a^2*b^4 + b^6))*sq
rt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^10 + 5*a^8*b^2 + 10*
a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(3/4)*sqrt((a^8*b^2 + 4*a^6*b
^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4) - sqrt(2)*d^5*sqrt((a^6 + 3*a^4*b^2
 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6
 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a^2*b^4 + b^6))*sqrt((sqrt(2)*(a^4*
b^3 + 2*a^2*b^5 + b^7)*d^3*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*
sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/
(a^4*b^2 + 2*a^2*b^4 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x
 + c))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4
)^(3/4)*cos(d*x + c) + (a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)
*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d
^4)*cos(d*x + c) + (a^13*b^2 + 6*a^11*b^4 + 15*a^9*b^6 + 20*a^7*b^8 + 15*a^
5*b^10 + 6*a^3*b^12 + a*b^14)*cos(d*x + c) + (a^12*b^3 + 6*a^10*b^5 + 15*a^
8*b^7 + 20*a^6*b^9 + 15*a^4*b^11 + 6*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x
 + c))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4
)^(3/4)*sqrt((a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4) + (a
^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)*d^4*sqrt((a^1
0 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)*sqrt((a^8*
b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4) + (a^15 + 7*a^13*b^2 +
 21*a^11*b^4 + 35*a^9*b^6 + 35*a^7*b^8 + 21*a^5*b^10 + 7*a^3*b^12 + a*b^14)
*d^2*sqrt((a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4))/(a^18*
b^2 + 9*a^16*b^4 + 36*a^14*b^6 + 84*a^12*b^8 + 126*a^10*b^10 + 126*a^8*b^12
 + 84*a^6*b^14 + 36*a^4*b^16 + 9*a^2*b^18 + b^20))*cos(d*x + c) + 12*sqrt(2
```

)*d^5*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5*a^8*b^
2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a^2*b^4
+ b^6))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^
4)^(3/4)*sqrt((a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4)*arc
tan(-(sqrt(2)*(a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*d^5*sqrt((a^6 + 3*a^4*b
^2 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b
^6 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a^2*b^4 + b^6))*sqrt((a*cos(d*x +
c) + b*sin(d*x + c))/cos(d*x + c))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^
4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(3/4)*sqrt((a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6
+ 4*a^2*b^8 + b^10)/d^4) - sqrt(2)*d^5*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 +
b^6 + a*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 +
b^10)/d^4))/(a^4*b^2 + 2*a^2*b^4 + b^6))*sqrt(-(sqrt(2)*(a^4*b^3 + 2*a^2*b^
5 + b^7)*d^3*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5
*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a
^2*b^4 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^10
+ 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(3/4)*cos(d*
x + c) - (a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)*d^2*sqrt((a^1
0 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)*cos(d*x +
c) - (a^13*b^2 + 6*a^11*b^4 + 15*a^9*b^6 + 20*a^7*b^8 + 15*a^5*b^10 + 6*a^3
*b^12 + a*b^14)*cos(d*x + c) - (a^12*b^3 + 6*a^10*b^5 + 15*a^8*b^7 + 20*a^6
*b^9 + 15*a^4*b^11 + 6*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x + c))*((a^10
+ 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(3/4)*sqrt((
a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4) - (a^10 + 5*a^8*b^
2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)*d^4*sqrt((a^10 + 5*a^8*b^2
+ 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)*sqrt((a^8*b^2 + 4*a^6*b^
4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4) - (a^15 + 7*a^13*b^2 + 21*a^11*b^4 +
35*a^9*b^6 + 35*a^7*b^8 + 21*a^5*b^10 + 7*a^3*b^12 + a*b^14)*d^2*sqrt((a^8
*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)/d^4))/(a^18*b^2 + 9*a^16*b
^4 + 36*a^14*b^6 + 84*a^12*b^8 + 126*a^10*b^10 + 126*a^8*b^12 + 84*a^6*b^14
+ 36*a^4*b^16 + 9*a^2*b^18 + b^20))*cos(d*x + c) - 3*sqrt(2)*((a^5 + 2*a^3
*b^2 + a*b^4)*d^3*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*
b^8 + b^10)/d^4)*cos(d*x + c) - (a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6
+ 5*a^2*b^8 + b^10)*d*cos(d*x + c))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^
6 + a*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^
10)/d^4))/(a^4*b^2 + 2*a^2*b^4 + b^6))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10
*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(1/4)*log((sqrt(2)*(a^4*b^3 + 2*a^2*b^5 +
b^7)*d^3*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5*a^
8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a^2*
b^4 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^10 + 5
*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(3/4)*cos(d*x +
c) + (a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)*d^2*sqrt((a^10 +
5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)*cos(d*x + c)
+ (a^13*b^2 + 6*a^11*b^4 + 15*a^9*b^6 + 20*a^7*b^8 + 15*a^5*b^10 + 6*a^3*b^
12 + a*b^14)*cos(d*x + c) + (a^12*b^3 + 6*a^10*b^5 + 15*a^8*b^7 + 20*a^6*b^
9 + 15*a^4*b^11 + 6*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x + c)) + 3*sqrt(2

```
)*((a^5 + 2*a^3*b^2 + a*b^4)*d^3*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a
^4*b^6 + 5*a^2*b^8 + b^10)/d^4)*cos(d*x + c) - (a^10 + 5*a^8*b^2 + 10*a^6*b
^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)*d*cos(d*x + c))*sqrt((a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6 + a*d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 +
 5*a^2*b^8 + b^10)/d^4))/(a^4*b^2 + 2*a^2*b^4 + b^6))*((a^10 + 5*a^8*b^2 +
10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)^(1/4)*log(-(sqrt(2)*(a^4*b
^3 + 2*a^2*b^5 + b^7)*d^3*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + a*d^2*s
qrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4))/(
a^4*b^2 + 2*a^2*b^4 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x
+ c))*((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^4)
^(3/4)*cos(d*x + c) - (a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)*
d^2*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)/d^
4)*cos(d*x + c) - (a^13*b^2 + 6*a^11*b^4 + 15*a^9*b^6 + 20*a^7*b^8 + 15*a^5
*b^10 + 6*a^3*b^12 + a*b^14)*cos(d*x + c) - (a^12*b^3 + 6*a^10*b^5 + 15*a^8
*b^7 + 20*a^6*b^9 + 15*a^4*b^11 + 6*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x
+ c)) + 8*((a^11*b + 5*a^9*b^3 + 10*a^7*b^5 + 10*a^5*b^7 + 5*a^3*b^9 + a*b^
11)*cos(d*x + c) + (a^10*b^2 + 5*a^8*b^4 + 10*a^6*b^6 + 10*a^4*b^8 + 5*a^2*
b^10 + b^12)*sin(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x +
 c)))/((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10)*d*co
s(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int a^2\sqrt{a+b\tan(c+dx)}\,dx-\int -b^2\sqrt{a+b\tan(c+dx)}\tan^2(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] -Integral(a**2*sqrt(a + b*tan(c + d*x)), x) - Integral(-b**2*sqrt(a + b*tan
(c + d*x))*tan(c + d*x)**2, x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.342 $\int(-a+b\tan(c+dx))\sqrt{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=422

$$\frac{b\sqrt{a^2+b^2}\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{\sqrt{a^2+b^2}+a}}-\frac{b\sqrt{a^2+b^2}\log\left(\sqrt{2}\sqrt{\sqrt{a^2+b^2}\right.}{}$$

```
[Out] -((b*Sqrt[a^2 + b^2]*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a +
b*Tan[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b
^2]]*d)) + (b*Sqrt[a^2 + b^2]*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*
Sqrt[a + b*Tan[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqr
t[a^2 + b^2]]*d) + (b*Sqrt[a^2 + b^2]*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d
*x] - Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[
2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) - (b*Sqrt[a^2 + b^2]*Log[a + Sqrt[a^2 + b^2
] + b*Tan[c + d*x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d
*x]]])/(2*Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) + (2*b*Sqrt[a + b*Tan[c + d*
x]])/d
```

Rubi [A] time = 0.394519, antiderivative size = 422, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3528, 12, 3485, 708, 1094, 634, 618, 206, 628}

$$\frac{b\sqrt{a^2+b^2}\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{\sqrt{a^2+b^2}+a}}-\frac{b\sqrt{a^2+b^2}\log\left(\sqrt{2}\sqrt{\sqrt{a^2+b^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*Tan[c + d*x])*Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] -((b*Sqrt[a^2 + b^2]*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a +
b*Tan[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b
^2]]*d)) + (b*Sqrt[a^2 + b^2]*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*
Sqrt[a + b*Tan[c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqr
t[a^2 + b^2]]*d) + (b*Sqrt[a^2 + b^2]*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d
*x] - Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[
2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) - (b*Sqrt[a^2 + b^2]*Log[a + Sqrt[a^2 + b^2
] + b*Tan[c + d*x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d
```

```
*x]]])/(2*Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) + (2*b*Sqrt[a + b*Tan[c + d*
x]])/d
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 12

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

Rule 3485

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Sub
st[Int[(a + x)^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b, c,
 d, n}, x] && NeQ[a^2 + b^2, 0]
```

Rule 708

```
Int[1/(Sqrt[(d_) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[2*
e, Subst[Int[1/(c*d^2 + a*e^2 - 2*c*d*x^2 + c*x^4), x], x, Sqrt[d + e*x]],
x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0]
```

Rule 1094

```
Int[((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(-1), x_Symbol] :> With[{q = Rt[a/
c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*q*r), Int[(r - x)/(q - r*x
 + x^2), x], x] + Dist[1/(2*c*q*r), Int[(r + x)/(q + r*x + x^2), x], x]]] /
; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[b^2 - 4*a*c]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int (-a+b\tan(c+dx))\sqrt{a+b\tan(c+dx)}\,dx = \frac{2b\sqrt{a+b\tan(c+dx)}}{d} + \int \frac{-a^2-b^2}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{2b\sqrt{a+b\tan(c+dx)}}{d} + \left(-a^2-b^2\right)\int \frac{1}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{2b\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left(b\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+x}\left(b^2+x^2\right)}\,dx, x, b\tan(\right.}{d}$$

$$= \frac{2b\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left(2b\left(a^2+b^2\right)\right)\text{Subst}\left(\int \frac{1}{a^2+b^2-2ax^2+x^4}\,dx, x, \sqrt{a\right.}{d}$$

$$= \frac{2b\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left(b\sqrt{a^2+b^2}\right)\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}-x}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x+x^2}\right.}{\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}d}$$

$$= \frac{2b\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left(b\sqrt{a^2+b^2}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x+x^2}\right.}{2d}$$

$$= \frac{b\sqrt{a^2+b^2}\log\left(a+\sqrt{a^2+b^2}+b\tan(c+dx)-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}\sqrt{a+\right.}{2\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}d}$$

$$= -\frac{b\sqrt{a^2+b^2}\tanh^{-1}\left(\frac{\sqrt{a+\sqrt{a^2+b^2}}-\sqrt{2}\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{a^2+b^2}}}\right)}{\sqrt{2}\sqrt{a-\sqrt{a^2+b^2}}d} + \frac{b\sqrt{a^2+b^2}\tanh^{-1}\left(\right.}{\sqrt{2}\sqrt{a}}$$

Mathematica [C] time = 0.23306, size = 157, normalized size = 0.37

$$\frac{\cos(c+dx)(a-b\tan(c+dx))\left(2b\sqrt{a+b\tan(c+dx)}+i\sqrt{a-ib}(a+ib)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)-i(a-ib)\sqrt{a+ib}\tanh\right.}{d(a\cos(c+dx)-b\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-a + b*Tan[c + d*x])*Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] (Cos[c + d*x]*(a - b*Tan[c + d*x])*(I*Sqrt[a - I*b]*(a + I*b)*ArcTanh[Sqrt[
a + b*Tan[c + d*x]]/Sqrt[a - I*b]] - I*(a - I*b)*Sqrt[a + I*b]*ArcTanh[Sqrt
```

```
[a + b*Tan[c + d*x]]/Sqrt[a + I*b]] + 2*b*Sqrt[a + b*Tan[c + d*x]]))/(d*(a*
Cos[c + d*x] - b*Sin[c + d*x]))
```

Maple [B] time = 0.093, size = 2285, normalized size = 5.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] -5/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d
*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
a^2+1/2/d*b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-
1/4/d/b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^5-1/2/
d*b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/d/b/(a
^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2
)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^4+2/d*b/(
a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/
2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2+2*b*(a
+b*tan(d*x+c))^(1/2)/d-4/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))*a^4-1/2/d*b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c)
)^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2
*a)^(1/2)*a^2+1/4/d/b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1
/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)*a^5+1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a
^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^
(1/2))*a^6+1/4/d*b^3/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/
2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)*a-1/4/d*b^3/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
*a-1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
a^4-1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4-1/d/b/
(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1
/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^6-2/d*b
/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2
```

```
*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2+1/4/
d/b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan
(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4+1/2/d*b/(a^2+b
^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-
(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+4/d*b/(a^2+b^2)^(3/2)/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*ta
n(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^4+5/d*b^3/(a^2+b^2)^(3/2)
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b
*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2-2/d*b^5/(a^2+b^2)^(3
/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+
b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+1/4/d*b^3/(a^2+b^2)*l
n((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+
b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/d*b^3/(a^2+b^2)^(1/2)/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c
))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+2/d*b^5/(a^2+b^2)^(3/2)/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c)
)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))-1/4/d*b^3/(a^2+b^2)*ln(b*tan(d*x+c)
+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/d*b^3/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)
^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(
a^2+b^2)^(1/2)-2*a)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(1/2),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [B] time = 2.29561, size = 6637, normalized size = 15.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*d^5*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^
2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 +
 b^6)/d^4)^(3/4)*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4)*arctan(-(sqrt(2)*(a^
4*b + 2*a^2*b^3 + b^5)*d^7*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2*sqrt((a^6 +
3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4))*sqrt((a*cos(d*x + c) +
b*sin(d*x + c))/cos(d*x + c))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(5/
4)*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4) - sqrt(2)*d^7*sqrt((a^4 + 2*a^2*b^
2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b
^4))*sqrt((sqrt(2)*(a^6*b^3 + 3*a^4*b^5 + 3*a^2*b^7 + b^9)*d*sqrt((a^4 + 2*
a^2*b^2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b
^2 + b^4))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^6 + 3*a
^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(1/4)*cos(d*x + c) + (a^6*b^2 + 3*a^4*b^4 +
3*a^2*b^6 + b^8)*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)*cos(d*x
+ c) + (a^9*b^2 + 4*a^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 + a*b^10)*cos(d*x + c)
+ (a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11)*sin(d*x + c))/cos(d*
x + c))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(5/4)*sqrt((a^4*b^2 + 2*a
^2*b^4 + b^6)/d^4) + (a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^
8 + b^10)*d^4*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)*sqrt((a^4*b^2 +
 2*a^2*b^4 + b^6)/d^4) + (a^13 + 6*a^11*b^2 + 15*a^9*b^4 + 20*a^7*b^6 + 15*
a^5*b^8 + 6*a^3*b^10 + a*b^12)*d^2*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4))/(
a^14*b^2 + 7*a^12*b^4 + 21*a^10*b^6 + 35*a^8*b^8 + 35*a^6*b^10 + 21*a^4*b^1
2 + 7*a^2*b^14 + b^16)) + 4*sqrt(2)*d^5*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2
*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4))*((a^6 + 3*
a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(3/4)*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4)
*arctan(-(sqrt(2)*(a^4*b + 2*a^2*b^3 + b^5)*d^7*sqrt((a^4 + 2*a^2*b^2 + b^4
 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4))*sq
rt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^6 + 3*a^4*b^2 + 3*a^
2*b^4 + b^6)/d^4)^(5/4)*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4) - sqrt(2)*d^7
*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^
6)/d^4))/(a^2*b^2 + b^4))*sqrt(-(sqrt(2)*(a^6*b^3 + 3*a^4*b^5 + 3*a^2*b^7 +
 b^9)*d*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b
^4 + b^6)/d^4))/(a^2*b^2 + b^4))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos
(d*x + c))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(1/4)*cos(d*x + c) - (
a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^
4 + b^6)/d^4)*cos(d*x + c) - (a^9*b^2 + 4*a^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 +
 a*b^10)*cos(d*x + c) - (a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11
)*sin(d*x + c))/cos(d*x + c))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(5/
4)*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4) - (a^10 + 5*a^8*b^2 + 10*a^6*b^4 +
 10*a^4*b^6 + 5*a^2*b^8 + b^10)*d^4*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6
)/d^4)*sqrt((a^4*b^2 + 2*a^2*b^4 + b^6)/d^4) - (a^13 + 6*a^11*b^2 + 15*a^9*
b^4 + 20*a^7*b^6 + 15*a^5*b^8 + 6*a^3*b^10 + a*b^12)*d^2*sqrt((a^4*b^2 + 2*
a^2*b^4 + b^6)/d^4))/(a^14*b^2 + 7*a^12*b^4 + 21*a^10*b^6 + 35*a^8*b^8 + 35
*a^6*b^10 + 21*a^4*b^12 + 7*a^2*b^14 + b^16)) + sqrt(2)*((a^3 + a*b^2)*d^3*
sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4) - (a^6 + 3*a^4*b^2 + 3*a^2*b^
4 + b^6)*d)*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a
```

```
^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d
^4)^(1/4)*log((sqrt(2)*(a^6*b^3 + 3*a^4*b^5 + 3*a^2*b^7 + b^9)*d*sqrt((a^4
+ 2*a^2*b^2 + b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a
^2*b^2 + b^4))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^6 +
 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(1/4)*cos(d*x + c) + (a^6*b^2 + 3*a^4*b^
4 + 3*a^2*b^6 + b^8)*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)*cos(
d*x + c) + (a^9*b^2 + 4*a^7*b^4 + 6*a^5*b^6 + 4*a^3*b^8 + a*b^10)*cos(d*x +
 c) + (a^8*b^3 + 4*a^6*b^5 + 6*a^4*b^7 + 4*a^2*b^9 + b^11)*sin(d*x + c))/co
s(d*x + c)) - sqrt(2)*((a^3 + a*b^2)*d^3*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4
+ b^6)/d^4) - (a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d)*sqrt((a^4 + 2*a^2*b^2
+ b^4 + a*d^2*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4
))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)^(1/4)*log(-(sqrt(2)*(a^6*b^3 +
 3*a^4*b^5 + 3*a^2*b^7 + b^9)*d*sqrt((a^4 + 2*a^2*b^2 + b^4 + a*d^2*sqrt((a
^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4))/(a^2*b^2 + b^4))*sqrt((a*cos(d*x +
c) + b*sin(d*x + c))/cos(d*x + c))*((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4
)^(1/4)*cos(d*x + c) - (a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^2*sqrt((a^
6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)/d^4)*cos(d*x + c) - (a^9*b^2 + 4*a^7*b^4 +
 6*a^5*b^6 + 4*a^3*b^8 + a*b^10)*cos(d*x + c) - (a^8*b^3 + 4*a^6*b^5 + 6*a^
4*b^7 + 4*a^2*b^9 + b^11)*sin(d*x + c))/cos(d*x + c)) + 8*(a^6*b + 3*a^4*b^
3 + 3*a^2*b^5 + b^7)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/
((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int a\sqrt{a+b\tan\left(c+dx\right)}\,dx-\int -b\sqrt{a+b\tan\left(c+dx\right)}\tan\left(c+dx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] -Integral(a*sqrt(a + b*tan(c + d*x)), x) - Integral(-b*sqrt(a + b*tan(c + d
*x))*tan(c + d*x), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))*(a+b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.343 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=213

$$-\frac{2\left(-8a^2B+10aAb+15b^2B\right)\sqrt{a+b\tan(c+dx)}}{15b^3d}+\frac{2(5Ab-4aB)\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{15b^2d}+\frac{(A-iB)\tanh^{-1}\left(\cdot\right.}{d\sqrt{a-}}$$

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*
d) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a +
I*b]*d) - (2*(10*a*A*b - 8*a^2*B + 15*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(15*
b^3*d) + (2*(5*A*b - 4*a*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(15*b^2*
d) + (2*B*Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(5*b*d)
```

Rubi [A] time = 0.522332, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3607, 3647, 3630, 3539, 3537, 63, 208}

$$-\frac{2\left(-8a^2B+10aAb+15b^2B\right)\sqrt{a+b\tan(c+dx)}}{15b^3d}+\frac{2(5Ab-4aB)\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{15b^2d}+\frac{(A-iB)\tanh^{-1}\left(\cdot\right.}{d\sqrt{a-}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```



```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*
d) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a +
I*b]*d) - (2*(10*a*A*b - 8*a^2*B + 15*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(15*
b^3*d) + (2*(5*A*b - 4*a*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(15*b^2*
d) + (2*B*Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(5*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{2B\tan^2(c+dx)\sqrt{a+b\tan(c+dx)}}{5bd} + \frac{2\int \frac{\tan(c+dx)\left(-2aB-\frac{5}{2}bB\tan(c+dx)+\frac{1}{2}(5Ab-4a\right.}{\sqrt{a+b\tan(c+dx)}}}{5b}$$

$$= \frac{2(5Ab-4aB)\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{15b^2d} + \frac{2B\tan^2(c+dx)\sqrt{a+b\tan(c}{5bd}$$

$$= -\frac{2\left(10aAb-8a^2B+15b^2B\right)\sqrt{a+b\tan(c+dx)}}{15b^3d} + \frac{2(5Ab-4aB)\tan(c+dx)}{15b^2d}$$

$$= -\frac{2\left(10aAb-8a^2B+15b^2B\right)\sqrt{a+b\tan(c+dx)}}{15b^3d} + \frac{2(5Ab-4aB)\tan(c+dx)}{15b^2d}$$

$$= -\frac{2\left(10aAb-8a^2B+15b^2B\right)\sqrt{a+b\tan(c+dx)}}{15b^3d} + \frac{2(5Ab-4aB)\tan(c+dx)}{15b^2d}$$

$$= -\frac{2\left(10aAb-8a^2B+15b^2B\right)\sqrt{a+b\tan(c+dx)}}{15b^3d} + \frac{2(5Ab-4aB)\tan(c+dx)}{15b^2d}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}d} + \frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}d} - \frac{2\left(10a\right.}{}$$

Mathematica [A] time = 4.08083, size = 170, normalized size = 0.8

$$\frac{\frac{2\sqrt{a+b\tan(c+dx)}\left(8a^2B+b(5Ab-4aB)\tan(c+dx)-10aAb+3b^2B\tan^2(c+dx)-15b^2B\right)}{b^3} + \frac{15(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}} + \frac{15(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+d}}{\sqrt{a+ib}}\right.}{\sqrt{a+ib}}}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((15*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a - I*
b] + (15*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/Sqrt[a
+ I*b] + (2*Sqrt[a + b*Tan[c + d*x]]*(-10*a*A*b + 8*a^2*B - 15*b^2*B + b*(5
*A*b - 4*a*B)*Tan[c + d*x] + 3*b^2*B*Tan[c + d*x]^2))/b^3)/(15*d)
```

Maple [B] time = 0.148, size = 4107, normalized size = 19.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2
)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a-1
/4/d/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*ta
n(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+2/d/(a^2+b^2)
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b
*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+1/d*b/(a^2+b^2)^(1
/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(
a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/4/d*b^2/(a^2+b^2)
^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)
-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2/d*b^3/(a^2+b^2)^(3/2)
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b
*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+2/d*b^3/(a^2+b^2)^(3/2
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^
2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/d*b/(a^2+b^2)^(1/2)
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2
)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/4/d*b^2/(a^2+b^2)^(3
/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+
(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/d/b^2/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2-1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/
(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1/4/d*b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*t
an(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)-1/4/d/b^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*
(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
*a+1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/
2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/
d/b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2
*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+1/4/d/b^2*ln(
```

```
(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^
2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/d*b/(a^2+b^2)*ln((a+b*tan(d
*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*
B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/d/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+
b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/d/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2))*A*a^3+1/4/d/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x
+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)*a-2/d/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b
*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*A*a^2-1/4/d/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1
/2)*a^2-1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*ta
n(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
))*A*a-1/d/b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d
*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
A*a^4+1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/
4/d/b^2/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/d/b/(a
^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)
^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4+2/3/d
/b^2*A*(a+b*tan(d*x+c))^(3/2)+2/5/d/b^3*B*(a+b*tan(d*x+c))^(5/2)-2/d/b^2*A*
(a+b*tan(d*x+c))^(1/2)*a-4/3/d/b^3*B*(a+b*tan(d*x+c))^(3/2)*a+2/d/b^3*a^2*B
*(a+b*tan(d*x+c))^(1/2)-1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*B*a^2+1/d/b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))*A*a^4-1/4/d/b^2/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*
(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)*a^3-1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*a
rctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)
^(1/2)-2*a)^(1/2))*A*a-3/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))*B*a^2-1/4/d/b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*ta
n(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)*a^3+1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*B*a^2-1/d/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2))*A*a^3-1/4/d*b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*
tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)*a-1/4/d/b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2
+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)
```

```
+2*a)^(1/2)*a^2+1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
(2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*B*a^4+1/4/d/b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2
)+2*a)^(1/2)*a^3-1/d/b^2*(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arct
an(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2))*A*a+1/d/b^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*a
rctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)
^(1/2)-2*a)^(1/2))*A*a^3+1/4/d*b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2
)^(1/2)+2*a)^(1/2)*a+1/d/b^2*(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*
arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2))*A*a-1/d/b^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2))*A*a^3+1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a
)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*
(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a+3/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*
a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-2*B*(a+b*tan(d*x+c))^(1/2)/b/d
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 20.3939, size = 17573, normalized size = 82.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] -1/60*(60*sqrt(2)*(a^2*b^3 + b^5)*d^5*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^
2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 +
b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*
A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4
*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 +
 2*a^2*b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4)*a
rctan(-((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 - (A^8 + 2*A^6*B^2 -
 2*A^2*B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^2
 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7*B + 3*A^5*B^3 + 3
*A^3*B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^5)*d^4*sqrt
((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^
4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))
+ (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 - (A^10 + 3*A^
8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^7*
B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^
4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B
 - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))
 - sqrt(2)*((A*a^5 + B*a^4*b + 2*A*a^3*b^2 + 2*B*a^2*b^3 + A*a*b^4 + B*b^5)
*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*
b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^
2)*d^4)) + ((A^3 + A*B^2)*a^4 + 2*(A^3 + A*B^2)*a^2*b^2 + (A^3 + A*B^2)*b^4
)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)
*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^
2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 +
b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*
A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((
4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*
A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4
 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x +
c) + sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*B^2
 + A*B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4)*b
^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(
A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 - 5*A
^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^3)*
d*cos(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 -
B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*
A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B
 - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(
d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) +
 (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*
B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*
A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A
^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 +
B^4)/((a^2 + b^2)*d^4))^(3/4) + sqrt(2)*((2*(A^4*B + A^2*B^3)*a^6 - (A^5 -
2*A^3*B^2 - 3*A*B^4)*a^5*b + (3*A^4*B + 4*A^2*B^3 + B^5)*a^4*b^2 - 2*(A^5 -
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2*A^3*B^2 - 3*A*B^4)*a^3*b^3 + 2*(A^2*B^3 + B^5)*a^2*b^4 - (A^5 - 2*A^3*B^
2 - 3*A*B^4)*a*b^5 - (A^4*B - B^5)*b^6)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B
- A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*
sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^6*B + 2*A^4*B^3 + A
^2*B^5)*a^5 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^4*b + 4*(A^6*B + 2*A^4*B^
3 + A^2*B^5)*a^3*b^2 - 2*(A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^2*b^3 + 2*(A^6
*B + 2*A^4*B^3 + A^2*B^5)*a*b^4 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^5)*d^
5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2
)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 -
B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)
*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*
B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos
(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 +
b^2)*d^4))^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^
10)*a^2*b - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B
^11)*a*b^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^1
0 + B^12)*b^3))*cos(d*x + c)^2 + 60*sqrt(2)*(a^2*b^3 + b^5)*d^5*sqrt(-((2*A
*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 +
2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 +
2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^
2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A
^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/
((a^2 + b^2)*d^4))^(3/4)*arctan(((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)
*a^5 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3
*A^3*B^5 + A*B^7)*a^3*b^2 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 +
2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2
*B^6 - B^8)*b^5)*d^4*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2
*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 +
B^4)/((a^2 + b^2)*d^4)) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 +
A*B^9)*a^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*
a^3*b + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^
10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt(
(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4
+ 2*a^2*b^2 + b^4)*d^4)) + sqrt(2)*((A*a^5 + B*a^4*b + 2*A*a^3*b^2 + 2*B*a
^2*b^3 + A*a*b^4 + B*b^5)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b +
(A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*
A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + ((A^3 + A*B^2)*a^4 + 2*(A^3 + A*B^2)*a^
2*b^2 + (A^3 + A*B^2)*b^4)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b
+ (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*
B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 +
2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 +
2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2
*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*
b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 +
(A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^

2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)
*a^3*b + (A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A
^5 - 2*A^3*B^2 + A*B^4)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*
d^4))*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^
2*B^5)*a^2*b + (A^7 - 5*A^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B
^3 - A^2*B^5 + B^7)*b^3)*d*cos(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 +
(A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2
 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/
(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt
((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/(
(a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B
 + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*
x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^
3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x +
 c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4) - sqrt(2)*((2*(A^4*B
 + A^2*B^3)*a^6 - (A^5 - 2*A^3*B^2 - 3*A*B^4)*a^5*b + (3*A^4*B + 4*A^2*B^3
+ B^5)*a^4*b^2 - 2*(A^5 - 2*A^3*B^2 - 3*A*B^4)*a^3*b^3 + 2*(A^2*B^3 + B^5)*
a^2*b^4 - (A^5 - 2*A^3*B^2 - 3*A*B^4)*a*b^5 - (A^4*B - B^5)*b^6)*d^7*sqrt((
4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4
+ 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) +
(2*(A^6*B + 2*A^4*B^3 + A^2*B^5)*a^5 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^
4*b + 4*(A^6*B + 2*A^4*B^3 + A^2*B^5)*a^3*b^2 - 2*(A^7 + A^5*B^2 - A^3*B^4
- A*B^6)*a^2*b^3 + 2*(A^6*B + 2*A^4*B^3 + A^2*B^5)*a*b^4 - (A^7 + A^5*B^2 -
 A^3*B^4 - A*B^6)*b^5)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A
^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^
2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^
2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^
2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 +
2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6
*B^6 + 4*A^4*B^8 + A^2*B^10)*a^2*b - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*
A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*
B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^3))*cos(d*x + c)^2 - 15*sqrt(2)*((A^4
+ 2*A^2*B^2 + B^4)*b^3*d*cos(d*x + c)^2 + (2*A*B*b^4 + (A^2 - B^2)*a*b^3)*d
^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c)^2)*sqrt(-((
2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^
4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^
4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2
*A^2*B^2 + B^4)*b^2))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log
(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 +
 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*
B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x
 + c) + sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*
B^2 + A*B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4
)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (

4*(A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 - 5*A^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^3)*d*cos(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c)) + 15*sqrt(2)*((A^4 + 2*A^2*B^2 + B^4)*b^3*d*cos(d*x + c)^2 + (2*A*B*b^4 + (A^2 - B^2)*a*b^3)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c)^2)*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 - 5*A^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^3)*d*cos(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c)) - 8*(3*(A^4*B + 2*A^2*B^3 + B^5)*b^2 + 2*(4*(A^4*B + 2*A^2*B^3 + B^5)*a^2 - 5*(A^5 + 2*A^3*B^2 + A*B^4)*a*b - 9*(A^4*B + 2*A^2*B^3 + B^5)*b^2)*cos(d*x + c)^2 - (4*(A^4*B + 2*A^2*B^3 + B^5)*a*b - 5*(A^5 + 2*A^3*B^2 + A*B^4)*b^2)*cos(d*x + c)*sin(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/((A^4 + 2*A^2*B^2 + B^4)*b^3*d*cos(d*x + c)^2)

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^3(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**3/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^3}{\sqrt{b\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^3/sqrt(b*tan(d*x + c) + a), x)
```

3.344 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=166

$$\frac{2(3Ab-2aB)\sqrt{a+b\tan(c+dx)}}{3b^2d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}+\frac{2B\tan(c+d}{}$$

```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*
d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a +
I*b]*d) + (2*(3*A*b - 2*a*B)*Sqrt[a + b*Tan[c + d*x]])/(3*b^2*d) + (2*B*Tan
[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(3*b*d)
```

Rubi [A] time = 0.357055, antiderivative size = 166, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {3607, 3630, 3539, 3537, 63, 208}

$$\frac{2(3Ab-2aB)\sqrt{a+b\tan(c+dx)}}{3b^2d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}+\frac{2B\tan(c+d}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*
d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a +
I*b]*d) + (2*(3*A*b - 2*a*B)*Sqrt[a + b*Tan[c + d*x]])/(3*b^2*d) + (2*B*Tan
[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(3*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
```

```
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{2B\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3bd} + \frac{2\int \frac{-aB-\frac{3}{2}bB\tan(c+dx)+\frac{1}{2}(3Ab-2aB)\tan^2(c+dx)}{\sqrt{a+b\tan(c+dx)}}d}{3b}$$

$$= \frac{2(3Ab-2aB)\sqrt{a+b\tan(c+dx)}}{3b^2d} + \frac{2B\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3bd} + \frac{2\int -}{}$$

$$= \frac{2(3Ab-2aB)\sqrt{a+b\tan(c+dx)}}{3b^2d} + \frac{2B\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3bd} + \frac{1}{2}(-A$$

$$= \frac{2(3Ab-2aB)\sqrt{a+b\tan(c+dx)}}{3b^2d} + \frac{2B\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3bd} + \frac{(iA-}{}$$

$$= \frac{2(3Ab-2aB)\sqrt{a+b\tan(c+dx)}}{3b^2d} + \frac{2B\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3bd} + \frac{(A-}{}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}d} - \frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}d} + \frac{2(3Ab-}{}$$

Mathematica [A] time = 1.51772, size = 139, normalized size = 0.84

$$\frac{\frac{2\sqrt{a+b\tan(c+dx)}(-2aB+3Ab+bB\tan(c+dx))}{b^2} + \frac{3(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}} + \frac{3(B-iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((3*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a - I*b
] + (3*((-I)*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/Sqrt[a
 + I*b] + (2*Sqrt[a + b*Tan[c + d*x]]*(3*A*b - 2*a*B + b*B*Tan[c + d*x]))/b
^2)/(3*d)
```

Maple [B] time = 0.124, size = 4040, normalized size = 24.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/4/d*b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/
d/b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/4/d*
b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b
*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+3/d*b/(a^2
+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(
1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+1/4/d/b
^2/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/d/b^2/(a^2+
b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*
(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4-1/d/b/(a^2+b^2
)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+1/d/b/(a^2+
b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1
/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^4-1/d/b^2*
(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a+1/d/b
^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)
+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3+
1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+
c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a
^2-1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^
2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
)*B*a+1/4/d/b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(
a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*
a^3-1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(
d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*A*a^4+1/d/b^2*(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b
*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*B*a-1/4/d/b^2/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*
a^3-1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/d/
b^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c)
)^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3
+2/d/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-1/d/
(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1
/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a+1/d/(
a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/
2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3-1/4/
```

d*b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+2/3/d/b^2*B*(a+b*tan(d*x+c))^(3/2)+2/d/b*A*(a+b*tan(d*x+c))^(1/2)+1/d*b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/d*b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/4/d*b^2/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+2/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/d/b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/d/b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/4/d/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-2/d/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a-1/d/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3-1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/4/d*b^2/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/4/d/b^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/d*b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/d/b^2*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/d/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/4/d/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/d/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/d/b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4-3/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^

```
2+1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(
d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*B*a+1/4/d/b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1
/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-2/d
/b^2*a*B*(a+b*tan(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^2}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/sqrt(b*tan(d*x + c) + a), x)
```

Fricas [B] time = 19.4768, size = 17361, normalized size = 104.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] -1/12*(12*sqrt(2)*(a^2*b^2 + b^4)*d^5*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2
 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b
^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A
^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*
A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 +
2*a^2*b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4)*ar
ctan(((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 - (A^8 + 2*A^6*B^2 - 2
*A^2*B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^2 -
 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A
^3*B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^5)*d^4*sqrt((
4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4
+ 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) +
(2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 - (A^10 + 3*A^8*
```

```
B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^7*B^
3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4
- 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B -
 A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) -
 sqrt(2)*((B*a^5 - A*a^4*b + 2*B*a^3*b^2 - 2*A*a^2*b^3 + B*a*b^4 - A*b^5)*d
^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^
2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)
*d^4)) + ((A^2*B + B^3)*a^4 + 2*(A^2*B + B^3)*a^2*b^2 + (A^2*B + B^3)*b^4)*
d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b
^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 -
 B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2
)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2
*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((4*(
A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2
*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 +
B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c)
+ sqrt(2)*((4*A^2*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B + 2*A^2*B^3
+ B^5)*a^2*b^2 - 4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3 + B^5)*b^4)
*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^4
*B^3 + A^2*B^5)*a^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5*A^6*B - A^
4*B^3 - 5*A^2*B^5 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^3)*d*c
os(d*x + c))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)
*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*
B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A
*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x
+ c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*
(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*
B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 -
 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)
/((a^2 + b^2)*d^4))^(3/4) + sqrt(2)*((2*(A^3*B^2 + A*B^4)*a^6 - (3*A^4*B +
2*A^2*B^3 - B^5)*a^5*b + (A^5 + 4*A^3*B^2 + 3*A*B^4)*a^4*b^2 - 2*(3*A^4*B +
 2*A^2*B^3 - B^5)*a^3*b^3 + 2*(A^5 + A^3*B^2)*a^2*b^4 - (3*A^4*B + 2*A^2*B^
3 - B^5)*a*b^5 + (A^5 - A*B^4)*b^6)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt
((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B
^6)*a^5 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^4*b + 4*(A^5*B^2 + 2*A^3*B^4
+ A*B^6)*a^3*b^2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^2*b^3 + 2*(A^5*B^2
 + 2*A^3*B^4 + A*B^6)*a*b^4 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^5)*d^5*sq
rt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((
a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*
a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)
) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a
^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x
+ c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*
```

d^4))^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a
^2*b - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*
a*b^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B
^12)*b^3))*cos(d*x + c) + 12*sqrt(2)*(a^2*b^2 + b^4)*d^5*sqrt(((2*A*B*a^2*b
 + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B
^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B
^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 +
B^4)*b^2))*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 +
 B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 +
b^2)*d^4))^(3/4)*arctan(-((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 -
(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^
5 + A*B^7)*a^3*b^2 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7
*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 -
B^8)*b^5)*d^4*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^
2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(
(a^2 + b^2)*d^4)) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*
a^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b +
 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*
A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*
B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^
2*b^2 + b^4)*d^4)) + sqrt(2)*((B*a^5 - A*a^4*b + 2*B*a^3*b^2 - 2*A*a^2*b^3
+ B*a*b^4 - A*b^5)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 -
 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2
 + B^4)/((a^2 + b^2)*d^4)) + ((A^2*B + B^3)*a^4 + 2*(A^2*B + B^3)*a^2*b^2 +
 (A^2*B + B^3)*b^4)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4
- 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b
+ 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^
2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^
2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B
^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6
 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 -
A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)
*d^4))*cos(d*x + c) - sqrt(2)*((4*A^2*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b +
 (A^4*B + 2*A^2*B^3 + B^5)*a^2*b^2 - 4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2
*A^2*B^3 + B^5)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*co
s(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a
^2*b + (5*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B
^4 + A*B^6)*b^3)*d*cos(d*x + c))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^
2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d
^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^
2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d
*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^
2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^
3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) +
(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A

```
*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^
4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4) - sqrt(2)*((2*(A^3*B^2 + A*B^
4)*a^6 - (3*A^4*B + 2*A^2*B^3 - B^5)*a^5*b + (A^5 + 4*A^3*B^2 + 3*A*B^4)*a^
4*b^2 - 2*(3*A^4*B + 2*A^2*B^3 - B^5)*a^3*b^3 + 2*(A^5 + A^3*B^2)*a^2*b^4 -
 (3*A^4*B + 2*A^2*B^3 - B^5)*a*b^5 + (A^5 - A*B^4)*b^6)*d^7*sqrt((4*A^2*B^2
*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b
^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^5*B
^2 + 2*A^3*B^4 + A*B^6)*a^5 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^4*b + 4*(
A^5*B^2 + 2*A^3*B^4 + A*B^6)*a^3*b^2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*
a^2*b^3 + 2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a*b^4 - (A^6*B + A^4*B^3 - A^2*B^
5 - B^7)*b^5)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^
2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*
B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^
4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^
2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2
 + B^4)/((a^2 + b^2)*d^4))^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A
^4*B^8 + A^2*B^10)*a^2*b - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 -
3*A^3*B^9 - A*B^11)*a*b^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*
B^8 + 2*A^2*B^10 + B^12)*b^3))*cos(d*x + c) + 3*sqrt(2)*((2*A*B*b^3 + (A^2
- B^2)*a*b^2)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x +
 c) - (A^4 + 2*A^2*B^2 + B^4)*b^2*d*cos(d*x + c))*sqrt(((2*A*B*a^2*b + 2*A*
B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^
4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^
2))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log(((4*(A^4*B^2 + A^
2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*
a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^
2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*((
4*A^2*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B + 2*A^2*B^3 + B^5)*a^2*b
^2 - 4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3 + B^5)*b^4)*d^3*sqrt((A
^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^4*B^3 + A^2*B
^5)*a^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5*A^6*B - A^4*B^3 - 5*A^
2*B^5 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^3)*d*cos(d*x + c))
*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*
sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b +
(A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*
x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2
*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^
8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^
6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 +
 B^8)*b^3)*sin(d*x + c))/cos(d*x + c)) - 3*sqrt(2)*((2*A*B*b^3 + (A^2 - B^2
)*a*b^2)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) -
 (A^4 + 2*A^2*B^2 + B^4)*b^2*d*cos(d*x + c))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3
```

```
 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((
a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^
2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(
(A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log(((4*(A^4*B^2 + A^2*B^4
)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b
^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqr
t((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*((4*A^2
*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B + 2*A^2*B^3 + B^5)*a^2*b^2 -
4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3 + B^5)*b^4)*d^3*sqrt((A^4 +
2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a
^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5*A^6*B - A^4*B^3 - 5*A^2*B^5
 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^3)*d*cos(d*x + c))*sqrt
(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt(
(A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 +
(A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4
- 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c
))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*
B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2
*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^
2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)
*b^3)*sin(d*x + c))/cos(d*x + c)) - 8*((A^4*B + 2*A^2*B^3 + B^5)*b*sin(d*x
+ c) - (2*(A^4*B + 2*A^2*B^3 + B^5)*a - 3*(A^5 + 2*A^3*B^2 + A*B^4)*b)*cos(
d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/((A^4 + 2*A
^2*B^2 + B^4)*b^2*d*cos(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^2(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**2/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^2}{\sqrt{b\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/sqrt(b*tan(d*x + c) + a), x)
```

3.345 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=124

$$-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}+\frac{2B\sqrt{a+b\tan(c+dx)}}{bd}$$

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b
]*d)) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a
 + I*b]*d) + (2*B*Sqrt[a + b*Tan[c + d*x]])/(b*d)
```

Rubi [A] time = 0.222946, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3592, 3539, 3537, 63, 208}

$$-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}+\frac{2B\sqrt{a+b\tan(c+dx)}}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b
]*d)) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a
 + I*b]*d) + (2*B*Sqrt[a + b*Tan[c + d*x]])/(b*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
```

```
a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{2B\sqrt{a+b\tan(c+dx)}}{bd} + \int \frac{-B+A\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{2B\sqrt{a+b\tan(c+dx)}}{bd} + \frac{1}{2}(-iA-B)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(iA-B)\int$$

$$= \frac{2B\sqrt{a+b\tan(c+dx)}}{bd} + \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x, i\tan(c+dx)\right)}{2d} + $$

$$= \frac{2B\sqrt{a+b\tan(c+dx)}}{bd} - \frac{(iA-B)\,\mathrm{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{bd}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}\,d} - \frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}\,d} + \frac{2B\sqrt{a+}}{}$$

Mathematica [A] time = 0.504041, size = 118, normalized size = 0.95

$$-\frac{\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}}+\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}-\frac{2B\sqrt{a+b\tan(c+dx)}}{b}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] -((((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a - I*b
] + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/Sqrt[a + I*
b] - (2*B*Sqrt[a + b*Tan[c + d*x]])/b)/d)
```

Maple [B] time = 0.106, size = 3997, normalized size = 32.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] -1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/
2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a+
1/4/d/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*t
an(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-2/d/(a^2+b^2
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+
b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2-1/d*b/(a^2+b^2)^(
1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*
(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/4/d*b^2/(a^2+b^2
)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c
)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+2/d*b^3/(a^2+b^2)^(3/2
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+
b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-2/d*b^3/(a^2+b^2)^(3/
2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b
^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/d*b/(a^2+b^2)^(1/2
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^
2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/4/d*b^2/(a^2+b^2)^(
3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/d/b^2/(2*(a^2+b^2)^(1/2
)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
```

)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2+1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/4/d*b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*
tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)+1/4/d/b^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)*a-1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1
/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1
/d/b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-
2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2-1/4/d/b^2*ln
((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b
^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/d*b/(a^2+b^2)*ln((a+b*tan(
d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))
B(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a
+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a
^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/d/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2))*A*a^3-1/4/d/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*
x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)*a+2/d/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+
b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^
(1/2))*A*a^2+1/4/d/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)*a^2+1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*t
an(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2))*A*a+1/d/b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(
d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*A*a^4-1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1
/4/d/b^2/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/d/b/(
a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4+1/d/
b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^
(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-1
/d/b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2
a)^(1/2)-2(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^4+1/
4/d/b^2/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b
*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/d*b^2/
(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a+3/d*b
/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2
a)^(1/2)-2(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/
4/d/b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/d/

```
b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+
2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1
/d/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)
+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^3+
1/4/d*b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/
d/b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan
(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/d/b/(a^2+b
^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2
*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4-1/4/d/b/(
a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*ta
n(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/d/b^2*(a^
2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^
(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a-1/d/b^2/
(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^3-1/4
/d*b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/d/b^2
*(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(
1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a+1/d/
b^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c)
)^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^3
-1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d
*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
A*a-3/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(
d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*B*a^2+2*B*(a+b*tan(d*x+c))^(1/2)/b/d
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/sqrt(b*tan(d*x + c) + a), x)
```

Fricas [B] time = 20.9122, size = 17095, normalized size = 137.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="
fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(a^2*b + b^3)*d^5*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B
^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*
d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B
^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*
B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^
2*b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4)*arctan
(-((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 - (A^8 + 2*A^6*B^2 - 2*A^
2*B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^2 - 2*
(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3*
B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^5)*d^4*sqrt((4*A
^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2
*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*
(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 - (A^10 + 3*A^8*B^2
 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^7*B^3 +
 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2
*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - sq
rt(2)*((A*a^5 + B*a^4*b + 2*A*a^3*b^2 + 2*B*a^2*b^3 + A*a*b^4 + B*b^5)*d^7*
sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/
((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^
4)) + ((A^3 + A*B^2)*a^4 + 2*(A^3 + A*B^2)*a^2*b^2 + (A^3 + A*B^2)*b^4)*d^5
*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)
/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B
^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*
d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B
^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((4*(A^
4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B
^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^
6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) +
sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*B^2 + A*
B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4)*b^4)*d
^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^5*B
^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 - 5*A^5*B^
2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^3)*d*cos
(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*
```

a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B
^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*
B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x +
c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(
A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*
a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B
^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 -
2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/
((a^2 + b^2)*d^4))^(3/4) + sqrt(2)*((2*(A^4*B + A^2*B^3)*a^6 - (A^5 - 2*A^3
*B^2 - 3*A*B^4)*a^5*b + (3*A^4*B + 4*A^2*B^3 + B^5)*a^4*b^2 - 2*(A^5 - 2*A^
3*B^2 - 3*A*B^4)*a^3*b^3 + 2*(A^2*B^3 + B^5)*a^2*b^4 - (A^5 - 2*A^3*B^2 - 3
*A*B^4)*a*b^5 - (A^4*B - B^5)*b^6)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B
^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt(
(A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^6*B + 2*A^4*B^3 + A^2*B^
5)*a^5 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^4*b + 4*(A^6*B + 2*A^4*B^3 + A
^2*B^5)*a^3*b^2 - 2*(A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^2*b^3 + 2*(A^6*B +
2*A^4*B^3 + A^2*B^5)*a*b^4 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^5)*d^5*sqr
t((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a
^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*
a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)
) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a
^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x
+ c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*
d^4))^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a
^2*b - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*
a*b^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B
^12)*b^3)) + 4*sqrt(2)*(a^2*b + b^3)*d^5*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 +
(A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2
+ b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/
(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt
((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^
4 + 2*a^2*b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4
)*arctan(((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 - (A^8 + 2*A^6*B^2
- 2*A^2*B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b
^2 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7*B + 3*A^5*B^3 +
3*A^3*B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^5)*d^4*sq
rt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((
a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)
) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 - (A^10 + 3*
A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^
7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*A^8*B^2 + 2*A^6*
B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 - 4*(A^3
*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4
)) + sqrt(2)*((A*a^5 + B*a^4*b + 2*A*a^3*b^2 + 2*B*a^2*b^3 + A*a*b^4 + B*b^
5)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4

)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + ((A^3 + A*B^2)*a^4 + 2*(A^3 + A*B^2)*a^2*b^2 + (A^3 + A*B^2)*b ^4)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^ 4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B ^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*B ^2 + A*B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4) *b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4 *(A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 - 5 *A^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^3)*d*cos(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3 *B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*si n(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4) - sqrt(2)*((2*(A^4*B + A^2*B^3)*a^6 - (A^5 - 2*A^3*B^2 - 3*A*B^4)*a^5*b + (3*A^4*B + 4*A^2*B^3 + B^5)*a^4*b^2 - 2*(A^5 - 2*A^3*B^2 - 3*A*B^4)*a^3*b^3 + 2*(A^2*B^3 + B^5)*a^2*b^4 - (A^5 - 2*A^3* B^2 - 3*A*B^4)*a*b^5 - (A^4*B - B^5)*b^6)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3* B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^6*B + 2*A^4*B^3 + A^2*B^5)*a^5 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^4*b + 4*(A^6*B + 2*A^4* B^3 + A^2*B^5)*a^3*b^2 - 2*(A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^2*b^3 + 2*(A ^6*B + 2*A^4*B^3 + A^2*B^5)*a*b^4 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^5)* d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b ^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^ 2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^ 2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*c os(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2* B^10)*a^2*b - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A *B^11)*a*b^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B ^10 + B^12)*b^3)) - sqrt(2)*((2*A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*b*d)*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^

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4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^
4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2
*A^2*B^2 + B^4)*b^2))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log
(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 +
 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*
B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x
 + c) + sqrt(2)*((4*A^3*B^2*a^4 - 4*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*
B^2 + A*B^4)*a^2*b^2 - 4*(A^4*B - A^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4
)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (
4*(A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 -
5*A^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^
3)*d*cos(d*x + c))*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2
 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 +
 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^
3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*s
in(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4
) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 -
 A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 +
 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 +
 (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c)) + sqrt(2)*((2*A*B
*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))
 + (A^4 + 2*A^2*B^2 + B^4)*b*d)*sqrt(-((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^
2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d
^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^
2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*((A^4 + 2*A^2
*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A
^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*
B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A
^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*((4*A^3*B^2*a^4 - 4
*(A^4*B - A^2*B^3)*a^3*b + (A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^2 - 4*(A^4*B - A
^2*B^3)*a*b^3 + (A^5 - 2*A^3*B^2 + A*B^4)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 +
B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^5*B^2 + A^3*B^4)*a^3 - 4*(A^6*
B - A^4*B^3 - 2*A^2*B^5)*a^2*b + (A^7 - 5*A^5*B^2 - A^3*B^4 + 5*A*B^6)*a*b^
2 + (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^3)*d*cos(d*x + c))*sqrt(-((2*A*B*a^
2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^
2*B^2 + B^4)/((a^2 + b^2)*d^4)) - (A^4 + 2*A^2*B^2 + B^4)*a^2 - (A^4 + 2*A^
2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2
 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 +
2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B
^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 +
B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^
7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d
*x + c))/cos(d*x + c)) + 8*(A^4*B + 2*A^2*B^3 + B^5)*sqrt((a*cos(d*x + c) +
 b*sin(d*x + c))/cos(d*x + c)))/((A^4 + 2*A^2*B^2 + B^4)*b*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)}{\sqrt{b\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/sqrt(b*tan(d*x + c) + a), x)
```

3.346 $\int \frac{A+B\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=102

$$\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}$$

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b
]*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a
 + I*b]*d)
```

Rubi [A] time = 0.150711, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {3539, 3537, 63, 208}

$$\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b
]*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a
 + I*b]*d)
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
```

```
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{1}{2}(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(A+iB)\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx, x, -i\tan(c+dx)\right)}{2d} + \frac{(iA+B)\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x\right.}{2d}$$

$$= -\frac{(A-iB)\,\text{Subst}\left(\int \frac{1}{-1-\frac{ia}{b}+\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{bd} - \frac{(A+iB)\,\text{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x\right.}{bd}$$

$$= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}\,d} + \frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}\,d}$$

Mathematica [A] time = 0.0993477, size = 101, normalized size = 0.99

$$\frac{i\left(\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] (I*(-(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a -
I*b]) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/Sqrt[a
```

```
+ I*b]))/d
```

Maple [B] time = 0.108, size = 3976, normalized size = 39.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] -1/4/d*b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4
/d/b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/4/d
*b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-
b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-3/d*b/(a^
2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^
(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2-1/4/d/
b^2/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2
*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/d/b^2/(a^2
+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2
*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4+1/d/b/(a^2+b^
2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2
)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^2-1/d/b/(a^2
+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(
1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*a^4+1/d/b^2
*(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2
*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a-1/d/
b^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2
)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3
-1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x
+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A*
a^2+1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b
^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
))*B*a-1/4/d/b/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*
(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
*a^3+1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan
(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
)*A*a^4-1/d/b^2*(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+
b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^
(1/2))*B*a+1/4/d/b^2/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)
+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
```

*a^3+1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2
)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/d
/b^2/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c
))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^
3-2/d/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/d
/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(
1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a-1/d/
(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1
/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^3+1/4
/d*b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)+(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/d*b/(a^2+b^2)
^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a
^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1/d*b/(a^2+b^2)^
(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2
*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A+1/4/d*b^2/(a^2+b^
2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+
c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2/d*b^3/(a^2+b^2)^(3/
2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a
+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*A-1/d*b^2/(a^2+b^2)/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*ta
n(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/d/b^2/(2*(a^2+b^2)^(1/2
)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2)
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-1/d/b^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2))*B*a^2-1/4/d/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+
c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)*a+2/d/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*
tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2))*B*a^2-1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*B*a+1/d/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2
+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2))*B*a^3+1/d*b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*t
an(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/
2))*B-1/4/d*b^2/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)+2/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(
d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*A+1/4/d/b^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/d*b/(a^2+b^
2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(
a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d/b^2*ln((a+b*tan(d*x+c
))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/d/(a^2+b^2)^(3/2)*ln(b*tan(d*x+c)+a+(a+b*

```
tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)*a^2+1/4/d/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2
+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)
+2*a)^(1/2)*a+1/4/d/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^
(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)*a^2+1/d/b^2/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*ta
n(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
))*B*a^4+3/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b
*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2))*A*a^2-1/d*b^2/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2
*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2
*a)^(1/2))*B*a-1/4/d/b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*A*(2*(a^2+b^2)^(1/2)+2*a)^(1/
2)*a^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 20.5547, size = 16926, normalized size = 165.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(a^2 + b^2)*d^4*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)
*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4
)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*
a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^2
*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b
^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4)*arctan(((
2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 - (A^8 + 2*A^6*B^2 - 2*A^2*B^
```

6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^2 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^5)*d^4*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - sqrt(2)*((B*a^5 - A*a^4*b + 2*B*a^3*b^2 - 2*A*a^2*b^3 + B*a*b^4 - A*b^5)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + ((A^2*B + B^3)*a^4 + 2*(A^2*B + B^3)*a^2*b^2 + (A^2*B + B^3)*b^4)*d^5*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*((4*A^2*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B + 2*A^2*B^3 + B^5)*a^2*b^2 - 4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3 + B^5)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^3)*d*cos(d*x + c))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4) + sqrt(2)*((2*(A^3*B^2 + A*B^4)*a^6 - (3*A^4*B + 2*A^2*B^3 - B^5)*a^5*b + (A^5 + 4*A^3*B^2 + 3*A*B^4)*a^4*b^2 - 2*(3*A^4*B + 2*A^2*B^3 - B^5)*a^3*b^3 + 2*(A^5 + A^3*B^2)*a^2*b^4 - (3*A^4*B + 2*A^2*B^3 - B^5)*a*b^5 + (A^5 - A*B^4)*b^6)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a^5 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^4*b + 4*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a^3*b^2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^2*b^3 + 2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a*b^4 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^5)*d^5*sqrt((4*A

^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2
*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (
A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^
4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*
(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) +
b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(
3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^2*b -
4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^2 +
(A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^
3)) + 4*sqrt(2)*(a^2 + b^2)*d^4*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2
)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^
4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2
a^2 - 4(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((4*A^2*B^
2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*
b^2 + b^4)*d^4))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(3/4)*arctan(-
((2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5 - (A^8 + 2*A^6*B^2 - 2*A^2*
B^6 - B^8)*a^4*b + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^2 - 2*(A
^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^
5 + A*B^7)*a*b^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^5)*d^4*sqrt((4*A^2
*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a
^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A
^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^4 - (A^10 + 3*A^8*B^2 +
2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*a^3*b + 2*(A^9*B + 4*A^7*B^3 + 6
*A^5*B^5 + 4*A^3*B^7 + A*B^9)*a^2*b^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A
^4*B^6 - 3*A^2*B^8 - B^10)*a*b^3)*d^2*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^
3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + sqrt
(2)*((B*a^5 - A*a^4*b + 2*B*a^3*b^2 - 2*A*a^2*b^3 + B*a*b^4 - A*b^5)*d^7*sq
rt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((
a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)
) + ((A^2*B + B^3)*a^4 + 2*(A^2*B + B^3)*a^2*b^2 + (A^2*B + B^3)*b^4)*d^5*s
qrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/(
(a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)
*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4
)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*
a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt(((4*(A^4*B
^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4
+ B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*
b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) - sqr
t(2)*((4*A^2*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B + 2*A^2*B^3 + B^5
)*a^2*b^2 - 4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3 + B^5)*b^4)*d^3*
sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^4*B^3
+ A^2*B^5)*a^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5*A^6*B - A^4*B^3
- 5*A^2*B^5 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^3)*d*cos(d*
x + c))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^
2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 +

B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)
*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))
/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*
B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*
b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 +
A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^
4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^
2 + b^2)*d^4))^(3/4) - sqrt(2)*((2*(A^3*B^2 + A*B^4)*a^6 - (3*A^4*B + 2*A^2
*B^3 - B^5)*a^5*b + (A^5 + 4*A^3*B^2 + 3*A*B^4)*a^4*b^2 - 2*(3*A^4*B + 2*A^
2*B^3 - B^5)*a^3*b^3 + 2*(A^5 + A^3*B^2)*a^2*b^4 - (3*A^4*B + 2*A^2*B^3 - B
^5)*a*b^5 + (A^5 - A*B^4)*b^6)*d^7*sqrt((4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*
a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((A^4
+ 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*a
^5 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^4*b + 4*(A^5*B^2 + 2*A^3*B^4 + A*B
^6)*a^3*b^2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^2*b^3 + 2*(A^5*B^2 + 2*
A^3*B^4 + A*B^6)*a*b^4 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^5)*d^5*sqrt((4
*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2)/((a^4 +
2*a^2*b^2 + b^4)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 +
(A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (
A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 -
4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c)
+ b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))
^(3/4))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*a^2*b
- 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^2
+ (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*
b^3)) - sqrt(2)*(A^4 + 2*A^2*B^2 + B^4 - (2*A*B*b + (A^2 - B^2)*a)*d^2*sqrt
((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3
+ (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((
a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^
2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*(
(A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4)*log(((4*(A^4*B^2 + A^2*B^4
)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*a^2*b
^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^4)*d^2*sqr
t((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*((4*A^2
*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B + 2*A^2*B^3 + B^5)*a^2*b^2 -
4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3 + B^5)*b^4)*d^3*sqrt((A^4 +
2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c) + (4*(A^4*B^3 + A^2*B^5)*a
^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5*A^6*B - A^4*B^3 - 5*A^2*B^5
+ B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^3)*d*cos(d*x + c))*sqrt
(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqrt(
(A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2 +
(A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^4
- 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c
))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4) + (4*(A^6*B^2 + 2*A^4*
B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^2*b + (A^8 - 2

```
*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^
2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^2 + (A^8 - 2*A^4*B^4 + B^8)
*b^3)*sin(d*x + c))/cos(d*x + c)) + sqrt(2)*(A^4 + 2*A^2*B^2 + B^4 - (2*A*B
*b + (A^2 - B^2)*a)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)))*sq
rt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 + (A^2 - B^2)*a*b^2)*d^2*sqr
t((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A^4 + 2*A^2*B^2 + B^4)*a^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4*(A^3*B - A*B^3)*a*b + (A^
4 - 2*A^2*B^2 + B^4)*b^2))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^(1/4
)*log(((4*(A^4*B^2 + A^2*B^4)*a^4 - 4*(A^5*B - A*B^5)*a^3*b + (A^6 + 3*A^4*
B^2 + 3*A^2*B^4 + B^6)*a^2*b^2 - 4*(A^5*B - A*B^5)*a*b^3 + (A^6 - A^4*B^2 -
 A^2*B^4 + B^6)*b^4)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*co
s(d*x + c) - sqrt(2)*((4*A^2*B^3*a^4 - 4*(A^3*B^2 - A*B^4)*a^3*b + (A^4*B +
 2*A^2*B^3 + B^5)*a^2*b^2 - 4*(A^3*B^2 - A*B^4)*a*b^3 + (A^4*B - 2*A^2*B^3
+ B^5)*b^4)*d^3*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))*cos(d*x + c
) + (4*(A^4*B^3 + A^2*B^5)*a^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*a^2*b + (5
*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*a*b^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^
6)*b^3)*d*cos(d*x + c))*sqrt(((2*A*B*a^2*b + 2*A*B*b^3 + (A^2 - B^2)*a^3 +
(A^2 - B^2)*a*b^2)*d^2*sqrt((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4)) + (A
^4 + 2*A^2*B^2 + B^4)*a^2 + (A^4 + 2*A^2*B^2 + B^4)*b^2)/(4*A^2*B^2*a^2 - 4
*(A^3*B - A*B^3)*a*b + (A^4 - 2*A^2*B^2 + B^4)*b^2))*sqrt((a*cos(d*x + c) +
 b*sin(d*x + c))/cos(d*x + c))*((A^4 + 2*A^2*B^2 + B^4)/((a^2 + b^2)*d^4))^
(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^3 - 4*(A^7*B + A^5*B^3 - A^3*B
^5 - A*B^7)*a^2*b + (A^8 - 2*A^4*B^4 + B^8)*a*b^2)*cos(d*x + c) + (4*(A^6*B
^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b
^2 + (A^8 - 2*A^4*B^4 + B^8)*b^3)*sin(d*x + c))/cos(d*x + c)))/(A^4 + 2*A^2
*B^2 + B^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/sqrt(b*tan(d*x + c) + a), x)
```

3.347 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=131

$$\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}+\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

```
[Out] (-2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + ((A - I*B)*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d) + ((A + I
*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```

Rubi [A] time = 0.339725, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3613, 3539, 3537, 63, 208, 3634}

$$\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}+\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] (-2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + ((A - I*B)*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d) + ((A + I
*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```


Rule 3613

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)])^(n_))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[
1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n*Simp[a*A + b*B - (A*b - a*B)*Tan[
e + f*x], x], x], x] + Dist[(b*(A*b - a*B))/(a^2 + b^2), Int[((c + d*Tan[e
+ f*x])^n*(1 + Tan[e + f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ
[c^2 + d^2, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
```

```
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = A\int \frac{\cot(c+dx)\left(1+\tan^2(c+dx)\right)}{\sqrt{a+b\tan(c+dx)}}\,dx + \int \frac{B-A\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{1}{2}(-iA+B)\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(iA+B)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx +$$

$$= \frac{(2A)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{b}+\frac{x^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{bd} - \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-}}\right.}{2d}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{(iA-B)\,\mathrm{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c\right.}{bd}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}d} + \frac{(A+iB)\tan}{}$$

Mathematica [A] time = 0.707593, size = 170, normalized size = 1.3

$$-\frac{\frac{\frac{\left(\sqrt{-b^2}B-Ab\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{a-\sqrt{-b^2}}}-\frac{\left(Ab+\sqrt{-b^2}B\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+\sqrt{-b^2}}}\right)}{\sqrt{a+\sqrt{-b^2}}}}{b}+\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] -((((2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a] + (((-(A*b) + Sq
rt[-b^2]*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/Sqrt[a
- Sqrt[-b^2]] - ((A*b + Sqrt[-b^2]*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt
[a + Sqrt[-b^2]]])/Sqrt[a + Sqrt[-b^2]])/b)/d)
```

Maple [C] time = 1.214, size = 33052, normalized size = 252.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\cot(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)/sqrt(b*tan(d*x + c) + a), x)
```

3.348 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=169

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}-\frac{A\cot(c+}{}$$

```
[Out] ((A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + ((I
*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d)
- ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b
]*d) - (A*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(a*d)
```

Rubi [A] time = 0.512888, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3609, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}-\frac{A\cot(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] ((A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + ((I
*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d)
- ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b
]*d) - (A*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(a*d)
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
```

```
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ad} - \frac{\int \frac{\cot(c+dx)\left(\frac{1}{2}(Ab-2aB)+aA\tan(c+dx)+\frac{1}{2}Ab\tan^2(c}{\sqrt{a+b\tan(c+dx)}}}{a}$$

$$= -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ad} - \frac{\int \frac{aA+aB\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a} - \frac{(Ab-2aB)\int \frac{\cot(c+}{\sqrt{}}}{2}$$

$$= -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ad} - \frac{1}{2}(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx - \frac{1}{2}($$

$$= -\frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ad} + \frac{(iA-B)\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx, x, -i\,\mathrm{ta}\right.}{2d}$$

$$= \frac{(Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} - \frac{A\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ad} + \frac{(A-}{}$$

$$= \frac{(Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}\,d} - \frac{(iA-}{}$$

Mathematica [A] time = 2.80508, size = 201, normalized size = 1.19

$$\frac{\frac{b(Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}} + \frac{\left(A\sqrt{-b^2}+bB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{a-\sqrt{-b^2}}} - \frac{\left(A\sqrt{-b^2}-bB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+\sqrt{-b^2}}}\right)}{\sqrt{a+\sqrt{-b^2}}} - \frac{Ab\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{a}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((b*(A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/a^(3/2) + ((A*
Sqrt[-b^2] + b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/S
qrt[a - Sqrt[-b^2]] - ((A*Sqrt[-b^2] - b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]
```

```
]/Sqrt[a + Sqrt[-b^2]]])/Sqrt[a + Sqrt[-b^2]] - (A*b*Cot[c + d*x]*Sqrt[a +
b*Tan[c + d*x]])/a)/(b*d)
```

Maple [C] time = 1.607, size = 69579, normalized size = 411.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\cot^2(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)**2/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\cot(dx + c)^2}{\sqrt{b\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^2/sqrt(b*tan(d*x + c) + a), x)
```

3.349 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=224

$$\frac{\left(8a^2A+4abB-3Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d}+\frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4a^2d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b}}{}\right.}{d\sqrt{a-ib}}$$

```
[Out] ((8*a^2*A - 3*A*b^2 + 4*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(
4*a^(5/2)*d) - ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/
(Sqrt[a - I*b]*d) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]])/(Sqrt[a + I*b]*d) + ((3*A*b - 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d
*x]])/(4*a^2*d) - (A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(2*a*d)
```

Rubi [A] time = 0.80705, antiderivative size = 224, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3609, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{\left(8a^2A+4abB-3Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d}+\frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4a^2d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b}}{}\right.}{d\sqrt{a-ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((8*a^2*A - 3*A*b^2 + 4*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(
4*a^(5/2)*d) - ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/
(Sqrt[a - I*b]*d) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*
b]])/(Sqrt[a + I*b]*d) + ((3*A*b - 4*a*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d
*x]])/(4*a^2*d) - (A*Cot[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]])/(2*a*d)
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
```

```
2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = -\frac{A\cot^2(c+dx)\sqrt{a+b\tan(c+dx)}}{2ad} - \frac{\int \frac{\cot^2(c+dx)\left(\frac{1}{2}(3Ab-4aB)+2aA\tan(c+dx)+\frac{3}{2}Ab\tan\ldots}{\sqrt{a+b\tan(c+dx)}}}{2a}$$

$$= \frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4a^2d} - \frac{A\cot^2(c+dx)\sqrt{a+b\tan(c+d\ldots}}{2ad}$$

$$= \frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4a^2d} - \frac{A\cot^2(c+dx)\sqrt{a+b\tan(c+d\ldots}}{2ad}$$

$$= \frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4a^2d} - \frac{A\cot^2(c+dx)\sqrt{a+b\tan(c+d\ldots}}{2ad}$$

$$= \frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{4a^2d} - \frac{A\cot^2(c+dx)\sqrt{a+b\tan(c+d\ldots}}{2ad}$$

$$= \frac{\left(8a^2A-3Ab^2+4abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d} + \frac{(3Ab-4aB)\cot(c+dx)\sqrt{a+\ldots}}{4a^2d}$$

$$= \frac{\left(8a^2A-3Ab^2+4abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{5/2}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+d\ldots}}{\sqrt{a-ib}}\right.}{\sqrt{a-ib}d}$$

Mathematica [A] time = 6.26077, size = 362, normalized size = 1.62

$$\frac{2b^3\left(-\frac{3A\left(\frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{\cot(c+dx)\sqrt{a+b\tan(c+dx)}}{ab}\right)}{8ab}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{2a^{3/2}b^2}-\frac{\left(A\sqrt{-b^2}+bB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{2b^3\sqrt{-b^2}\sqrt{a-\sqrt{-b^2}}}-\frac{b\left(A\sqrt{-b^2}-bB\right)\tanh\ldots}{2\left(-b^2\right)^{5/2}\ldots}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] (2*b^3*((A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*b^3) + (B*Ar
cTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(2*a^(3/2)*b^2) - ((A*Sqrt[-b^2] +
 b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/(2*b^3*Sqrt[-
b^2]*Sqrt[a - Sqrt[-b^2]]) - (b*(A*Sqrt[-b^2] - b*B)*ArcTanh[Sqrt[a + b*Tan
[c + d*x]]/Sqrt[a + Sqrt[-b^2]]])/(2*(-b^2)^(5/2)*Sqrt[a + Sqrt[-b^2]]) - (
```

```
B*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(2*a*b^3) - (A*Cot[c + d*x]^2*Sqrt
[a + b*Tan[c + d*x]])/(4*a*b^3) - (3*A*(ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sq
rt[a]]/a^(3/2) - (Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(a*b)))/(8*a*b)))/
d
```

Maple [C] time = 2.191, size = 111109, normalized size = 496.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\cot^3(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)**3/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\cot(dx + c)^3}{\sqrt{b\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^3/sqrt(b*tan(d*x + c) + a), x)
```

3.350 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=264

$$\frac{2a(Ab-aB)\tan^2(c+dx)}{bd\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{2\left(-4a^2B+3aAb-b^2B\right)\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3b^2d\left(a^2+b^2\right)}+\frac{2\left(6a^2Ab-8a^3B-5ab^2B\right.}{3b^3d}$$

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2
)*d) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(3/2)*d) + (2*a*(A*b - a*B)*Tan[c + d*x]^2)/(b*(a^2 + b^2)*d*Sqrt[a + b*
Tan[c + d*x]]) + (2*(6*a^2*A*b + 3*A*b^3 - 8*a^3*B - 5*a*b^2*B)*Sqrt[a + b*
Tan[c + d*x]])/(3*b^3*(a^2 + b^2)*d) - (2*(3*a*A*b - 4*a^2*B - b^2*B)*Tan[c
 + d*x]*Sqrt[a + b*Tan[c + d*x]])/(3*b^2*(a^2 + b^2)*d)
```

Rubi [A] time = 0.723921, antiderivative size = 264, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3605, 3647, 3630, 3539, 3537, 63, 208}

$$\frac{2a(Ab-aB)\tan^2(c+dx)}{bd\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{2\left(-4a^2B+3aAb-b^2B\right)\tan(c+dx)\sqrt{a+b\tan(c+dx)}}{3b^2d\left(a^2+b^2\right)}+\frac{2\left(6a^2Ab-8a^3B-5ab^2B\right.}{3b^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```



```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2
)*d) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(3/2)*d) + (2*a*(A*b - a*B)*Tan[c + d*x]^2)/(b*(a^2 + b^2)*d*Sqrt[a + b*
Tan[c + d*x]]) + (2*(6*a^2*A*b + 3*A*b^3 - 8*a^3*B - 5*a*b^2*B)*Sqrt[a + b*
Tan[c + d*x]])/(3*b^3*(a^2 + b^2)*d) - (2*(3*a*A*b - 4*a^2*B - b^2*B)*Tan[c
 + d*x]*Sqrt[a + b*Tan[c + d*x]])/(3*b^2*(a^2 + b^2)*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
```

```
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \frac{2a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\int \frac{\tan(c+dx)\left(-2a(Ab-aB)+\frac{1}{2}b(Ab-aB)\tan(c+dx)-\frac{1}{2}\right.}{\sqrt{a+b\tan(c+dx)}}}{b\left(a^2+b^2\right)}$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{2\left(3aAb-4a^2B-b^2B\right)\tan(c+dx)\sqrt{a+b}}{3b^2\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\left(6a^2Ab+3Ab^3-8a^3B-5ab^2B\right)\sqrt{a+b}}{3b^3\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\left(6a^2Ab+3Ab^3-8a^3B-5ab^2B\right)\sqrt{a+b}}{3b^3\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\left(6a^2Ab+3Ab^3-8a^3B-5ab^2B\right)\sqrt{a+b}}{3b^3\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\left(6a^2Ab+3Ab^3-8a^3B-5ab^2B\right)\sqrt{a+b}}{3b^3\left(a^2+b^2\right)d}$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} + \frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}d} + \frac{2a(}{b\left(a^2+\right.}$$

Mathematica [C] time = 3.29794, size = 300, normalized size = 1.14

$$\frac{\frac{3i(aA+bB)\left((a+ib)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)-(a-ib)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a+ib}\right)\right)}{(a^2+b^2)\sqrt{a+b\tan(c+dx)}}+\frac{2(-8a^2B+6aAb+3b^2B)}{b^2\sqrt{a+b\tan(c+dx)}}+\frac{2(3Ab-4aB}{b\sqrt{a+b\tan}}}{3bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),
x]
```

```
[Out] ((3*I)*A*(ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]/Sqrt[a - I*b] - A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]/Sqrt[a + I*b]) + (2*(6*a*A*b
 - 8*a^2*B + 3*b^2*B))/(b^2*Sqrt[a + b*Tan[c + d*x]]) + ((3*I)*(a*A + b*B)*
((a + I*b)*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a - I*b)]
- (a - I*b)*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a + I*b)]
))/((a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]]) + (2*(3*A*b - 4*a*B)*Tan[c + d*x]
)/(b*Sqrt[a + b*Tan[c + d*x]]) + (2*B*Tan[c + d*x]^2)/Sqrt[a + b*Tan[c + d*
x]])/(3*b*d)
```

Maple [B] time = 0.14, size = 8025, normalized size = 30.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\tan^3{(c + dx)}}{(a + b\tan{(c + dx)})^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**3/(a + b*tan(c + d*x))**(3/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan{(dx + c)} + A)\tan{(dx + c)}^3}{(b\tan{(dx + c)} + a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^3/(b*tan(d*x + c) + a)^(3/2), x
)
```

3.351 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=167

$$-\frac{2a^2(Ab-aB)}{b^2d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}+\frac{2B\sqrt{a+b\,\mathrm{ta}}}{b^2}$$

```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2
)*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(3/2)*d) - (2*a^2*(A*b - a*B))/(b^2*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x
]]) + (2*B*Sqrt[a + b*Tan[c + d*x]])/(b^2*d)
```

Rubi [A] time = 0.44311, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {3604, 3630, 3539, 3537, 63, 208}

$$-\frac{2a^2(Ab-aB)}{b^2d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}+\frac{2B\sqrt{a+b\,\mathrm{ta}}}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2
)*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(3/2)*d) - (2*a^2*(A*b - a*B))/(b^2*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x
]]) + (2*B*Sqrt[a + b*Tan[c + d*x]])/(b^2*d)
```


Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{2a^2(Ab-aB)}{b^2(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{-a(Ab-aB)+b(Ab-aB)\tan(c+dx)+(a^2+b^2)B\tan^2(c}{\sqrt{a+b\tan(c+dx)}}}{b(a^2+b^2)}$$

$$= -\frac{2a^2(Ab-aB)}{b^2(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{2B\sqrt{a+b\tan(c+dx)}}{b^2d} + \frac{\int \frac{-b(aA+bB)+b(Ab}{\sqrt{a+b\tan}}}{b(a^2}$$

$$= -\frac{2a^2(Ab-aB)}{b^2(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{2B\sqrt{a+b\tan(c+dx)}}{b^2d} - \frac{(A-iB)\int \frac{1+i\tan}{\sqrt{a+b}}}{2(a-i}$$

$$= -\frac{2a^2(Ab-aB)}{b^2(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{2B\sqrt{a+b\tan(c+dx)}}{b^2d} + \frac{(i(A+iB))\,\mathrm{Subs}}{}$$

$$= -\frac{2a^2(Ab-aB)}{b^2(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{2B\sqrt{a+b\tan(c+dx)}}{b^2d} + \frac{(A-iB)\,\mathrm{Subst}}{}$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} - \frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}d} - \frac{}{b^2(a^2+}$$

Mathematica [C] time = 1.27118, size = 248, normalized size = 1.49

$$\frac{\frac{(Ab-aB)\left((b-ia)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)+(b+ia)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a+ib}\right)\right)}{(a^2+b^2)\sqrt{a+b\tan(c+dx)}} + \frac{4aB-2Ab}{b\sqrt{a+b\tan(c+dx)}} + \frac{2B\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}} -}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),
x]
```

```
[Out] (I*B*(ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]/Sqrt[a - I*b] - ArcTa
nh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]/Sqrt[a + I*b]) + (-2*A*b + 4*a*B
)/(b*Sqrt[a + b*Tan[c + d*x]]) + ((A*b - a*B)*(((-I)*a + b)*Hypergeometric2
F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a - I*b)] + (I*a + b)*Hypergeometric
2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a + I*b)]))/((a^2 + b^2)*Sqrt[a + b
*Tan[c + d*x]]) + (2*B*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]])/(b*d)
```

Maple [B] time = 0.115, size = 7982, normalized size = 47.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^2(c + dx)}{(a + b\tan(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**2/(a + b*tan(c + d*x))**(3/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^2}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/(b*tan(d*x + c) + a)^(3/2), x
)
```

3.352 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=141

$$\frac{2a(Ab-aB)}{bd\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3
/2)*d)) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(3/2)*d) + (2*a*(A*b - a*B))/(b*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]
])
```

Rubi [A] time = 0.280975, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3591, 3539, 3537, 63, 208}

$$\frac{2a(Ab-aB)}{bd\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3
/2)*d)) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(3/2)*d) + (2*a*(A*b - a*B))/(b*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]
])
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{Ab-aB+(aA+bB)\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a^2+b^2}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(ia+b)} + \frac{((ia+b)(A+\ldots}{\ldots}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x, i\tan(c\ldots\right.}{2(a-ib)d}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{(i(A+iB))\,\text{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\ldots}\right.}{(a+ib)bd}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} - \frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}d} + \frac{\ldots}{b\left(a^2+\ldots\right.}$$

Mathematica [A] time = 1.38869, size = 229, normalized size = 1.62

$$\frac{\frac{b\left(A\left(b^2-a\sqrt{-b^2}\right)-bB\left(a+\sqrt{-b^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{-b^2}\sqrt{a-\sqrt{-b^2}}} - \frac{b\left(A\left(a\sqrt{-b^2}+b^2\right)+bB\left(\sqrt{-b^2}-a\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+\sqrt{-b^2}}}\right)}{\sqrt{-b^2}\sqrt{a+\sqrt{-b^2}}} + \frac{2a(Ab-aB)}{\sqrt{a+b\tan(c+dx)}}}{bd\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((b*(A*(b^2 - a*Sqrt[-b^2]) - b*(a + Sqrt[-b^2])*B)*ArcTanh[Sqrt[a + b*Tan[
c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/(Sqrt[-b^2]*Sqrt[a - Sqrt[-b^2]]) - (b*(A*
(b^2 + a*Sqrt[-b^2]) + b*(-a + Sqrt[-b^2])*B)*ArcTanh[Sqrt[a + b*Tan[c + d*
x]]/Sqrt[a + Sqrt[-b^2]]])/(Sqrt[-b^2]*Sqrt[a + Sqrt[-b^2]]) + (2*a*(A*b -
a*B))/Sqrt[a + b*Tan[c + d*x]])/(b*(a^2 + b^2)*d)
```

Maple [B] time = 0.091, size = 7956, normalized size = 56.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\tan{(c + dx)}}{(a + b\tan{(c + dx)})^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)/(a + b*tan(c + d*x))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/(b*tan(d*x + c) + a)^(3/2), x)
```

3.353 $\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=138

$$-\frac{2(Ab-aB)}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3
/2)*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(3/2)*d) - (2*(A*b - a*B))/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.23565, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3529, 3539, 3537, 63, 208}

$$-\frac{2(Ab-aB)}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{(-B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3
/2)*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(3/2)*d) - (2*(A*b - a*B))/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
```

```
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{2(Ab-aB)}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}+\frac{\int \frac{aA+bB-(Ab-aB)\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a^2+b^2}$$

$$= -\frac{2(Ab-aB)}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(a-ib)}+\frac{(A+iB)\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx}}$$

$$= -\frac{2(Ab-aB)}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}-\frac{(i(A+iB))\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx,x,-i\tan(c+dx)\right)}{2(a+ib)d}$$

$$= -\frac{2(Ab-aB)}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}-\frac{(A-iB)\,\text{Subst}\left(\int \frac{1}{-1-\frac{ia}{b}+\frac{ix^2}{b}}\,dx,x,\sqrt{a+b\tan(c+dx)}\right)}{(a-ib)bd}$$

$$= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d}+\frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}d}-\frac{2(Ab-}{\left(a^2+b^2\right)d\sqrt{a+}$$

Mathematica [C] time = 0.178797, size = 113, normalized size = 0.82

$$\frac{i\left(\frac{(A-iB)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)}{a-ib}-\frac{(A+iB)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a+ib}\right)}{a+ib}\right)}{d\sqrt{a+b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] (I*(((A - I*B)*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a - I*
b)])/(a - I*b) - ((A + I*B)*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c +
d*x])/(a + I*b)])/(a + I*b)))/(d*Sqrt[a + b*Tan[c + d*x]])
```

Maple [B] time = 0.108, size = 7951, normalized size = 57.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan{(c + dx)}}{(a + b\tan{(c + dx)})^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(a + b*tan(c + d*x))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan{(dx + c)} + A}{(b\tan{(dx + c)} + a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)/(b*tan(d*x + c) + a)^(3/2), x)
```

3.354 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=171

$$\frac{2b(Ab-aB)}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+}}{}\right.}{d(a+ib)^{3/2}}$$

```
[Out] (-2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + ((A - I*B)*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)*d) + ((A +
 I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(3/2)*d)
+ (2*b*(A*b - a*B))/(a*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.607033, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3609, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{2b(Ab-aB)}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+}}{}\right.}{d(a+ib)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] (-2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + ((A - I*B)*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)*d) + ((A +
 I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(3/2)*d)
+ (2*b*(A*b - a*B))/(a*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
```

```
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\int \frac{\cot(c+dx)\left(\frac{1}{2}A\left(a^2+b^2\right)-\frac{1}{2}a(Ab-aB)\tan(c+dx)+\frac{1}{2}b(Ab}{\sqrt{a+b\tan(c+dx)}}}{a\left(a^2+b^2\right)}$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{A\int \frac{\cot(c+dx)\left(1+\tan^2(c+dx)\right)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a} + \frac{2\int \frac{-\frac{1}{2}a(Ab-aB)}{\sqrt{a}}}{a}$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{((ia+b)(A+iB))\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2\left(a^2+b^2\right)} + \frac{(iA+}{}$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(2A)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{b}+\frac{x^2}{b}}\,dx, x, \sqrt{a+b\tan(c+d}\right.}{abd}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(i(A+iB))\,\mathrm{Su}}{}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} + \frac{(A+iB)\tanh}{(a-}$$

Mathematica [A] time = 1.18229, size = 186, normalized size = 1.09

$$\frac{-\frac{2A\left(a^2+b^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}} + \frac{2b(Ab-aB)}{\sqrt{a+b\tan(c+dx)}} + \frac{a(a+ib)(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}} + \frac{a(a-ib)(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((-2*A*(a^2 + b^2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a] + (a*
(a + I*b)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a
```

```
- I*b] + (a*(a - I*b)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a +
I*b]])/Sqrt[a + I*b] + (2*b*(A*b - a*B))/Sqrt[a + b*Tan[c + d*x]])/(a*(a^2
+ b^2)*d)
```

Maple [C] time = 1.801, size = 63939, normalized size = 373.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\cot(c + dx)}{(a + b\tan(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)/(a + b*tan(c + d*x))**(3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\cot(dx + c)}{(b\tan(dx + c) + a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)/(b*tan(d*x + c) + a)^(3/2), x)
```

3.355 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=219

$$-\frac{b\left(a^2A-2abB+3Ab^2\right)}{a^2d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(3Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(-B+i$$

```
[Out] ((3*A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) + (
(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)
*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b
)^(3/2)*d) - (b*(a^2*A + 3*A*b^2 - 2*a*b*B))/(a^2*(a^2 + b^2)*d*Sqrt[a + b*
Tan[c + d*x]]) - (A*Cot[c + d*x])/(a*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.857862, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3609, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{b\left(a^2A-2abB+3Ab^2\right)}{a^2d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(3Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(-B+i$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((3*A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) + (
(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)
*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b
)^(3/2)*d) - (b*(a^2*A + 3*A*b^2 - 2*a*b*B))/(a^2*(a^2 + b^2)*d*Sqrt[a + b*
Tan[c + d*x]]) - (A*Cot[c + d*x])/(a*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
```

```
2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{A\cot(c+dx)}{ad\sqrt{a+b\tan(c+dx)}} - \frac{\int \frac{\cot(c+dx)\left(\frac{1}{2}(3Ab-2aB)+aA\tan(c+dx)+\frac{3}{2}Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^{3/2}}dx}{a}$$

$$= -\frac{b\left(a^2A+3Ab^2-2abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot(c+dx)}{ad\sqrt{a+b\tan(c+dx)}} - \frac{2\int \frac{\cot(c+dx)\left(\frac{1}{4}\left(a^2\right.\right.}{}}{}$$

$$= -\frac{b\left(a^2A+3Ab^2-2abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot(c+dx)}{ad\sqrt{a+b\tan(c+dx)}} - \frac{2\int \frac{\frac{1}{2}a^2(aA+bB)-\frac{1}{2}a}{\sqrt{a+b}}}{a^2\left(a\right.}$$

$$= -\frac{b\left(a^2A+3Ab^2-2abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot(c+dx)}{ad\sqrt{a+b\tan(c+dx)}} - \frac{(A-iB)\int \frac{1+i\tan}{\sqrt{a+b\tan}}}{2(a-ib}$$

$$= -\frac{b\left(a^2A+3Ab^2-2abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot(c+dx)}{ad\sqrt{a+b\tan(c+dx)}} + \frac{(i(A+iB))\,\mathrm{Subs}}{}$$

$$= \frac{(3Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d} - \frac{b\left(a^2A+3Ab^2-2abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{}{ad\sqrt{}}$$

$$= \frac{(3Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} - \frac{(iA}{}$$

Mathematica [A] time = 3.56799, size = 208, normalized size = 0.95

$$\frac{-\frac{b\left(a^2A-2abB+3Ab^2\right)}{\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} + a^2\left(\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}} + \frac{(B-iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}}\right) + \frac{(3Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{aA\cot(c}{\sqrt{a+b\tan}}}{a^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),
x]
```

```
[Out] (((3*A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a] + a^2*
(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(a - I*b)^(3/2
) + (((-I)*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(a + I*b
)^(3/2)) - (b*(a^2*A + 3*A*b^2 - 2*a*b*B))/((a^2 + b^2)*Sqrt[a + b*Tan[c +
```

```
d*x]]) - (a*A*Cot[c + d*x])/Sqrt[a + b*Tan[c + d*x]])/(a^2*d)
```

Maple [C] time = 2.865, size = 119757, normalized size = 546.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\cot^2(c + dx)}{(a + b\tan(c + dx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*cot(c + d*x)**2/(a + b*tan(c + d*x))**(3/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\cot(dx + c)^2}{(b\tan(dx + c) + a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^2/(b*tan(d*x + c) + a)^(3/2), x
)
```

3.356 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=285

$$\frac{b\left(7a^2Ab-4a^3B-12ab^2B+15Ab^3\right)}{4a^3d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{\left(8a^2A+12abB-15Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{7/2}d}+\frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}}-$$

```
[Out] ((8*a^2*A - 15*A*b^2 + 12*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])
/(4*a^(7/2)*d) - ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]
)/((a - I*b)^(3/2)*d) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/((a + I*b)^(3/2)*d) + (b*(7*a^2*A*b + 15*A*b^3 - 4*a^3*B - 12*a*b^
2*B))/(4*a^3*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]]) + ((5*A*b - 4*a*B)*Cot
[c + d*x])/(4*a^2*d*Sqrt[a + b*Tan[c + d*x]]) - (A*Cot[c + d*x]^2)/(2*a*d*S
qrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.20969, antiderivative size = 285, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3609, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{b\left(7a^2Ab-4a^3B-12ab^2B+15Ab^3\right)}{4a^3d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{\left(8a^2A+12abB-15Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{7/2}d}+\frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}}-$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((8*a^2*A - 15*A*b^2 + 12*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])
/(4*a^(7/2)*d) - ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]
)/((a - I*b)^(3/2)*d) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/((a + I*b)^(3/2)*d) + (b*(7*a^2*A*b + 15*A*b^3 - 4*a^3*B - 12*a*b^
2*B))/(4*a^3*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]]) + ((5*A*b - 4*a*B)*Cot
[c + d*x])/(4*a^2*d*Sqrt[a + b*Tan[c + d*x]]) - (A*Cot[c + d*x]^2)/(2*a*d*S
qrt[a + b*Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
```

```
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
```

```
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{A\cot^2(c+dx)}{2ad\sqrt{a+b\tan(c+dx)}} - \frac{\int \frac{\cot^2(c+dx)\left(\frac{1}{2}(5Ab-4aB)+2aA\tan(c+dx)+\frac{5}{2}Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^{3/2}}dx}{2a}$$

$$= \frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot^2(c+dx)}{2ad\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{\cot(c+dx)\left(\frac{1}{4}\left(-8a^2A+15Ab^2-\right.\right.}{}}{}$$

$$= \frac{b\left(7a^2Ab+15Ab^3-4a^3B-12ab^2B\right)}{4a^3\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot^2(}{2ad\sqrt{a+b}}$$

$$= \frac{b\left(7a^2Ab+15Ab^3-4a^3B-12ab^2B\right)}{4a^3\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot^2(}{2ad\sqrt{a+b}}$$

$$= \frac{b\left(7a^2Ab+15Ab^3-4a^3B-12ab^2B\right)}{4a^3\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot^2(}{2ad\sqrt{a+b}}$$

$$= \frac{b\left(7a^2Ab+15Ab^3-4a^3B-12ab^2B\right)}{4a^3\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(5Ab-4aB)\cot(c+dx)}{4a^2d\sqrt{a+b\tan(c+dx)}} - \frac{A\cot^2(}{2ad\sqrt{a+b}}$$

$$= \frac{\left(8a^2A-15Ab^2+12abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{7/2}d} + \frac{b\left(7a^2Ab+15Ab^3-4a^3B\right.}{4a^3\left(a^2+b^2\right)d\sqrt{a+b\tan}}$$

$$= \frac{\left(8a^2A-15Ab^2+12abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{7/2}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c}}{\sqrt{a-ib}}\right.}{(a-ib)^{3/2}d}$$

Mathematica [A] time = 6.21701, size = 409, normalized size = 1.44

$$-\frac{A\cot^2(c+dx)}{2ad\sqrt{a+b\tan(c+dx)}} - \frac{-\frac{(5Ab-4aB)\cot(c+dx)}{2ad\sqrt{a+b\tan(c+dx)}} - \frac{\frac{2\left(\frac{1}{4}b^2\left(-8a^2A-12abB+15Ab^2\right)-a\left(-2a^2bB-\frac{3}{4}ab(5Ab-4aB)\right)\right)}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} + 2\left(\frac{\left(a^2+b^2\right)\left(8a^2A+12abB-15Ab^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b}}{}\right.}{4\sqrt{a}d}\right.}{}}{2a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),
x]
```

```
[Out] -(A*Cot[c + d*x]^2)/(2*a*d*Sqrt[a + b*Tan[c + d*x]]) - (-((5*A*b - 4*a*B)*C
ot[c + d*x])/(2*a*d*Sqrt[a + b*Tan[c + d*x]]) - ((2*(((a^2 + b^2)*(8*a^2*A
- 15*A*b^2 + 12*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(4*Sqrt[a
]*d) + (I*Sqrt[a - I*b]*(a^3*(A*b - a*B) - I*a^3*(a*A + b*B))*ArcTanh[Sqrt[
a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((-a + I*b)*d) - (I*Sqrt[a + I*b]*(a^3*
(A*b - a*B) + I*a^3*(a*A + b*B))*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a +
I*b]])/((-a - I*b)*d)))/(a*(a^2 + b^2)) + (2*((b^2*(-8*a^2*A + 15*A*b^2 - 1
2*a*b*B))/4 - a*(-2*a^2*b*B - (3*a*b*(5*A*b - 4*a*B))/4)))/(a*(a^2 + b^2)*d
*Sqrt[a + b*Tan[c + d*x]]))/a)/(2*a)
```

Maple [C] time = 3.467, size = 174418, normalized size = 612.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^3}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^3/(b*tan(d*x + c) + a)^(3/2), x
)
```

3.357 $\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=371

$$\frac{2a(Ab-aB)\tan^3(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(a^2Ab-2a^3B-4ab^2B+3Ab^3\right)\tan^2(c+dx)}{b^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2\left(4a^3Ab-15a^2b^2B-8a^4B+\right.}{}$$

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5
/2)*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(5/2)*d) + (2*a*(A*b - a*B)*Tan[c + d*x]^3)/(3*b*(a^2 + b^2)*d*(a + b
*Tan[c + d*x])^(3/2)) + (2*a*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b^2*B)*Tan[
c + d*x]^2)/(b^2*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]]) + (2*(8*a^4*A*b
+ 17*a^2*A*b^3 + 3*A*b^5 - 16*a^5*B - 30*a^3*b^2*B - 8*a*b^4*B)*Sqrt[a + b*
Tan[c + d*x]])/(3*b^4*(a^2 + b^2)^2*d) - (2*(4*a^3*A*b + 10*a*A*b^3 - 8*a^4
*B - 15*a^2*b^2*B - b^4*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(3*b^3*(a
^2 + b^2)^2*d)
```

Rubi [A] time = 1.04536, antiderivative size = 371, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3605, 3645, 3647, 3630, 3539, 3537, 63, 208}

$$\frac{2a(Ab-aB)\tan^3(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(a^2Ab-2a^3B-4ab^2B+3Ab^3\right)\tan^2(c+dx)}{b^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2\left(4a^3Ab-15a^2b^2B-8a^4B+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5
/2)*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(5/2)*d) + (2*a*(A*b - a*B)*Tan[c + d*x]^3)/(3*b*(a^2 + b^2)*d*(a + b
*Tan[c + d*x])^(3/2)) + (2*a*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b^2*B)*Tan[
c + d*x]^2)/(b^2*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]]) + (2*(8*a^4*A*b
+ 17*a^2*A*b^3 + 3*A*b^5 - 16*a^5*B - 30*a^3*b^2*B - 8*a*b^4*B)*Sqrt[a + b*
Tan[c + d*x]])/(3*b^4*(a^2 + b^2)^2*d) - (2*(4*a^3*A*b + 10*a*A*b^3 - 8*a^4
*B - 15*a^2*b^2*B - b^4*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]])/(3*b^3*(a
^2 + b^2)^2*d)
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
```

```
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^4(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\int \frac{\tan^2(c+dx)\left(-3a(Ab-aB)+\frac{3}{2}b(Ab-aB)\tan(c+dx\right.}{(a+b\tan(c+dx))}}{3b\left(a^2+b^2\right.}$$

$$= \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(a^2Ab+3Ab^3-2a^3B-4ab^2B\right)\tan^2(}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(a^2Ab+3Ab^3-2a^3B-4ab^2B\right)\tan^2(}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(a^2Ab+3Ab^3-2a^3B-4ab^2B\right)\tan^2(}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(a^2Ab+3Ab^3-2a^3B-4ab^2B\right)\tan^2(}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(a^2Ab+3Ab^3-2a^3B-4ab^2B\right)\tan^2(}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^3(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(a^2Ab+3Ab^3-2a^3B-4ab^2B\right)\tan^2(}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} + \frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{5/2}d} + \frac{2a}{3b\left(a^2\right.}$$

Mathematica [C] time = 6.3233, size = 450, normalized size = 1.21

$$\frac{2B\tan^3(c+dx)}{3bd(a+b\tan(c+dx))^{3/2}}+\frac{2\left(\frac{3(Ab-2aB)\tan^2(c+dx)}{bd(a+b\tan(c+dx))^{3/2}}+\frac{2\left(\frac{3(-8a^2B+4aAb+b^2B)\tan(c+dx)}{2bd(a+b\tan(c+dx))^{3/2}}-\frac{3\left(-\frac{2(8a^2Ab-16a^3B+2ab^2B+Ab^3)}{3b(a+b\tan(c+dx))^{3/2}}+\frac{2\left(\left(\frac{3}{2}ab^4B-\frac{3Ab^5}{2}\right)\left(\frac{\text{Hypergeo}\cdots}{\cdots}\right.\cdots\right)}{\cdots}\right.}{\cdots}\right.}{\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^4*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
x]
```

```
[Out] (2*B*Tan[c + d*x]^3)/(3*b*d*(a + b*Tan[c + d*x])^(3/2)) + (2*((3*(A*b - 2*a
*B)*Tan[c + d*x]^2)/(b*d*(a + b*Tan[c + d*x])^(3/2)) + (2*((3*(4*a*A*b - 8*
a^2*B + b^2*B)*Tan[c + d*x])/(2*b*d*(a + b*Tan[c + d*x])^(3/2)) - (3*((-2*(
```

```
8*a^2*A*b + A*b^3 - 16*a^3*B + 2*a*b^2*B))/(3*b*(a + b*Tan[c + d*x])^(3/2))
 + (2*((((-3*A*b^5)/2 + (3*a*b^4*B)/2)*(-Hypergeometric2F1[-3/2, 1, -1/2, (
a + b*Tan[c + d*x])/(a - I*b)]/(3*(I*a + b)*(a + b*Tan[c + d*x])^(3/2)) + H
ypergeometric2F1[-3/2, 1, -1/2, (a + b*Tan[c + d*x])/(a + I*b)]/(3*(I*a - b
)*(a + b*Tan[c + d*x])^(3/2))))/b - (3*b^3*B*(-(Hypergeometric2F1[-1/2, 1,
1/2, (a + b*Tan[c + d*x])/(a - I*b)]/((I*a + b)*Sqrt[a + b*Tan[c + d*x]]))
+ Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a + I*b)]/((I*a - b
)*Sqrt[a + b*Tan[c + d*x]])))/2))/(3*b)))/(4*b*d)))/b))/(3*b)
```

Maple [B] time = 0.137, size = 12953, normalized size = 34.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

[Out] Timed out

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^4}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^4/(b*tan(d*x + c) + a)^(5/2), x
)
```

3.358 $\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=261

$$\frac{2a(Ab-aB)\tan^2(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{2a^2\left(a^2Ab-4a^3B-10ab^2B+7Ab^3\right)}{3b^3d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2\left(-4a^2B+aAb-3b^2B\right)\sqrt{a+b\tan(c+dx)}}{3b^3d\left(a^2+b^2\right)}$$

```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2
)*d) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(5/2)*d) + (2*a*(A*b - a*B)*Tan[c + d*x]^2)/(3*b*(a^2 + b^2)*d*(a + b*Ta
n[c + d*x])^(3/2)) - (2*a^2*(a^2*A*b + 7*A*b^3 - 4*a^3*B - 10*a*b^2*B))/(3*
b^3*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]]) - (2*(a*A*b - 4*a^2*B - 3*b^2
*B)*Sqrt[a + b*Tan[c + d*x]])/(3*b^3*(a^2 + b^2)*d)
```

Rubi [A] time = 0.712448, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212, Rules used = {3605, 3635, 3630, 3539, 3537, 63, 208}

$$\frac{2a(Ab-aB)\tan^2(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{2a^2\left(a^2Ab-4a^3B-10ab^2B+7Ab^3\right)}{3b^3d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2\left(-4a^2B+aAb-3b^2B\right)\sqrt{a+b\tan(c+dx)}}{3b^3d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2
)*d) + ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(5/2)*d) + (2*a*(A*b - a*B)*Tan[c + d*x]^2)/(3*b*(a^2 + b^2)*d*(a + b*Ta
n[c + d*x])^(3/2)) - (2*a^2*(a^2*A*b + 7*A*b^3 - 4*a^3*B - 10*a*b^2*B))/(3*
b^3*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]]) - (2*(a*A*b - 4*a^2*B - 3*b^2
*B)*Sqrt[a + b*Tan[c + d*x]])/(3*b^3*(a^2 + b^2)*d)
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
```

```
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
```

```
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\int \frac{\tan(c+dx)\left(-2a(Ab-aB)+\frac{3}{2}b(Ab-aB)\tan(c+dx)\right.}{(a+b\tan(c+dx))}}{3b\left(a^2+b^2\right.}$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2a^2\left(a^2Ab+7Ab^3-4a^3B-10ab^2B\right)}{3b^3\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \cdots$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2a^2\left(a^2Ab+7Ab^3-4a^3B-10ab^2B\right)}{3b^3\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \cdots$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2a^2\left(a^2Ab+7Ab^3-4a^3B-10ab^2B\right)}{3b^3\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \cdots$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2a^2\left(a^2Ab+7Ab^3-4a^3B-10ab^2B\right)}{3b^3\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \cdots$$

$$= \frac{2a(Ab-aB)\tan^2(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2a^2\left(a^2Ab+7Ab^3-4a^3B-10ab^2B\right)}{3b^3\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \cdots$$

$$= \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} + \frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{5/2}d} + \frac{2a(\cdots}{3b\left(a^2+\cdots\right.}$$

Mathematica [C] time = 3.31298, size = 309, normalized size = 1.18

$$-\frac{-b^2(aA+bB)\left(i(a+ib)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)-(b+ia)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan\cdots}{a\cdots}\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
x]
```

```
[Out] -(-2*(a - I*b)*(a + I*b)*(-2*a*A*b + 8*a^2*B + b^2*B) - b^2*(a*A + b*B)*(I*
(a + I*b)*Hypergeometric2F1[-3/2, 1, -1/2, (a + b*Tan[c + d*x])/(a - I*b)]
- (I*a + b)*Hypergeometric2F1[-3/2, 1, -1/2, (a + b*Tan[c + d*x])/(a + I*b)
]) - 6*(a - I*b)*(a + I*b)*b*(-(A*b) + 4*a*B)*Tan[c + d*x] - 6*(a - I*b)*(a
 + I*b)*b^2*B*Tan[c + d*x]^2 + 3*A*b^2*(I*(a + I*b)*Hypergeometric2F1[-1/2,
 1, 1/2, (a + b*Tan[c + d*x])/(a - I*b)] - (I*a + b)*Hypergeometric2F1[-1/2
, 1, 1/2, (a + b*Tan[c + d*x])/(a + I*b)])*(a + b*Tan[c + d*x]))/(3*b^3*(a^
2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2))
```

Maple [B] time = 0.13, size = 12907, normalized size = 49.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^3(c + dx)}{(a + b\tan(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**3/(a + b*tan(c + d*x))**(5/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^3}{(b\tan(dx + c) + a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^3/(b*tan(d*x + c) + a)^(5/2), x
)
```

3.359 $\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=198

$$-\frac{2a^2(Ab-aB)}{3b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}-\frac{(-B+$$

```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2
)*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(5/2)*d) - (2*a^2*(A*b - a*B))/(3*b^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
^(3/2)) + (2*a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(b^2*(a^2 + b^2)^2*d*Sqrt[a +
 b*Tan[c + d*x]])
```

Rubi [A] time = 0.529017, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {3604, 3628, 3539, 3537, 63, 208}

$$-\frac{2a^2(Ab-aB)}{3b^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}-\frac{(-B+$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2
)*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(5/2)*d) - (2*a^2*(A*b - a*B))/(3*b^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
^(3/2)) + (2*a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(b^2*(a^2 + b^2)^2*d*Sqrt[a +
 b*Tan[c + d*x]])
```


Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
```

```
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{2a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{\int \frac{-a(Ab-aB)+b(Ab-aB)\tan(c+dx)+\left(a^2+b^2\right)B}{(a+b\tan(c+dx))^{3/2}}}{b\left(a^2+b^2\right)}$$

$$= -\frac{2a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} +$$

$$= -\frac{2a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} -$$

$$= -\frac{2a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} +$$

$$= -\frac{2a^2(Ab-aB)}{3b^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} -$$

$$= \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} - \frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{5/2}d} - \frac{}{3b^2\left(a^2\right.}$$

Mathematica [C] time = 0.941611, size = 260, normalized size = 1.31

$$-\frac{b(Ab-aB)\left(i(a+ib)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)-(b+ia)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan}{a-}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
x]
```

```
[Out] -(2*(a - I*b)*(a + I*b)*(A*b + 2*a*B) + b*(A*b - a*B)*(I*(a + I*b)*Hypergeo
metric2F1[-3/2, 1, -1/2, (a + b*Tan[c + d*x])/(a - I*b)] - (I*a + b)*Hyperg
eometric2F1[-3/2, 1, -1/2, (a + b*Tan[c + d*x])/(a + I*b)]) + 6*(a - I*b)*(
a + I*b)*b*B*Tan[c + d*x] + 3*b*B*(I*(a + I*b)*Hypergeometric2F1[-1/2, 1, 1
/2, (a + b*Tan[c + d*x])/(a - I*b)] - (I*a + b)*Hypergeometric2F1[-1/2, 1,
1/2, (a + b*Tan[c + d*x])/(a + I*b)])*(a + b*Tan[c + d*x]))/(3*b^2*(a^2 + b
^2)*d*(a + b*Tan[c + d*x])^(3/2))
```

Maple [B] time = 0.102, size = 12849, normalized size = 64.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^2(c + dx)}{(a + b\tan(c + dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**2/(a + b*tan(c + d*x))**(5/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^2}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^2/(b*tan(d*x + c) + a)^(5/2), x
)
```

3.360 $\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=188

$$\frac{2a(Ab-aB)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2\left(a^2A+2abB-Ab^2\right)}{d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}-\frac{(A+iB)\tanh}{d(a}$$

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5
/2)*d)) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(5/2)*d) + (2*a*(A*b - a*B))/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^
(3/2)) + (2*(a^2*A - A*b^2 + 2*a*b*B))/((a^2 + b^2)^2*d*Sqrt[a + b*Tan[c +
d*x]])
```

Rubi [A] time = 0.400631, antiderivative size = 188, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3591, 3529, 3539, 3537, 63, 208}

$$\frac{2a(Ab-aB)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2\left(a^2A+2abB-Ab^2\right)}{d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}-\frac{(A+iB)\tanh}{d(a}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] -(((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5
/2)*d)) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(5/2)*d) + (2*a*(A*b - a*B))/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^
(3/2)) + (2*(a^2*A - A*b^2 + 2*a*b*B))/((a^2 + b^2)^2*d*Sqrt[a + b*Tan[c +
d*x]])
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
```

```
-1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{\int \frac{Ab-aB+(aA+bB)\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx}{a^2+b^2}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(a^2A-Ab^2+2abB\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{2aAb-}{}}{}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(a^2A-Ab^2+2abB\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{(iA-B}{}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(a^2A-Ab^2+2abB\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB}{}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(a^2A-Ab^2+2abB\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \frac{(i(A+}{}$$

$$= -\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} - \frac{(A+iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{5/2}d} + \frac{}{3b\left(a^2+\right.}$$

Mathematica [A] time = 3.62852, size = 325, normalized size = 1.73

$$\frac{\frac{2a\left(a^2+b^2\right)(Ab-aB)}{(a+b\tan(c+dx))^{3/2}} + \frac{6b\left(a^2A+2abB-Ab^2\right)}{\sqrt{a+b\tan(c+dx)}} + \frac{3b\left(a^2\left(-\left(A\sqrt{-b^2}+bB\right)\right)+2ab\left(Ab-\sqrt{-b^2}B\right)+b^2\left(A\sqrt{-b^2}+bB\right)\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{-b^2}}}\right)}{\sqrt{-b^2}\sqrt{a-\sqrt{-b^2}}} - \frac{3b\left(a^2A\sqrt{-b^2}-a^2bB+2a\right.}{}}{3bd\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((3*b*(-(a^2*(A*Sqrt[-b^2] + b*B)) + b^2*(A*Sqrt[-b^2] + b*B) + 2*a*b*(A*b
- Sqrt[-b^2]*B))*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - Sqrt[-b^2]]])/(S
qrt[-b^2]*Sqrt[a - Sqrt[-b^2]]) - (3*b*(2*a*A*b^2 + a^2*A*Sqrt[-b^2] + A*(-
b^2)^(3/2) - a^2*b*B + b^3*B + 2*a*b*Sqrt[-b^2]*B)*ArcTanh[Sqrt[a + b*Tan[c
 + d*x]]/Sqrt[a + Sqrt[-b^2]]])/(Sqrt[-b^2]*Sqrt[a + Sqrt[-b^2]]) + (2*a*(a
^2 + b^2)*(A*b - a*B))/(a + b*Tan[c + d*x])^(3/2) + (6*b*(a^2*A - A*b^2 + 2
*a*b*B))/Sqrt[a + b*Tan[c + d*x]])/(3*b*(a^2 + b^2)^2*d)
```

Maple [B] time = 0.1, size = 12841, normalized size = 68.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="
maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B \tan{(c + dx)}) \tan{(c + dx)}}{(a + b \tan{(c + dx)})^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)/(a + b*tan(c + d*x))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)/(b*tan(d*x + c) + a)^(5/2), x)
```

3.361 $\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=185

$$-\frac{2(Ab-aB)}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{2\left(a^2(-B)+2aAb+b^2B\right)}{d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}+\frac{(-B+iA)\,t}{}$$

```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5
/2)*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(5/2)*d) - (2*(A*b - a*B))/(3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2
)) - (2*(2*a*A*b - a^2*B + b^2*B))/((a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]
])
```

Rubi [A] time = 0.364245, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3529, 3539, 3537, 63, 208}

$$-\frac{2(Ab-aB)}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{2\left(a^2(-B)+2aAb+b^2B\right)}{d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}+\frac{(-B+iA)\,t}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] -(((I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5
/2)*d)) + ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a +
 I*b)^(5/2)*d) - (2*(A*b - a*B))/(3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2
)) - (2*(2*a*A*b - a^2*B + b^2*B))/((a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]
])
```


Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{\int \frac{aA+bB-(Ab-aB)\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx}{a^2+b^2}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(2aAb-a^2B+b^2B\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{a^2A-Ab^2+2abB-}{\sqrt{a}}}{(}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(2aAb-a^2B+b^2B\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\int \frac{1+i\,t}{\sqrt{a+b}}}{2(a-i}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(2aAb-a^2B+b^2B\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \frac{(iA-B)\,\mathrm{Subst}}{}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(2aAb-a^2B+b^2B\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\,\mathrm{Subst}}{}$$

$$= -\frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} + \frac{(iA-B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{5/2}d} - \frac{2(Ab}{3\left(a^2+b^2\right)d(a+}$$

Mathematica [C] time = 0.14876, size = 115, normalized size = 0.62

$$-\frac{i\left(\frac{(A+iB)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan(c+dx)}{a+ib}\right)}{a+ib}-\frac{(A-iB)\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)}{a-ib}\right)}{3d(a+b\tan(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((-I/3)*(-(((A - I*B)*Hypergeometric2F1[-3/2, 1, -1/2, (a + b*Tan[c + d*x])
/(a - I*b)])/(a - I*b)) + ((A + I*B)*Hypergeometric2F1[-3/2, 1, -1/2, (a +
b*Tan[c + d*x])/(a + I*b)])/(a + I*b)))/(d*(a + b*Tan[c + d*x])^(3/2))
```

Maple [B] time = 0.107, size = 12836, normalized size = 69.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan\left(c + dx\right)}{\left(a + b\tan\left(c + dx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(a + b*tan(c + d*x))**(5/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(b*tan(d*x + c) + a)^(5/2), x)
```

3.362 $\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=224

$$\frac{2b(Ab-aB)}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(3a^2Ab-2a^3B+Ab^3\right)}{a^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{(A-iB)\tanh^{-1}}{d(a-}$$

```
[Out] (-2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) + ((A - I*B)*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2)*d) + ((A +
 I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(5/2)*d)
+ (2*b*(A*b - a*B))/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(
3*a^2*A*b + A*b^3 - 2*a^3*B))/(a^2*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]]
)
```

Rubi [A] time = 0.918239, antiderivative size = 224, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3609, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{2b(Ab-aB)}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(3a^2Ab-2a^3B+Ab^3\right)}{a^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d}+\frac{(A-iB)\tanh^{-1}}{d(a-}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```



```
[Out] (-2*A*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(5/2)*d) + ((A - I*B)*A
rcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2)*d) + ((A +
 I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(5/2)*d)
+ (2*b*(A*b - a*B))/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(
3*a^2*A*b + A*b^3 - 2*a^3*B))/(a^2*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]]
)
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
```

```
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
```

```
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\int \frac{\cot(c+dx)\left(\frac{3}{2}A\left(a^2+b^2\right)-\frac{3}{2}a(Ab-aB)\tan(c+dx)+\cdots}{(a+b\tan(c+dx))^{3/2}}}{3a\left(a^2+b^2\right)}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2Ab+Ab^3-2a^3B\right)}{a^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{4\int \cdots}{\cdots}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2Ab+Ab^3-2a^3B\right)}{a^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{A \cdots}{\cdots}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2Ab+Ab^3-2a^3B\right)}{a^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \frac{(iA \cdots}{\cdots}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2Ab+Ab^3-2a^3B\right)}{a^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{(2A \cdots}{\cdots}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d} + \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3 \cdots\right.}{a^2\left(a^2+ \cdots\right.}$$

$$= -\frac{2A\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} + \frac{(A+iB)\tan \cdots}{(a \cdots}$$

Mathematica [A] time = 4.89794, size = 242, normalized size = 1.08

$$\frac{2\left(\frac{3b\left(3a^2Ab-2a^3B+Ab^3\right)}{a\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} - \frac{3A\left(a^2+b^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}} + \frac{b(Ab-aB)}{(a+b\tan(c+dx))^{3/2}} + \frac{3a(a+ib)(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{2(a-ib)^{3/2}} + \frac{3a(a-ib)(A+iB) \cdots}{2 \cdots}\right.}{3ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] (2*((-3*A*(a^2 + b^2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/a^(3/2) +
(3*a*(a + I*b)*(A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(
2*(a - I*b)^(3/2)) + (3*a*(a - I*b)*(A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*
```

```
x]]/Sqrt[a + I*b]])/(2*(a + I*b)^(3/2)) + (b*(A*b - a*B))/(a + b*Tan[c + d*
x])^(3/2) + (3*b*(3*a^2*A*b + A*b^3 - 2*a^3*B))/(a*(a^2 + b^2)*Sqrt[a + b*T
an[c + d*x]])))/(3*a*(a^2 + b^2)*d)
```

Maple [C] time = 5.095, size = 185586, normalized size = 828.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)/(b*tan(d*x + c) + a)^(5/2), x)
```

3.363 $\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=289

$$-\frac{b\left(3a^2A-2abB+5Ab^2\right)}{3a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{b\left(10a^2Ab^2+a^4A-6a^3bB-2ab^3B+5Ab^4\right)}{a^3d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(5Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+}}{\sqrt{a}}\right.}{a^{7/2}d}$$

```
[Out] ((5*A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(7/2)*d) + (
(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2)
*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b
)^(5/2)*d) - (b*(3*a^2*A + 5*A*b^2 - 2*a*b*B))/(3*a^2*(a^2 + b^2)*d*(a + b*
Tan[c + d*x])^(3/2)) - (A*Cot[c + d*x])/(a*d*(a + b*Tan[c + d*x])^(3/2)) -
(b*(a^4*A + 10*a^2*A*b^2 + 5*A*b^4 - 6*a^3*b*B - 2*a*b^3*B))/(a^3*(a^2 + b^
2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.25245, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3609, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$-\frac{b\left(3a^2A-2abB+5Ab^2\right)}{3a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{b\left(10a^2Ab^2+a^4A-6a^3bB-2ab^3B+5Ab^4\right)}{a^3d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(5Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+}}{\sqrt{a}}\right.}{a^{7/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((5*A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(7/2)*d) + (
(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2)
*d) - ((I*A - B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b
)^(5/2)*d) - (b*(3*a^2*A + 5*A*b^2 - 2*a*b*B))/(3*a^2*(a^2 + b^2)*d*(a + b*
Tan[c + d*x])^(3/2)) - (A*Cot[c + d*x])/(a*d*(a + b*Tan[c + d*x])^(3/2)) -
(b*(a^4*A + 10*a^2*A*b^2 + 5*A*b^4 - 6*a^3*b*B - 2*a*b^3*B))/(a^3*(a^2 + b^
2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
```

```
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
```

```
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot^2(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^{3/2}} - \frac{\int \frac{\cot(c+dx)\left(\frac{1}{2}(5Ab-2aB)+aA\tan(c+dx)+\frac{5}{2}Ab\tan^2(c+dx)\right)}{(a+b\tan(c+dx))^{5/2}}\,d}{a}$$

$$= -\frac{b\left(3a^2A+5Ab^2-2abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^{3/2}} - \frac{2\int \frac{\cot(c+}{}}{}$$

$$= -\frac{b\left(3a^2A+5Ab^2-2abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^{3/2}} - \frac{b\left(a^4A+\right.}{a^3\left(\right.}$$

$$= -\frac{b\left(3a^2A+5Ab^2-2abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^{3/2}} - \frac{b\left(a^4A+\right.}{a^3\left(\right.}$$

$$= -\frac{b\left(3a^2A+5Ab^2-2abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^{3/2}} - \frac{b\left(a^4A+\right.}{a^3\left(\right.}$$

$$= -\frac{b\left(3a^2A+5Ab^2-2abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{A\cot(c+dx)}{ad(a+b\tan(c+dx))^{3/2}} - \frac{b\left(a^4A+\right.}{a^3\left(\right.}$$

$$= \frac{(5Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{7/2}d} - \frac{b\left(3a^2A+5Ab^2-2abB\right)}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} -$$

$$= \frac{(5Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{7/2}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} - \frac{(iA}{}$$

Mathematica [A] time = 4.87337, size = 306, normalized size = 1.06

$$\frac{\frac{b\left(-3a^2A+2abB-5Ab^2\right)}{\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}} + \frac{3\left(-\frac{b\left(10a^2Ab^2+a^4A-6a^3bB-2ab^3B+5Ab^4\right)}{\sqrt{a+b\tan(c+dx)}} + \frac{\left(a^2+b^2\right)^2(5Ab-2aB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}} + \frac{a^3(a+ib)^2(B+iA)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}} + \frac{a^3(}{}\right.}{a\left(a^2+b^2\right)^2}}{3a^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^2*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
x]
```

```
[Out] ((b*(-3*a^2*A - 5*A*b^2 + 2*a*b*B))/((a^2 + b^2)*(a + b*Tan[c + d*x])^(3/2)
) - (3*a*A*Cot[c + d*x])/(a + b*Tan[c + d*x])^(3/2) + (3*(((a^2 + b^2)^2*(5
*A*b - 2*a*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a] + (a^3*(a
+ I*b)^2*(I*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a
- I*b] + (a^3*(a - I*b)^2*((-I)*A + B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqr
t[a + I*b]])/Sqrt[a + I*b] - (b*(a^4*A + 10*a^2*A*b^2 + 5*A*b^4 - 6*a^3*b*B
 - 2*a*b^3*B))/Sqrt[a + b*Tan[c + d*x]]))/(a*(a^2 + b^2)^2))/(3*a^2*d)
```

Maple [C] time = 9.231, size = 339349, normalized size = 1174.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^2}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^2/(b*tan(d*x + c) + a)^(5/2), x
)
```

3.364 $\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=364

$$\frac{b\left(62a^2Ab^3+11a^4Ab-40a^3b^2B-4a^5B-20ab^4B+35Ab^5\right)}{4a^4d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{b\left(27a^2Ab-12a^3B-20ab^2B+35Ab^3\right)}{12a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{\left(8a^2A+20ab\right.}{}$$

```
[Out] ((8*a^2*A - 35*A*b^2 + 20*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])
/(4*a^(9/2)*d) - ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]
)/((a - I*b)^(5/2)*d) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/((a + I*b)^(5/2)*d) + (b*(27*a^2*A*b + 35*A*b^3 - 12*a^3*B - 20*a*
b^2*B))/(12*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + ((7*A*b - 4*a*B
)*Cot[c + d*x])/(4*a^2*d*(a + b*Tan[c + d*x])^(3/2)) - (A*Cot[c + d*x]^2)/(
2*a*d*(a + b*Tan[c + d*x])^(3/2)) + (b*(11*a^4*A*b + 62*a^2*A*b^3 + 35*A*b^
5 - 4*a^5*B - 40*a^3*b^2*B - 20*a*b^4*B))/(4*a^4*(a^2 + b^2)^2*d*Sqrt[a + b
*Tan[c + d*x]])
```

Rubi [A] time = 1.63428, antiderivative size = 364, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {3609, 3649, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{b\left(62a^2Ab^3+11a^4Ab-40a^3b^2B-4a^5B-20ab^4B+35Ab^5\right)}{4a^4d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{b\left(27a^2Ab-12a^3B-20ab^2B+35Ab^3\right)}{12a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{\left(8a^2A+20ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((8*a^2*A - 35*A*b^2 + 20*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])
/(4*a^(9/2)*d) - ((A - I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]
)/((a - I*b)^(5/2)*d) - ((A + I*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a
+ I*b]])/((a + I*b)^(5/2)*d) + (b*(27*a^2*A*b + 35*A*b^3 - 12*a^3*B - 20*a*
b^2*B))/(12*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + ((7*A*b - 4*a*B
)*Cot[c + d*x])/(4*a^2*d*(a + b*Tan[c + d*x])^(3/2)) - (A*Cot[c + d*x]^2)/(
2*a*d*(a + b*Tan[c + d*x])^(3/2)) + (b*(11*a^4*A*b + 62*a^2*A*b^3 + 35*A*b^
5 - 4*a^5*B - 40*a^3*b^2*B - 20*a*b^4*B))/(4*a^4*(a^2 + b^2)^2*d*Sqrt[a + b
*Tan[c + d*x]])
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
```

```
a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot^3(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^{3/2}} - \frac{\int \frac{\cot^2(c+dx)\left(\frac{1}{2}(7Ab-4aB)+2aA\tan(c+dx)+\frac{7}{2}Ab\tan^2(c+dx)\cdots\right.}{(a+b\tan(c+dx))^{5/2}}}{2a}\cdots$$

$$= \frac{(7Ab-4aB)\cot(c+dx)}{4a^2d(a+b\tan(c+dx))^{3/2}} - \frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^{3/2}} + \frac{\int \cot(c+dx)\left(\frac{1}{4}\left(-8a^2A+3\cdots\right.\right.}{\cdots}$$

$$= \frac{b\left(27a^2Ab+35Ab^3-12a^3B-20ab^2B\right)}{12a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{(7Ab-4aB)\cot(c+dx)}{4a^2d(a+b\tan(c+dx))^{3/2}} - \frac{\cdots}{2ad(a\cdots}$$

$$= \frac{b\left(27a^2Ab+35Ab^3-12a^3B-20ab^2B\right)}{12a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{(7Ab-4aB)\cot(c+dx)}{4a^2d(a+b\tan(c+dx))^{3/2}} - \frac{\cdots}{2ad(a\cdots}$$

$$= \frac{b\left(27a^2Ab+35Ab^3-12a^3B-20ab^2B\right)}{12a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{(7Ab-4aB)\cot(c+dx)}{4a^2d(a+b\tan(c+dx))^{3/2}} - \frac{\cdots}{2ad(a\cdots}$$

$$= \frac{b\left(27a^2Ab+35Ab^3-12a^3B-20ab^2B\right)}{12a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{(7Ab-4aB)\cot(c+dx)}{4a^2d(a+b\tan(c+dx))^{3/2}} - \frac{\cdots}{2ad(a\cdots}$$

$$= \frac{b\left(27a^2Ab+35Ab^3-12a^3B-20ab^2B\right)}{12a^3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{(7Ab-4aB)\cot(c+dx)}{4a^2d(a+b\tan(c+dx))^{3/2}} - \frac{\cdots}{2ad(a\cdots}$$

$$= \frac{\left(8a^2A-35Ab^2+20abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{9/2}d} + \frac{b\left(27a^2Ab+35Ab^3-12a\cdots\right.}{12a^3\left(a^2+b^2\right)d(a+b\,\mathrm{ta}\cdots}$$

$$= \frac{\left(8a^2A-35Ab^2+20abB\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{9/2}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{a+b\tan\cdots}}{\sqrt{a-\cdots}}\right.}{(a-ib)^{5/2}d}$$

Mathematica [A] time = 6.29067, size = 593, normalized size = 1.63

$$-\frac{A\cot^2(c+dx)}{2ad(a+b\tan(c+dx))^{3/2}}-\frac{-\frac{(7Ab-4aB)\cot(c+dx)}{2ad(a+b\tan(c+dx))^{3/2}}-\frac{\frac{2\left(\frac{1}{4}b^2\left(-8a^2A-20abB+35Ab^2\right)-a\left(-2a^2bB-\frac{5}{4}ab(7Ab-4aB)\right)\right)}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+2\left(\frac{2\left(-\frac{3}{8}b^2\left(a^2+b^2\right)\left(8a^2A+20abB-35Ab^2\right)-a\left(\cdots\right.\right.}{ad\left(a^2+\cdots\right.}\cdots\right.}{\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^3*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
x]
```

```
[Out] -(A*Cot[c + d*x]^2)/(2*a*d*(a + b*Tan[c + d*x])^(3/2)) - (-((7*A*b - 4*a*B)
*Cot[c + d*x])/(2*a*d*(a + b*Tan[c + d*x])^(3/2)) - ((2*((b^2*(-8*a^2*A + 3
5*A*b^2 - 20*a*b*B))/4 - a*(-2*a^2*b*B - (5*a*b*(7*A*b - 4*a*B))/4)))/(3*a*
(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*((2*((3*(a^2 + b^2)^2*(8*a^2
*A - 35*A*b^2 + 20*a*b*B)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(8*Sqr
t[a]*d) + (I*Sqrt[a - I*b]*(((-3*I)/2)*a^4*(a^2*A - A*b^2 + 2*a*b*B) + (3*a
^4*(2*a*A*b - a^2*B + b^2*B))/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a -
I*b]])/((-a + I*b)*d) - (I*Sqrt[a + I*b]*(((3*I)/2)*a^4*(a^2*A - A*b^2 + 2*
a*b*B) + (3*a^4*(2*a*A*b - a^2*B + b^2*B))/2)*ArcTanh[Sqrt[a + b*Tan[c + d*
x]]/Sqrt[a + I*b]])/((-a - I*b)*d)))/(a*(a^2 + b^2)) + (2*((-3*b^2*(a^2 + b
^2)*(8*a^2*A - 35*A*b^2 + 20*a*b*B))/8 - a*(3*a^3*b*(A*b - a*B) - (3*a*b*(2
7*a^2*A*b + 35*A*b^3 - 12*a^3*B - 20*a*b^2*B))/8)))/(a*(a^2 + b^2)*d*Sqrt[a
 + b*Tan[c + d*x]])))/(3*a*(a^2 + b^2)))/a)/(2*a)
```

Maple [C] time = 10.691, size = 467680, normalized size = 1284.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^3}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^3/(b*tan(d*x + c) + a)^(5/2), x
)
```

3.365 $\int \frac{aB+bB\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=362

$$\frac{bB\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{\sqrt{a^2+b^2}+a}}-\frac{bB\log\left(\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan\right.}{2\sqrt{2}d\sqrt{}}$$

```
[Out] (b*B*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a + b*Tan[c + d*x]])
/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b^2]]*d) - (b*B*A
rcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*Sqrt[a + b*Tan[c + d*x]])/Sqrt[
a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b^2]]*d) + (b*B*Log[a +
 Sqrt[a^2 + b^2] + b*Tan[c + d*x] - Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[
a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) - (b*B*Log[a
+ Sqrt[a^2 + b^2] + b*Tan[c + d*x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt
[a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*d)
```

Rubi [A] time = 0.328009, antiderivative size = 362, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {21, 3485, 700, 1129, 634, 618, 206, 628}

$$\frac{bB\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{\sqrt{a^2+b^2}+a}}-\frac{bB\log\left(\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan\right.}{2\sqrt{2}d\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] (b*B*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a + b*Tan[c + d*x]])
/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b^2]]*d) - (b*B*A
rcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*Sqrt[a + b*Tan[c + d*x]])/Sqrt[
a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a - Sqrt[a^2 + b^2]]*d) + (b*B*Log[a +
 Sqrt[a^2 + b^2] + b*Tan[c + d*x] - Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[
a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) - (b*B*Log[a
+ Sqrt[a^2 + b^2] + b*Tan[c + d*x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt
[a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3485

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Sub
st[Int[(a + x)^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b, c,
 d, n}, x] && NeQ[a^2 + b^2, 0]
```

Rule 700

```
Int[Sqrt[(d_) + (e_.)*(x_)]/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[2*e, S
ubst[Int[x^2/(c*d^2 + a*e^2 - 2*c*d*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x]
 /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0]
```

Rule 1129

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :> With[{q =
 Rt[a/c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*r), Int[x^(m - 1)/(q
 - r*x + x^2), x], x] - Dist[1/(2*c*r), Int[x^(m - 1)/(q + r*x + x^2), x],
x]]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && GeQ[m, 1] && LtQ[m, 3
] && NegQ[b^2 - 4*a*c]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{aB + bB\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx = B\int \sqrt{a+b\tan(c+dx)}\,dx$$

$$= \frac{(bB)\,\text{Subst}\left(\int \frac{\sqrt{a+x}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{d}$$

$$= \frac{(2bB)\,\text{Subst}\left(\int \frac{x^2}{a^2+b^2-2ax^2+x^4}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{d}$$

$$= \frac{(bB)\,\text{Subst}\left(\int \frac{x}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x+x^2}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}d} - \frac{(bB)\,\text{Subst}\left(\int \frac{\cdots}{\sqrt{a^2+b^2}\cdots}\right.}{\cdots}$$

$$= \frac{(bB)\,\text{Subst}\left(\int \frac{1}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x+x^2}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{2d} + \frac{(bB)\,\text{Subst}\left(\int \frac{\cdots}{\sqrt{a^2+b^2}\cdots}\right.}{\cdots}$$

$$= \frac{bB\log\left(a+\sqrt{a^2+b^2}+b\tan(c+dx)-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}\sqrt{a+b\tan(c+dx)}\right)}{2\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}d} - \frac{bB\log\left(\cdots\right.}{\cdots}$$

$$= \frac{bB\tanh^{-1}\left(\frac{\sqrt{a+\sqrt{a^2+b^2}}-\sqrt{2}\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{a^2+b^2}}}\right)}{\sqrt{2}\sqrt{a-\sqrt{a^2+b^2}}d} - \frac{bB\tanh^{-1}\left(\frac{\sqrt{a+\sqrt{a^2+b^2}}+\sqrt{2}\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{a^2+b^2}}}\right)}{\sqrt{2}\sqrt{a-\sqrt{a^2+b^2}}d} + \frac{bB\,\text{lo}\cdots}{\cdots}$$

Mathematica [C] time = 0.0830508, size = 88, normalized size = 0.24

$$-\frac{iB\left(\sqrt{a-ib}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)-\sqrt{a+ib}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((-I)*B*(Sqrt[a - I*b]*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] - Sq
rt[a + I*b]*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]))/d
```

Maple [B] time = 0.103, size = 662, normalized size = 1.8

$$\frac{aB}{4\,bd}\ln\left(b\tan(dx+c)+a+\sqrt{a+b\tan(dx+c)}\sqrt{2\sqrt{a^2+b^2}+2\,a}+\sqrt{a^2+b^2}\right)\sqrt{2\sqrt{a^2+b^2}+2\,a}-\frac{a^2B}{bd}\arctan\left(\left(2\sqrt{a\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1
/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/d*B/b*a^2/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2
*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))-1/4/d/b*ln(b*tan(d*x+c)+a+(a+b*ta
n(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^
2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)+1/d*B/b*(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*
a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2))-1/4/d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)
^(1/2)*a+1/d*B/b*a^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/
2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+1/4/
d/b*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-
(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*(a^2+b^2)^(1/2)-1/d*B/b*(a
^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.24889, size = 4263, normalized size = 11.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="fricas"
)
```

```
[Out] -1/4*(4*sqrt(2)*sqrt(B^4*b^2/d^4)*d^4*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*sqrt(
(B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4)*arctan
(-(sqrt(2)*sqrt(B^4*b^2/d^4)*B^3*b*d^5*sqrt((a*cos(d*x + c) + b*sin(d*x + c
))/cos(d*x + c))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d
^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4) - sqrt(2)*sqrt(B^4*b^2/d^4)
*d^5*sqrt((sqrt(2)*B^3*b^3*d^3*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d
*x + c))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^
2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4)*cos(d*x + c) + (B^4*a^2*b^2 + B^4*b
^4)*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4)*cos(d*x + c) + (B^6*a^3*b^2 + B^6*a*b
^4)*cos(d*x + c) + (B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d
*x + c)))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B
^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4) + (B^4*a^2 + B^4*b^2)*sqrt(B^4*b^2
/d^4)*d^4*sqrt((B^4*a^2 + B^4*b^2)/d^4) + (B^6*a^3 + B^6*a*b^2)*sqrt(B^4*b^
2/d^4)*d^2)/(B^8*a^2*b^2 + B^8*b^4)) + 4*sqrt(2)*sqrt(B^4*b^2/d^4)*d^4*sqrt
((B^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4
*a^2 + B^4*b^2)/d^4)^(3/4)*arctan(-(sqrt(2)*sqrt(B^4*b^2/d^4)*B^3*b*d^5*sqr
t((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*sqrt((B^2*a^2 + B^2*b^2 +
 a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^
(3/4) - sqrt(2)*sqrt(B^4*b^2/d^4)*d^5*sqrt(-(sqrt(2)*B^3*b^3*d^3*sqrt((a*co
s(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*
sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4)*c
os(d*x + c) - (B^4*a^2*b^2 + B^4*b^4)*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4)*cos
(d*x + c) - (B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) - (B^6*a^2*b^3 + B^6*b^5
)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c)))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2
*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4)
- (B^4*a^2 + B^4*b^2)*sqrt(B^4*b^2/d^4)*d^4*sqrt((B^4*a^2 + B^4*b^2)/d^4) -
 (B^6*a^3 + B^6*a*b^2)*sqrt(B^4*b^2/d^4)*d^2)/(B^8*a^2*b^2 + B^8*b^4)) + sq
rt(2)*(B^4*a^2 + B^4*b^2 - B^2*a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))*sqrt((B
^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^
2 + B^4*b^2)/d^4)^(1/4)*log((sqrt(2)*B^3*b^3*d^3*sqrt((a*cos(d*x + c) + b*s
in(d*x + c))/cos(d*x + c))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 +
B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(3/4)*cos(d*x + c) + (B
^4*a^2*b^2 + B^4*b^4)*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4)*cos(d*x + c) + (B^6
*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) + (B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/
```

```
((a^2 + b^2)*cos(d*x + c))) - sqrt(2)*(B^4*a^2 + B^4*b^2 - B^2*a*d^2*sqrt((
B^4*a^2 + B^4*b^2)/d^4))*sqrt((B^2*a^2 + B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^
4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*b^2)/d^4)^(1/4)*log(-(sqrt(2)*B^3*b
^3*d^3*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*sqrt((B^2*a^2 +
 B^2*b^2 + a*d^2*sqrt((B^4*a^2 + B^4*b^2)/d^4))/(B^2*b^2))*((B^4*a^2 + B^4*
b^2)/d^4)^(3/4)*cos(d*x + c) - (B^4*a^2*b^2 + B^4*b^4)*d^2*sqrt((B^4*a^2 +
B^4*b^2)/d^4)*cos(d*x + c) - (B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) - (B^6*
a^2*b^3 + B^6*b^5)*sin(d*x + c))/((a^2 + b^2)*cos(d*x + c))))/(B^4*a^2 + B^
4*b^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\sqrt{a+b\tan{(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] B*Integral(sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{Bb\tan{(dx+c)}+Ba}{\sqrt{b\tan{(dx+c)}+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/sqrt(b*tan(d*x + c) + a), x)
```

3.366 $\int \frac{aB+bB\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=406

$$-\frac{bB\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{a^2+b^2}\sqrt{\sqrt{a^2+b^2}+a}}+\frac{bB\log\left(\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\,\mathrm{t}\right.}}{2\sqrt{2}d\sqrt{a^2}}$$

```
[Out] (b*B*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a + b*Tan[c + d*x]])
/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a^2 + b^2]*Sqrt[a - Sqrt[a^2 + b
^2]]*d) - (b*B*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*Sqrt[a + b*Tan[
c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a^2 + b^2]*Sqrt[a - Sq
rt[a^2 + b^2]]*d) - (b*B*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d*x] - Sqrt[2]
*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a^2 +
 b^2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) + (b*B*Log[a + Sqrt[a^2 + b^2] + b*Tan[c
 + d*x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*S
qrt[2]*Sqrt[a^2 + b^2]*Sqrt[a + Sqrt[a^2 + b^2]]*d)
```

Rubi [A] time = 0.334315, antiderivative size = 406, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {21, 3485, 708, 1094, 634, 618, 206, 628}

$$-\frac{bB\log\left(-\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\tan(c+dx)}+\sqrt{a^2+b^2}+a+b\tan(c+dx)\right)}{2\sqrt{2}d\sqrt{a^2+b^2}\sqrt{\sqrt{a^2+b^2}+a}}+\frac{bB\log\left(\sqrt{2}\sqrt{\sqrt{a^2+b^2}+a}\sqrt{a+b\,\mathrm{t}\right.}}{2\sqrt{2}d\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] (b*B*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] - Sqrt[2]*Sqrt[a + b*Tan[c + d*x]])
/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a^2 + b^2]*Sqrt[a - Sqrt[a^2 + b
^2]]*d) - (b*B*ArcTanh[(Sqrt[a + Sqrt[a^2 + b^2]] + Sqrt[2]*Sqrt[a + b*Tan[
c + d*x]])/Sqrt[a - Sqrt[a^2 + b^2]]])/(Sqrt[2]*Sqrt[a^2 + b^2]*Sqrt[a - Sq
rt[a^2 + b^2]]*d) - (b*B*Log[a + Sqrt[a^2 + b^2] + b*Tan[c + d*x] - Sqrt[2]
*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*Sqrt[2]*Sqrt[a^2 +
 b^2]*Sqrt[a + Sqrt[a^2 + b^2]]*d) + (b*B*Log[a + Sqrt[a^2 + b^2] + b*Tan[c
 + d*x] + Sqrt[2]*Sqrt[a + Sqrt[a^2 + b^2]]*Sqrt[a + b*Tan[c + d*x]]])/(2*S
```

```
qrt[2]*Sqrt[a^2 + b^2]*Sqrt[a + Sqrt[a^2 + b^2]]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3485

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Sub
st[Int[(a + x)^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{a, b, c,
 d, n}, x] && NeQ[a^2 + b^2, 0]
```

Rule 708

```
Int[1/(Sqrt[(d_) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[2*
e, Subst[Int[1/(c*d^2 + a*e^2 - 2*c*d*x^2 + c*x^4), x], x, Sqrt[d + e*x]],
x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0]
```

Rule 1094

```
Int[((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(-1), x_Symbol] :> With[{q = Rt[a/
c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*q*r), Int[(r - x)/(q - r*x
 + x^2), x], x] + Dist[1/(2*c*q*r), Int[(r + x)/(q + r*x + x^2), x], x]]] /
; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[b^2 - 4*a*c]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{1}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{(bB)\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{a+x}\left(b^2+x^2\right)}\,dx, x, b\tan(c+dx)\right)}{d}$$

$$= \frac{(2bB)\,\mathrm{Subst}\left(\int \frac{1}{a^2+b^2-2ax^2+x^4}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{d}$$

$$= \frac{(bB)\,\mathrm{Subst}\left(\int \frac{\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}-x}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x+x^2}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{\sqrt{2}\sqrt{a^2+b^2}\sqrt{a+\sqrt{a^2+b^2}}d} + \frac{(bB)\,\mathrm{Subst}\left(\int \right.}{}$$

$$= \frac{(bB)\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{a^2+b^2}-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}x+x^2}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{2\sqrt{a^2+b^2}d} + \frac{(bB)\,\mathrm{Subst}\left(\int \right.}{}$$

$$= -\frac{bB\log\left(a+\sqrt{a^2+b^2}+b\tan(c+dx)-\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}\sqrt{a+b\tan(c+dx)}\right)}{2\sqrt{2}\sqrt{a^2+b^2}\sqrt{a+\sqrt{a^2+b^2}}d} + \frac{bB\log}{}$$

$$= \frac{bB\tanh^{-1}\left(\frac{\sqrt{a+\sqrt{a^2+b^2}}-\sqrt{2}\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{a^2+b^2}}}\right)}{\sqrt{2}\sqrt{a^2+b^2}\sqrt{a-\sqrt{a^2+b^2}}d} - \frac{bB\tanh^{-1}\left(\frac{\sqrt{a+\sqrt{a^2+b^2}}+\sqrt{2}\sqrt{a+b\tan(c+dx)}}{\sqrt{a-\sqrt{a^2+b^2}}}\right)}{\sqrt{2}\sqrt{a^2+b^2}\sqrt{a-\sqrt{a^2+b^2}}d} - \frac{bB\,\mathrm{l}}{}$$

Mathematica [C] time = 0.0575885, size = 88, normalized size = 0.22

$$-\frac{iB\left(\frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}}-\frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((-I)*B*(ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]]/Sqrt[a - I*b] - Ar
cTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]/Sqrt[a + I*b]))/d
```

Maple [B] time = 0.105, size = 1575, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/4/d*b/
(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)+(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-1/4/d/b/(a^2+b^2)^(3
/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+
(a^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/4/d*b/(a^2+b^2)^(3/2
)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a
^2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/d/b/(a^2+b^2)^(1/2)/(2*(
a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/
2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-1/d*b/(a^2+b^2)^(1/2)/(
2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^
(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B+1/d/b/(a^2+b^2)^(3/2)/(2
*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(
1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4+3/d*b/(a^2+b^2)^(3/2)
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2
)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+2/d*b^3/(a^2+b^2)^
(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^
2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/4/d/b/(a^2+b^2)
*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^
2+b^2)^(1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2-1/4/d*b/(a^2+b^2)*ln((a+b
*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(
1/2))*B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/d/b/(a^2+b^2)^(3/2)*ln((a+b*tan(d
*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*
B*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/4/d*b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x
+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*B*
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*
a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2
```

```
*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2+1/d*b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B-1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/
(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^4-3/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/
2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2
))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B*a^2-2/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+b^2
)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))
^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.53637, size = 4593, normalized size = 11.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="fricas"
)
```

```
[Out] -1/4*(4*sqrt(2)*(a^2 + b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^4
*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*
sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*arctan((sqrt(2)*(a^4 + 2*a^2*b^2 +
b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt((sqrt(2)*B^5*b^3*
d*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^
4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)
*d^4)))/(B^2*b^2))*cos(d*x + c) + B^6*a*b^2*cos(d*x + c) + B^6*b^3*sin(d*x
+ c) + (B^4*a^2*b^2 + B^4*b^4)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c)
)/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(5/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^
3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)) - sqrt(2)*(B^3*a^4*b
```

```
 + 2*B^3*a^2*b^3 + B^3*b^5)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7
*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4
))^(5/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*
d^4)))/(B^2*b^2)) - (B^6*a^4 + 2*B^6*a^2*b^2 + B^6*b^4)*sqrt(B^4*b^2/((a^4
+ 2*a^2*b^2 + b^4)*d^4))*d^4*sqrt(B^4/((a^2 + b^2)*d^4)) - (B^8*a^3 + B^8*a
*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^2)/(B^10*b^2)) + 4*sqrt
(2)*(a^2 + b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^4*(B^4/((a^2
+ b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a
^2 + b^2)*d^4)))/(B^2*b^2))*arctan((sqrt(2)*(a^4 + 2*a^2*b^2 + b^4)*sqrt(B^
4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt(-(sqrt(2)*B^5*b^3*d*sqrt((a*c
os(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*s
qrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^
2*b^2))*cos(d*x + c) - B^6*a*b^2*cos(d*x + c) - B^6*b^3*sin(d*x + c) - (B^4
*a^2*b^2 + B^4*b^4)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))/cos(d*x +
 c))*(B^4/((a^2 + b^2)*d^4))^(5/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*
d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)) - sqrt(2)*(B^3*a^4*b + 2*B^3*a^
2*b^3 + B^3*b^5)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt((a*co
s(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(5/4)*sq
rt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2
*b^2)) + (B^6*a^4 + 2*B^6*a^2*b^2 + B^6*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2
 + b^4)*d^4))*d^4*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^8*a^3 + B^8*a*b^2)*sqrt(
B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^2)/(B^10*b^2)) + sqrt(2)*(B^2*a*d^
2*sqrt(B^4/((a^2 + b^2)*d^4)) - B^4)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^
2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))
*log((sqrt(2)*B^5*b^3*d*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)
)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2
*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*cos(d*x + c) + B^6*a*b^2*cos(d*x +
 c) + B^6*b^3*sin(d*x + c) + (B^4*a^2*b^2 + B^4*b^4)*d^2*sqrt(B^4/((a^2 + b
^2)*d^4))*cos(d*x + c))/cos(d*x + c)) - sqrt(2)*(B^2*a*d^2*sqrt(B^4/((a^2 +
 b^2)*d^4)) - B^4)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 +
(a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*log(-(sqrt(2)*B^5
*b^3*d*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^
2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 + (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 +
 b^2)*d^4)))/(B^2*b^2))*cos(d*x + c) - B^6*a*b^2*cos(d*x + c) - B^6*b^3*sin
(d*x + c) - (B^4*a^2*b^2 + B^4*b^4)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x
 + c))/cos(d*x + c)))/B^4
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{\sqrt{a+b\tan\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(1/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan(dx+c)+Ba}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/(b*tan(d*x + c) + a)^(3/2), x)
```

3.367 $\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=119

$$-\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

```
[Out] (-2*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + (B*ArcTanh[S
qrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d) + (B*ArcTanh[Sqrt
[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```

Rubi [A] time = 0.280494, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.206, Rules used = {21, 3574, 3539, 3537, 63, 208, 3634}

$$-\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] (-2*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(Sqrt[a]*d) + (B*ArcTanh[S
qrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d) + (B*ArcTanh[Sqrt
[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3574

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)/((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[1/(c^2 + d^2), Int[(a + b*Tan[e + f*x])^m*
(c - d*Tan[e + f*x]), x], x] + Dist[d^2/(c^2 + d^2), Int[((a + b*Tan[e + f*
x])^m*(1 + Tan[e + f*x]^2))/(c + d*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2
```

```
, 0] &&  !IntegerQ[m]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{\cot(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\left(B\int \frac{\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx\right) + B\int \frac{\cot(c+dx)\left(1+\tan^2(c+dx)\right)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\left(\frac{1}{2}(iB)\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx\right) + \frac{1}{2}(iB)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx + \frac{B\,\mathrm{Su}}{}$$

$$= -\frac{B\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x, i\tan(c+dx)\right)}{2d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx, x,\right.}{2d}$$

$$= -\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{(iB)\,\mathrm{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+d\right.}{bd}$$

$$= -\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d} + \frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}d} + \frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan}}{\sqrt{a+i}}\right.}{\sqrt{a+ib}d}$$

Mathematica [A] time = 0.137833, size = 112, normalized size = 0.94

$$\frac{B\left(-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}} + \frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}} + \frac{\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2
),x]
```

```
[Out] (B*((-2*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a] + ArcTanh[Sqrt[a
 + b*Tan[c + d*x]]/Sqrt[a - I*b]]/Sqrt[a - I*b] + ArcTanh[Sqrt[a + b*Tan[c
+ d*x]]/Sqrt[a + I*b]]/Sqrt[a + I*b]))/d
```

Maple [C] time = 0.808, size = 20195, normalized size = 169.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 4.84468, size = 11555, normalized size = 97.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorit
hm="fricas")
```

```
[Out] [1/4*(4*sqrt(2)*(a^3 + a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d
^5*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^
2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*arctan(-((B^6*a^4 + 2*B^6*a^2*b^2
 + B^6*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^4*sqrt(B^4/((a^2
+ b^2)*d^4)) + (B^8*a^3 + B^8*a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*
d^4))*d^2 - sqrt(2)*((a^5 + 2*a^3*b^2 + a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b
^2 + b^4)*d^4))*d^7*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^2*a^4 + 2*B^2*a^2*b^2
+ B^2*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((B^6*a*cos
(d*x + c) + B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b
^2)*d^4))*cos(d*x + c) + sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2
)*d^3*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*si
n(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2
*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x +
 c))*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*
d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)) + sqrt(2)*((B^3*a^5 + 2*B^3*a^3
```

*b^2 + B^3*a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^5*a^4 + 2*B^5*a^2*b^2 + B^5*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/(B^10*b^2)) + 4*sqrt(2)*(a^3 + a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*arctan(((B^6*a^4 + 2*B^6*a^2*b^2 + B^6*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^4*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^8*a^3 + B^8*a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^2 + sqrt(2)*((a^5 + 2*a^3*b^2 + a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((B^6*a*cos(d*x + c) + B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2)*d^3*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)) - sqrt(2)*((B^3*a^5 + 2*B^3*a^3*b^2 + B^3*a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^5*a^4 + 2*B^5*a^2*b^2 + B^5*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/(B^10*b^2)) + 2*B^5*sqrt(a)*log(-(8*a*b*cos(d*x + c)*sin(d*x + c) + (8*a^2 - b^2)*cos(d*x + c)^2 + b^2 - 4*(2*a*cos(d*x + c)^2 + b*cos(d*x + c)*sin(d*x + c))*sqrt(a)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/(cos(d*x + c)^2 - 1)) + sqrt(2)*(B^2*a^2*d^3*sqrt(B^4/((a^2 + b^2)*d^4)) + B^4*a*d)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*log((B^6*a*cos(d*x + c) + B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2)*d^3*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x + c)) - sqrt(2)*(B^2*a^2*d^3*sqrt(B^4/((a^2 + b^2)*d^4)) + B^4*a*d)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*log((B^6*a*cos(d*x + c) + B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2)*d^3*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x + c)))/(B^4*a*d), 1/4*(4*sqrt(2)*(a^3 + a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*

```
sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*arctan(-((B^6*a^4 + 2*B^6*a^2*b^2 +
 B^6*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^4*sqrt(B^4/((a^2 +
b^2)*d^4)) + (B^8*a^3 + B^8*a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^
4))*d^2 - sqrt(2)*((a^5 + 2*a^3*b^2 + a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2
 + b^4)*d^4))*d^7*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^2*a^4 + 2*B^2*a^2*b^2 +
B^2*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((B^6*a*cos(d
*x + c) + B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b^2
)*d^4))*cos(d*x + c) + sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2)*
d^3*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(
d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b
^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x + c
))*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^
2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)) + sqrt(2)*((B^3*a^5 + 2*B^3*a^3*b
^2 + B^3*a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt(B^4/((
a^2 + b^2)*d^4)) + (B^5*a^4 + 2*B^5*a^2*b^2 + B^5*b^4)*sqrt(B^4*b^2/((a^4 +
 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x
 + c))*(B^4/((a^2 + b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2
)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/(B^10*b^2)) + 4*sqrt(2)*(a^3
 + a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5*(B^4/((a^2 + b^2)
*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b
^2)*d^4)))/(B^2*b^2))*arctan(((B^6*a^4 + 2*B^6*a^2*b^2 + B^6*b^4)*sqrt(B^4*
b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^4*sqrt(B^4/((a^2 + b^2)*d^4)) + (B^8*a
^3 + B^8*a*b^2)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^2 + sqrt(2)*(
(a^5 + 2*a^3*b^2 + a*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*s
qrt(B^4/((a^2 + b^2)*d^4)) + (B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4)*sqrt(B^4*b
^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^5)*sqrt((B^6*a*cos(d*x + c) + B^6*b*sin
(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c
) - sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2)*d^3*sqrt(B^4/((a^2
+ b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x +
 c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*
d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x + c))*(B^4/((a^2 + b^2
)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 +
b^2)*d^4)))/(B^2*b^2)) - sqrt(2)*((B^3*a^5 + 2*B^3*a^3*b^2 + B^3*a*b^4)*sqr
t(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d^4))*d^7*sqrt(B^4/((a^2 + b^2)*d^4)) +
(B^5*a^4 + 2*B^5*a^2*b^2 + B^5*b^4)*sqrt(B^4*b^2/((a^4 + 2*a^2*b^2 + b^4)*d
^4))*d^5)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 +
 b^2)*d^4))^(3/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^
2 + b^2)*d^4)))/(B^2*b^2)))/(B^10*b^2)) + 8*B^5*sqrt(-a)*arctan(sqrt(-a)*sq
rt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))/a) + sqrt(2)*(B^2*a^2*d^
3*sqrt(B^4/((a^2 + b^2)*d^4)) + B^4*a*d)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt
((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b
^2))*log((B^6*a*cos(d*x + c) + B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2
*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*(B^5*a*d*cos(d*x + c) +
 (B^3*a^2 + B^3*b^2)*d^3*sqrt(B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*
cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*
```

```
sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B
^2*b^2)))/cos(d*x + c)) - sqrt(2)*(B^2*a^2*d^3*sqrt(B^4/((a^2 + b^2)*d^4))
+ B^4*a*d)*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3 + a
*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2))*log((B^6*a*cos(d*x + c) +
 B^6*b*sin(d*x + c) + (B^4*a^2 + B^4*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4))*c
os(d*x + c) - sqrt(2)*(B^5*a*d*cos(d*x + c) + (B^3*a^2 + B^3*b^2)*d^3*sqrt(
B^4/((a^2 + b^2)*d^4))*cos(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))
/cos(d*x + c))*(B^4/((a^2 + b^2)*d^4))^(1/4)*sqrt((B^2*a^2 + B^2*b^2 - (a^3
 + a*b^2)*d^2*sqrt(B^4/((a^2 + b^2)*d^4)))/(B^2*b^2)))/cos(d*x + c)))/(B^4*
a*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{\cot (c+dx)}{\sqrt{a+b\tan (c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(cot(c + d*x)/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan (dx+c)+Ba)\cot (dx+c)}{(b\tan (dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*cot(d*x + c)/(b*tan(d*x + c) + a)^(3/2),
 x)
```

3.368 $\int \frac{aB+bB\tan(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=123

$$-\frac{2bB}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{iB\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{iB\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

```
[Out] ((-I)*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)*d
) + (I*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(3/2)*
d) - (2*b*B)/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.185477, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {21, 3483, 3539, 3537, 63, 208}

$$-\frac{2bB}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{iB\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{iB\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((-I)*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)*d
) + (I*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(3/2)*
d) - (2*b*B)/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3483

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n + 1))/(d*(n + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2),
Int[(a - b*Tan[c + d*x])*(a + b*Tan[c + d*x])^(n + 1), x], x] /; FreeQ[{a,
b, c, d}, x] && NeQ[a^2 + b^2, 0] && LtQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx = B\int \frac{1}{(a+b\tan(c+dx))^{3/2}}\,dx$$
$$= -\frac{2bB}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{B\int \frac{a-b\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a^2+b^2}$$
$$= -\frac{2bB}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{B\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(a-ib)} + \frac{B\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(a+ib)}$$
$$= -\frac{2bB}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx, x, -i\tan(c+dx)\right)}{2(ia-b)d} - \frac{B\,\mathrm{Su}}{}$$
$$= -\frac{2bB}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{-1-\frac{ia}{b}+\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{(a-ib)bd} - \frac{B\,\mathrm{S}}{}$$
$$= -\frac{iB\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} + \frac{iB\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}d} - \frac{2bB}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx}}$$

Mathematica [C] time = 0.138146, size = 106, normalized size = 0.86

$$\frac{B\left(i(a+ib)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)+(-b-ia)\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a+ib}\right)\right)}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] (B*(I*(a + I*b)*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a - I
*b)] + ((-I)*a - b)*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[c + d*x])/(a
 + I*b)]))/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Maple [B] time = 0.094, size = 1955, normalized size = 15.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] -2*b*B/(a^2+b^2)/d/(a+b*tan(d*x+c))^(1/2)+1/4/d*B/b/(a^2+b^2)^2*ln(b*tan(d*
x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2)
)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+1/4/d*B*b/(a^2+b^2)^2*ln(b*tan(d*x+c)+a
+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(
a^2+b^2)^(1/2)+2*a)^(1/2)*a-1/4/d*B/b/(a^2+b^2)^(5/2)*ln(b*tan(d*x+c)+a+(a+
b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)*a^4+1/4/d*B*b^3/(a^2+b^2)^(5/2)*ln(b*tan(d*x+c)+a+(a+
b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)-1/d*B/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*a^3-1/d*B*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2))*a-1/d*B*b/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)
*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2))*a^2+1/d*B/b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1
/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2))*a^5-1/d*B*b^3/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^
2+b^2)^(1/2)-2*a)^(1/2))+3/d*B*b^3/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^
(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a
^2+b^2)^(1/2)-2*a)^(1/2))*a+4/d*B*b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)
^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(
a^2+b^2)^(1/2)-2*a)^(1/2))*a^3-1/4/d*B/b/(a^2+b^2)^2*ln((a+b*tan(d*x+c))^(1
/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)*a^3-1/4/d*B*b/(a^2+b^2)^2*ln((a+b*tan(d*x+c))^(1/2)*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)*a+1/4/d*B/b/(a^2+b^2)^(5/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)*a^4-1/4/d*B*b^3/(a^2+b^2)^(5/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)+1/d*B/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2
*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*
a)^(1/2))*a^3+1/d*B*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*a+1/d*B*b/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2
*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*
a)^(1/2))*a^2-1/d*B/b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(
((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2))*a^5+1/d*B*b^3/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan
(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2
)-2*a)^(1/2))-3/d*B*b^3/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arcta
n(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/
```

```
2)-2*a)^(1/2))*a-4/d*B*b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arct
an(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2))*a^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 2.64157, size = 14052, normalized size = 114.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="fricas"
)
```

```
[Out] 1/4*(4*sqrt(2)*((a^10 + 3*a^8*b^2 + 2*a^6*b^4 - 2*a^4*b^6 - 3*a^2*b^8 - b^1
0)*d^5*cos(d*x + c)^2 + 2*(a^9*b + 4*a^7*b^3 + 6*a^5*b^5 + 4*a^3*b^7 + a*b^
9)*d^5*cos(d*x + c)*sin(d*x + c) + (a^8*b^2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2
*b^8 + b^10)*d^5)*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 +
 (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3
*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^
6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4)*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^
2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8
 + 6*a^2*b^10 + b^12)*d^4))*arctan(((3*B^6*a^12 + 14*B^6*a^10*b^2 + 25*B^6*
a^8*b^4 + 20*B^6*a^6*b^6 + 5*B^6*a^4*b^8 - 2*B^6*a^2*b^10 - B^6*b^12)*d^4*s
qrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*
B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a
^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^8*a^9 + 8*B^8*a^7*b^2 + 6*B^8*a^5*
b^4 - B^8*a*b^8)*d^2*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12
+ 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^
4)) + sqrt(2)*(2*(a^13 + 6*a^11*b^2 + 15*a^9*b^4 + 20*a^7*b^6 + 15*a^5*b^8
```

+ 6*a^3*b^10 + a*b^12)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^
4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15
*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (B^2*a^10 +
5*B^2*a^8*b^2 + 10*B^2*a^6*b^4 + 10*B^2*a^4*b^6 + 5*B^2*a^2*b^8 + B^2*b^10
)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 +
15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*
a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^
6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^
2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt(((9*B^4*a^8*b^2 + 12*B^4*a^6*b^4
- 2*B^4*a^4*b^6 - 4*B^4*a^2*b^8 + B^4*b^10)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + sqrt(2)*((9*B^3*a^8*b^3 + 12*B^3*a
^6*b^5 - 2*B^3*a^4*b^7 - 4*B^3*a^2*b^9 + B^3*b^11)*d^3*sqrt(B^4/((a^6 + 3*a
^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + 2*(9*B^5*a^5*b^3 - 6*B^5*a^3
*b^5 + B^5*a*b^7)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2
*b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6
+ 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2
*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*
a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5*b^2 - 6*B^6*a^3*b^4 + B
^6*a*b^6)*cos(d*x + c) + (9*B^6*a^4*b^3 - 6*B^6*a^2*b^5 + B^6*b^7)*sin(d*x
+ c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4) +
sqrt(2)*(2*(3*B^3*a^15*b + 17*B^3*a^13*b^3 + 39*B^3*a^11*b^5 + 45*B^3*a^9*
b^7 + 25*B^3*a^7*b^9 + 3*B^3*a^5*b^11 - 3*B^3*a^3*b^13 - B^3*a*b^15)*d^7*sq
rt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B
^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^
4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^5*a^12*b + 14*B^5*a^10*b^3 + 25*B^5
*a^8*b^5 + 20*B^5*a^6*b^7 + 5*B^5*a^4*b^9 - 2*B^5*a^2*b^11 - B^5*b^13)*d^5*
sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8
*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 +
3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*
a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*
b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(
d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4))/(9*B^10*a^
4*b^2 - 6*B^10*a^2*b^4 + B^10*b^6)) + 4*sqrt(2)*((a^10 + 3*a^8*b^2 + 2*a^6*
b^4 - 2*a^4*b^6 - 3*a^2*b^8 - b^10)*d^5*cos(d*x + c)^2 + 2*(a^9*b + 4*a^7*b
^3 + 6*a^5*b^5 + 4*a^3*b^7 + a*b^9)*d^5*cos(d*x + c)*sin(d*x + c) + (a^8*b^
2 + 4*a^6*b^4 + 6*a^4*b^6 + 4*a^2*b^8 + b^10)*d^5)*sqrt((B^2*a^6 + 3*B^2*a^
4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d
^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*
B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/
4)*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*
a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*arctan(-((3*B^
6*a^12 + 14*B^6*a^10*b^2 + 25*B^6*a^8*b^4 + 20*B^6*a^6*b^6 + 5*B^6*a^4*b^8
- 2*B^6*a^2*b^10 - B^6*b^12)*d^4*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b
^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^
2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^

```
8*a^9 + 8*B^8*a^7*b^2 + 6*B^8*a^5*b^4 - B^8*a*b^8)*d^2*sqrt((9*B^4*a^4*b^2
- 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 +
15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) - sqrt(2)*(2*(a^13 + 6*a^11*b^2 + 15*
a^9*b^4 + 20*a^7*b^6 + 15*a^5*b^8 + 6*a^3*b^10 + a*b^12)*d^7*sqrt(B^4/((a^6
 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 +
 B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^
2*b^10 + b^12)*d^4)) + (B^2*a^10 + 5*B^2*a^8*b^2 + 10*B^2*a^6*b^4 + 10*B^2*
a^4*b^6 + 5*B^2*a^2*b^8 + B^2*b^10)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4
 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*
a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2
*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b
^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqr
t(((9*B^4*a^8*b^2 + 12*B^4*a^6*b^4 - 2*B^4*a^4*b^6 - 4*B^4*a^2*b^8 + B^4*b^
10)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) -
sqrt(2)*((9*B^3*a^8*b^3 + 12*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 4*B^3*a^2*b^9 +
B^3*b^11)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x +
 c) + 2*(9*B^5*a^5*b^3 - 6*B^5*a^3*b^5 + B^5*a*b^7)*d*cos(d*x + c))*sqrt((B
^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3
*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9
*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x +
 c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) +
(9*B^6*a^5*b^2 - 6*B^6*a^3*b^4 + B^6*a*b^6)*cos(d*x + c) + (9*B^6*a^4*b^3 -
 6*B^6*a^2*b^5 + B^6*b^7)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^
2 + 3*a^2*b^4 + b^6)*d^4))^(3/4) - sqrt(2)*(2*(3*B^3*a^15*b + 17*B^3*a^13*b
^3 + 39*B^3*a^11*b^5 + 45*B^3*a^9*b^7 + 25*B^3*a^7*b^9 + 3*B^3*a^5*b^11 - 3
*B^3*a^3*b^13 - B^3*a*b^15)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^
6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2
 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^5
*a^12*b + 14*B^5*a^10*b^3 + 25*B^5*a^8*b^5 + 20*B^5*a^6*b^7 + 5*B^5*a^4*b^9
 - 2*B^5*a^2*b^11 - B^5*b^13)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4
*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^
10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 +
 (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3
*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*c
os(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*
b^4 + b^6)*d^4))^(3/4))/(9*B^10*a^4*b^2 - 6*B^10*a^2*b^4 + B^10*b^6)) + sqr
t(2)*((B^4*a^4 - B^4*b^4)*d*cos(d*x + c)^2 + 2*(B^4*a^3*b + B^4*a*b^3)*d*co
s(d*x + c)*sin(d*x + c) + (B^4*a^2*b^2 + B^4*b^4)*d - ((B^2*a^7 - 3*B^2*a^5
*b^2 - B^2*a^3*b^4 + 3*B^2*a*b^6)*d^3*cos(d*x + c)^2 + 2*(B^2*a^6*b - 2*B^2
*a^4*b^3 - 3*B^2*a^2*b^5)*d^3*cos(d*x + c)*sin(d*x + c) + (B^2*a^5*b^2 - 2*
B^2*a^3*b^4 - 3*B^2*a*b^6)*d^3)*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^
6)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 + (a^9 -
6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4
 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^
4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log(((9*B^4*a^8*b^2 + 12*B^4*a^6*b^4 -
```

```
2*B^4*a^4*b^6 - 4*B^4*a^2*b^8 + B^4*b^10)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + sqrt(2)*((9*B^3*a^8*b^3 + 12*B^3*a^6
*b^5 - 2*B^3*a^4*b^7 - 4*B^3*a^2*b^9 + B^3*b^11)*d^3*sqrt(B^4/((a^6 + 3*a^4
*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + 2*(9*B^5*a^5*b^3 - 6*B^5*a^3*b
^5 + B^5*a*b^7)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b
^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 +
 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b
^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^
4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5*b^2 - 6*B^6*a^3*b^4 + B^6
*a*b^6)*cos(d*x + c) + (9*B^6*a^4*b^3 - 6*B^6*a^2*b^5 + B^6*b^7)*sin(d*x +
c))/cos(d*x + c)) - sqrt(2)*((B^4*a^4 - B^4*b^4)*d*cos(d*x + c)^2 + 2*(B^4*
a^3*b + B^4*a*b^3)*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^2*b^2 + B^4*b^4)*d
- ((B^2*a^7 - 3*B^2*a^5*b^2 - B^2*a^3*b^4 + 3*B^2*a*b^6)*d^3*cos(d*x + c)^2
 + 2*(B^2*a^6*b - 2*B^2*a^4*b^3 - 3*B^2*a^2*b^5)*d^3*cos(d*x + c)*sin(d*x +
 c) + (B^2*a^5*b^2 - 2*B^2*a^3*b^4 - 3*B^2*a*b^6)*d^3)*sqrt(B^4/((a^6 + 3*a
^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*
b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6
+ 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*
b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log(((9*B^4*a^8
*b^2 + 12*B^4*a^6*b^4 - 2*B^4*a^4*b^6 - 4*B^4*a^2*b^8 + B^4*b^10)*d^2*sqrt(
B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) - sqrt(2)*((9*B
^3*a^8*b^3 + 12*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 4*B^3*a^2*b^9 + B^3*b^11)*d^3
*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + 2*(9*B^
5*a^5*b^3 - 6*B^5*a^3*b^5 + B^5*a*b^7)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^
2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 + (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^
8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2
- 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x
+ c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5*b^
2 - 6*B^6*a^3*b^4 + B^6*a*b^6)*cos(d*x + c) + (9*B^6*a^4*b^3 - 6*B^6*a^2*b^
5 + B^6*b^7)*sin(d*x + c))/cos(d*x + c)) - 8*(B^5*a*b*cos(d*x + c)^2 + B^5*
b^2*cos(d*x + c)*sin(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d
*x + c)))/((B^4*a^4 - B^4*b^4)*d*cos(d*x + c)^2 + 2*(B^4*a^3*b + B^4*a*b^3)
*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^2*b^2 + B^4*b^4)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{a\sqrt{a+b\tan{(c+dx)}}+b\sqrt{a+b\tan{(c+dx)}}\tan{(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] B*Integral(1/(a*sqrt(a + b*tan(c + d*x)) + b*sqrt(a + b*tan(c + d*x))*tan(c
 + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan(dx+c)+Ba}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/(b*tan(d*x + c) + a)^(5/2), x)
```

3.369 $\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=154

$$\frac{2b^2B}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

```
[Out] (-2*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + (B*ArcTanh[S
qrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)*d) + (B*ArcTanh[Sq
rt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(3/2)*d) + (2*b^2*B)/(a*(
a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.493671, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {21, 3569, 3653, 3539, 3537, 63, 208, 3634}

$$\frac{2b^2B}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] (-2*B*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/(a^(3/2)*d) + (B*ArcTanh[S
qrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2)*d) + (B*ArcTanh[Sq
rt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*b)^(3/2)*d) + (2*b^2*B)/(a*(
a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3569

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m + 1)*(c
```

```
+ d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(a^2 + b^2)*(b*c - a*d)), x] + Dist[1
/((m + 1)*(a^2 + b^2)*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d
*Tan[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2) - b*(b*c -
a*d)*(m + 1)*Tan[e + f*x] - b^2*d*(m + n + 2)*Tan[e + f*x]^2, x], x], x] /;
 FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
&& NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && LtQ[m, -1] && (LtQ[n, 0] || Intege
rQ[m]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
```

```
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rubi steps

$$\int \frac{\cot(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = B\int \frac{\cot(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{2b^2B}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(2B)\int \frac{\cot(c+dx)\left(\frac{1}{2}\left(a^2+b^2\right)-\frac{1}{2}ab\tan(c+dx)+\frac{1}{2}b^2\tan^2\right.}{\sqrt{a+b\tan(c+dx)}}}{a\left(a^2+b^2\right)}$$

$$= \frac{2b^2B}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{B\int \frac{\cot(c+dx)\left(1+\tan^2(c+dx)\right)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a} + \frac{(2B)\int \frac{-\frac{ab}{2}-\frac{1}{2}}{\sqrt{a+}}}{a\left(a^2\right.}$$

$$= \frac{2b^2B}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{B\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(ia-b)} - \frac{B\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(ia+b)}$$

$$= \frac{2b^2B}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x, i\tan(c+dx)\right)}{2(a-ib)d}$$

$$= -\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{2b^2B}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{2B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d} + \frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} + \frac{B\tanh^{-1}\left(\frac{\sqrt{a+b\tan}}{\sqrt{a+i}}\right.}{(a+ib)^{3/2}d}$$

Mathematica [A] time = 1.15979, size = 166, normalized size = 1.08

$$\frac{B\left(-\frac{2\left(a^2+b^2\right)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}}+\frac{2b^2}{\sqrt{a+b\tan(c+dx)}}+\frac{a(a+ib)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}}+\frac{a(a-ib)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}}\right)}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2
),x]
```

```
[Out] (B*((-2*(a^2 + b^2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a]])/Sqrt[a] + (a
*(a + I*b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/Sqrt[a - I*b] +
 (a*(a - I*b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/Sqrt[a + I*b
] + (2*b^2)/Sqrt[a + b*Tan[c + d*x]]))/(a*(a^2 + b^2)*d)
```

Maple [C] time = 1.17, size = 39987, normalized size = 259.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 7.60152, size = 29088, normalized size = 188.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorit
hm="fricas")
```

```
[Out] [1/4*(4*sqrt(2)*((a^12 + 3*a^10*b^2 + 2*a^8*b^4 - 2*a^6*b^6 - 3*a^4*b^8 - a
^2*b^10)*d^5*cos(d*x + c)^2 + 2*(a^11*b + 4*a^9*b^3 + 6*a^7*b^5 + 4*a^5*b^7
 + a^3*b^9)*d^5*cos(d*x + c)*sin(d*x + c) + (a^10*b^2 + 4*a^8*b^4 + 6*a^6*b
^6 + 4*a^4*b^8 + a^2*b^10)*d^5)*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b
^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 +
 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b
^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4)*sqrt((9*B^4*a^4*
b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^
6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*arctan(-((3*B^6*a^12 + 14*B^6*a^1
0*b^2 + 25*B^6*a^8*b^4 + 20*B^6*a^6*b^6 + 5*B^6*a^4*b^8 - 2*B^6*a^2*b^10 -
B^6*b^12)*d^4*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B
^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20
*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^8*a^9 + 8*B^8*a^7*b
^2 + 6*B^8*a^5*b^4 - B^8*a*b^8)*d^2*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B
^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*
b^10 + b^12)*d^4)) + sqrt(2)*((a^14 + 5*a^12*b^2 + 9*a^10*b^4 + 5*a^8*b^6 -
 5*a^6*b^8 - 9*a^4*b^10 - 5*a^2*b^12 - b^14)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2
 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((
a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^1
2)*d^4)) + (B^2*a^11 + 5*B^2*a^9*b^2 + 10*B^2*a^7*b^4 + 10*B^2*a^5*b^6 + 5*
B^2*a^3*b^8 + B^2*a*b^10)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6
)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 +
 b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^
9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2
*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt(((9*B^4*
a^8 + 12*B^4*a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^8)*d^2*sqrt(B^
4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + sqrt(2)*((9*B^3
*a^9 + 12*B^3*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a*b^8)*d^3*sqrt
(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + (9*B^5*a^6 -
 15*B^5*a^4*b^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*cos(d*x + c))*sqrt((B^2*a^6 +
3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*
a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*
b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(
d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^
5 - 6*B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) + (9*B^6*a^4*b - 6*B^6*a^2*b^3
+ B^6*b^5)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 +
 b^6)*d^4))^(3/4) + sqrt(2)*((3*B^3*a^16 + 14*B^3*a^14*b^2 + 22*B^3*a^12*b^
4 + 6*B^3*a^10*b^6 - 20*B^3*a^8*b^8 - 22*B^3*a^6*b^10 - 6*B^3*a^4*b^12 + 2*
B^3*a^2*b^14 + B^3*b^16)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*
d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 +
15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^5*a^
```

13 + 14*B^5*a^11*b^2 + 25*B^5*a^9*b^4 + 20*B^5*a^7*b^6 + 5*B^5*a^5*b^8 - 2*
B^5*a^3*b^10 - B^5*a*b^12)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^
6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10
+ b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a
^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^
2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(
d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4
 + b^6)*d^4))^(3/4))/(9*B^10*a^4*b^2 - 6*B^10*a^2*b^4 + B^10*b^6)) + 4*sqrt
(2)*((a^12 + 3*a^10*b^2 + 2*a^8*b^4 - 2*a^6*b^6 - 3*a^4*b^8 - a^2*b^10)*d^5
*cos(d*x + c)^2 + 2*(a^11*b + 4*a^9*b^3 + 6*a^7*b^5 + 4*a^5*b^7 + a^3*b^9)*
d^5*cos(d*x + c)*sin(d*x + c) + (a^10*b^2 + 4*a^8*b^4 + 6*a^6*b^6 + 4*a^4*b
^8 + a^2*b^10)*d^5)*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6
 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((
a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4)*sqrt((9*B^4*a^4*b^2 - 6*B^4*
a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b
^8 + 6*a^2*b^10 + b^12)*d^4))*arctan(((3*B^6*a^12 + 14*B^6*a^10*b^2 + 25*B^
6*a^8*b^4 + 20*B^6*a^6*b^6 + 5*B^6*a^4*b^8 - 2*B^6*a^2*b^10 - B^6*b^12)*d^4
*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 -
6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15
*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^8*a^9 + 8*B^8*a^7*b^2 + 6*B^8*a^
5*b^4 - B^8*a*b^8)*d^2*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^1
2 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*
d^4)) - sqrt(2)*((a^14 + 5*a^12*b^2 + 9*a^10*b^4 + 5*a^8*b^6 - 5*a^6*b^8 -
9*a^4*b^10 - 5*a^2*b^12 - b^14)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4
+ b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10
*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (B
^2*a^11 + 5*B^2*a^9*b^2 + 10*B^2*a^7*b^4 + 10*B^2*a^5*b^6 + 5*B^2*a^3*b^8 +
 B^2*a*b^10)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*
a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))
*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4
 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d
^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt(((9*B^4*a^8 + 12*B^4*
a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^8)*d^2*sqrt(B^4/((a^6 + 3*a
^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) - sqrt(2)*((9*B^3*a^9 + 12*B^3
*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a*b^8)*d^3*sqrt(B^4/((a^6 +
3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + (9*B^5*a^6 - 15*B^5*a^4*b
^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2
 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sq
rt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a
^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^
4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5 - 6*B^6*a^3
*b^2 + B^6*a*b^4)*cos(d*x + c) + (9*B^6*a^4*b - 6*B^6*a^2*b^3 + B^6*b^5)*si
n(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(
3/4) - sqrt(2)*((3*B^3*a^16 + 14*B^3*a^14*b^2 + 22*B^3*a^12*b^4 + 6*B^3*a^1

0*b^6 - 20*B^3*a^8*b^8 - 22*B^3*a^6*b^10 - 6*B^3*a^4*b^12 + 2*B^3*a^2*b^14 + B^3*b^16)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^5*a^13 + 14*B^5*a^11*b^2 + 25*B^5*a^9*b^4 + 20*B^5*a^7*b^6 + 5*B^5*a^5*b^8 - 2*B^5*a^3*b^10 - B^5*a*b^12)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4))/(9*B^10*a^4*b^2 - 6*B^10*a^2*b^4 + B^10*b^6)) + sqrt(2)*((B^4*a^6 - B^4*a^2*b^4)*d*cos(d*x + c)^2 + 2*(B^4*a^5*b + B^4*a^3*b^3)*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^4*b^2 + B^4*a^2*b^4)*d + ((B^2*a^9 - 3*B^2*a^7*b^2 - B^2*a^5*b^4 + 3*B^2*a^3*b^6)*d^3*cos(d*x + c)^2 + 2*(B^2*a^8*b - 2*B^2*a^6*b^3 - 3*B^2*a^4*b^5)*d^3*cos(d*x + c)*sin(d*x + c) + (B^2*a^7*b^2 - 2*B^2*a^5*b^4 - 3*B^2*a^3*b^6)*d^3)*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log(((9*B^4*a^8 + 12*B^4*a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + sqrt(2)*((9*B^3*a^9 + 12*B^3*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a*b^8)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + (9*B^5*a^6 - 15*B^5*a^4*b^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5 - 6*B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) + (9*B^6*a^4*b - 6*B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/cos(d*x + c)) - sqrt(2)*((B^4*a^6 - B^4*a^2*b^4)*d*cos(d*x + c)^2 + 2*(B^4*a^5*b + B^4*a^3*b^3)*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^4*b^2 + B^4*a^2*b^4)*d + ((B^2*a^9 - 3*B^2*a^7*b^2 - B^2*a^5*b^4 + 3*B^2*a^3*b^6)*d^3*cos(d*x + c)^2 + 2*(B^2*a^8*b - 2*B^2*a^6*b^3 - 3*B^2*a^4*b^5)*d^3*cos(d*x + c)*sin(d*x + c) + (B^2*a^7*b^2 - 2*B^2*a^5*b^4 - 3*B^2*a^3*b^6)*d^3)*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log(((9*B^4*a^8 + 12*B^4*a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) - sqrt(2)*((9*B^3*a^9 + 12*B^3*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a*b^8)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + (9*B^5*a^6 - 15*B^5*a^4*b^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*cos(d*x + c))*sqrt((B^2*a^

6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5 - 6*B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) + (9*B^6*a^4*b - 6*B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/cos(d*x + c)) + 2*(B^5*a^2*b^2 + B^5*b^4 + (B^5*a^4 - B^5*b^4)*cos(d*x + c)^2 + 2*(B^5*a^3*b + B^5*a*b^3)*cos(d*x + c)*sin(d*x + c))*sqrt(a)*log(-(8*a*b*cos(d*x + c)*sin(d*x + c) + (8*a^2 - b^2)*cos(d*x + c)^2 + b^2 - 4*(2*a*cos(d*x + c)^2 + b*cos(d*x + c)*sin(d*x + c))*sqrt(a)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/(cos(d*x + c)^2 - 1)) + 8*(B^5*a^2*b^2*cos(d*x + c)^2 + B^5*a*b^3*cos(d*x + c)*sin(d*x + c))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/((B^4*a^6 - B^4*a^2*b^4)*d*cos(d*x + c)^2 + 2*(B^4*a^5*b + B^4*a^3*b^3)*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^4*b^2 + B^4*a^2*b^4)*d), 1/4*(4*sqrt(2)*((a^12 + 3*a^10*b^2 + 2*a^8*b^4 - 2*a^6*b^6 - 3*a^4*b^8 - a^2*b^10)*d^5*cos(d*x + c)^2 + 2*(a^11*b + 4*a^9*b^3 + 6*a^7*b^5 + 4*a^5*b^7 + a^3*b^9)*d^5*cos(d*x + c)*sin(d*x + c) + (a^10*b^2 + 4*a^8*b^4 + 6*a^6*b^6 + 4*a^4*b^8 + a^2*b^10)*d^5)*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4)*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*arctan(-((3*B^6*a^12 + 14*B^6*a^10*b^2 + 25*B^6*a^8*b^4 + 20*B^6*a^6*b^6 + 5*B^6*a^4*b^8 - 2*B^6*a^2*b^10 - B^6*b^12)*d^4*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^8*a^9 + 8*B^8*a^7*b^2 + 6*B^8*a^5*b^4 - B^8*a*b^8)*d^2*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + sqrt(2)*((a^14 + 5*a^12*b^2 + 9*a^10*b^4 + 5*a^8*b^6 - 5*a^6*b^8 - 9*a^4*b^10 - 5*a^2*b^12 - b^14)*d^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (B^2*a^11 + 5*B^2*a^9*b^2 + 10*B^2*a^7*b^4 + 10*B^2*a^5*b^6 + 5*B^2*a^3*b^8 + B^2*a*b^10)*d^5*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt(((9*B^4*a^8 + 12*B^4*a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + sqrt(2)*((9*B^3*a^9 + 12*B^3*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a*b^8)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + (9*B^5*a^6 - 15*B^5*a^4*b^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4

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*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*s
qrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2
+ 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5 - 6*B^6*a^3*b^2 + B^6*a*b^4)*co
s(d*x + c) + (9*B^6*a^4*b - 6*B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/cos(d*x
+ c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4) + sqrt(2)*((3*B
^3*a^16 + 14*B^3*a^14*b^2 + 22*B^3*a^12*b^4 + 6*B^3*a^10*b^6 - 20*B^3*a^8*b
^8 - 22*B^3*a^6*b^10 - 6*B^3*a^4*b^12 + 2*B^3*a^2*b^14 + B^3*b^16)*d^7*sqrt
(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4
*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*
b^8 + 6*a^2*b^10 + b^12)*d^4)) + (3*B^5*a^13 + 14*B^5*a^11*b^2 + 25*B^5*a^9
*b^4 + 20*B^5*a^7*b^6 + 5*B^5*a^5*b^8 - 2*B^5*a^3*b^10 - B^5*a*b^12)*d^5*sq
rt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b
^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*
B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*
b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^
2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*
x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4))/(9*B^10*a^4*
b^2 - 6*B^10*a^2*b^4 + B^10*b^6)) + 4*sqrt(2)*((a^12 + 3*a^10*b^2 + 2*a^8*b
^4 - 2*a^6*b^6 - 3*a^4*b^8 - a^2*b^10)*d^5*cos(d*x + c)^2 + 2*(a^11*b + 4*a
^9*b^3 + 6*a^7*b^5 + 4*a^5*b^7 + a^3*b^9)*d^5*cos(d*x + c)*sin(d*x + c) + (
a^10*b^2 + 4*a^8*b^4 + 6*a^6*b^6 + 4*a^4*b^8 + a^2*b^10)*d^5)*sqrt((B^2*a^6
 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 -
 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a
^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6
)*d^4))^(3/4)*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^1
0*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*arc
tan(((3*B^6*a^12 + 14*B^6*a^10*b^2 + 25*B^6*a^8*b^4 + 20*B^6*a^6*b^6 + 5*B^
6*a^4*b^8 - 2*B^6*a^2*b^10 - B^6*b^12)*d^4*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a
^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 +
 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4
)) + (3*B^8*a^9 + 8*B^8*a^7*b^2 + 6*B^8*a^5*b^4 - B^8*a*b^8)*d^2*sqrt((9*B^
4*a^4*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*
a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) - sqrt(2)*((a^14 + 5*a^12*b
^2 + 9*a^10*b^4 + 5*a^8*b^6 - 5*a^6*b^8 - 9*a^4*b^10 - 5*a^2*b^12 - b^14)*d
^7*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2
- 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 +
15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + (B^2*a^11 + 5*B^2*a^9*b^2 + 10*B^2*
a^7*b^4 + 10*B^2*a^5*b^6 + 5*B^2*a^3*b^8 + B^2*a*b^10)*d^5*sqrt((9*B^4*a^4*
b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^
6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 +
3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(
B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*
b^4 + B^2*b^6))*sqrt(((9*B^4*a^8 + 12*B^4*a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a
^2*b^6 + B^4*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*c
os(d*x + c) - sqrt(2)*((9*B^3*a^9 + 12*B^3*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*
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a^3*b^6 + B^3*a*b^8)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)
)*cos(d*x + c) + (9*B^5*a^6 - 15*B^5*a^4*b^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*c
os(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9
 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*
b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*
x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 +
 b^6)*d^4))^(1/4) + (9*B^6*a^5 - 6*B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) +
(9*B^6*a^4*b - 6*B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/cos(d*x + c))*(B^4/((
a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4) - sqrt(2)*((3*B^3*a^16 + 14*
B^3*a^14*b^2 + 22*B^3*a^12*b^4 + 6*B^3*a^10*b^6 - 20*B^3*a^8*b^8 - 22*B^3*a
^6*b^10 - 6*B^3*a^4*b^12 + 2*B^3*a^2*b^14 + B^3*b^16)*d^7*sqrt(B^4/((a^6 +
3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*sqrt((9*B^4*a^4*b^2 - 6*B^4*a^2*b^4 + B^
4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b
^10 + b^12)*d^4)) + (3*B^5*a^13 + 14*B^5*a^11*b^2 + 25*B^5*a^9*b^4 + 20*B^5
*a^7*b^6 + 5*B^5*a^5*b^8 - 2*B^5*a^3*b^10 - B^5*a*b^12)*d^5*sqrt((9*B^4*a^4
*b^2 - 6*B^4*a^2*b^4 + B^4*b^6)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b
^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 +
 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt
(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2
*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/
((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4))/(9*B^10*a^4*b^2 - 6*B^10*
a^2*b^4 + B^10*b^6)) + sqrt(2)*((B^4*a^6 - B^4*a^2*b^4)*d*cos(d*x + c)^2 +
2*(B^4*a^5*b + B^4*a^3*b^3)*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^4*b^2 + B^
4*a^2*b^4)*d + ((B^2*a^9 - 3*B^2*a^7*b^2 - B^2*a^5*b^4 + 3*B^2*a^3*b^6)*d^3
*cos(d*x + c)^2 + 2*(B^2*a^8*b - 2*B^2*a^6*b^3 - 3*B^2*a^4*b^5)*d^3*cos(d*x
 + c)*sin(d*x + c) + (B^2*a^7*b^2 - 2*B^2*a^5*b^4 - 3*B^2*a^3*b^6)*d^3)*sqr
t(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4
*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^
2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B
^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4
)*log(((9*B^4*a^8 + 12*B^4*a^6*b^2 - 2*B^4*a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^
8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + s
qrt(2)*((9*B^3*a^9 + 12*B^3*a^7*b^2 - 2*B^3*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a
*b^8)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c)
+ (9*B^5*a^6 - 15*B^5*a^4*b^2 + 7*B^5*a^2*b^4 - B^5*b^6)*d*cos(d*x + c))*sq
rt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a^5*b^4 -
8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)
))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*sqrt((a*cos(d*x + c) + b*sin(
d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/
4) + (9*B^6*a^5 - 6*B^6*a^3*b^2 + B^6*a*b^4)*cos(d*x + c) + (9*B^6*a^4*b -
6*B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/cos(d*x + c)) - sqrt(2)*((B^4*a^6 -
B^4*a^2*b^4)*d*cos(d*x + c)^2 + 2*(B^4*a^5*b + B^4*a^3*b^3)*d*cos(d*x + c)*
sin(d*x + c) + (B^4*a^4*b^2 + B^4*a^2*b^4)*d + ((B^2*a^9 - 3*B^2*a^7*b^2 -
B^2*a^5*b^4 + 3*B^2*a^3*b^6)*d^3*cos(d*x + c)^2 + 2*(B^2*a^8*b - 2*B^2*a^6*
b^3 - 3*B^2*a^4*b^5)*d^3*cos(d*x + c)*sin(d*x + c) + (B^2*a^7*b^2 - 2*B^2*a

```
^5*b^4 - 3*B^2*a^3*b^6)*d^3)*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*
d^4)))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4 + B^2*b^6 - (a^9 - 6*a
^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 +
b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6))*(B^4/((a^6 + 3*a^4*b
^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log(((9*B^4*a^8 + 12*B^4*a^6*b^2 - 2*B^4*
a^4*b^4 - 4*B^4*a^2*b^6 + B^4*b^8)*d^2*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^2*b
^4 + b^6)*d^4))*cos(d*x + c) - sqrt(2)*((9*B^3*a^9 + 12*B^3*a^7*b^2 - 2*B^3
*a^5*b^4 - 4*B^3*a^3*b^6 + B^3*a*b^8)*d^3*sqrt(B^4/((a^6 + 3*a^4*b^2 + 3*a^
2*b^4 + b^6)*d^4))*cos(d*x + c) + (9*B^5*a^6 - 15*B^5*a^4*b^2 + 7*B^5*a^2*b
^4 - B^5*b^6)*d*cos(d*x + c))*sqrt((B^2*a^6 + 3*B^2*a^4*b^2 + 3*B^2*a^2*b^4
 + B^2*b^6 - (a^9 - 6*a^5*b^4 - 8*a^3*b^6 - 3*a*b^8)*d^2*sqrt(B^4/((a^6 + 3
*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(9*B^2*a^4*b^2 - 6*B^2*a^2*b^4 + B^2*b^6
))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(B^4/((a^6 + 3*a^4*
b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (9*B^6*a^5 - 6*B^6*a^3*b^2 + B^6*a*b^4
)*cos(d*x + c) + (9*B^6*a^4*b - 6*B^6*a^2*b^3 + B^6*b^5)*sin(d*x + c))/cos(
d*x + c)) + 8*(B^5*a^2*b^2 + B^5*b^4 + (B^5*a^4 - B^5*b^4)*cos(d*x + c)^2 +
 2*(B^5*a^3*b + B^5*a*b^3)*cos(d*x + c)*sin(d*x + c))*sqrt(-a)*arctan(sqrt(
-a)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))/a) + 8*(B^5*a^2*b^
2*cos(d*x + c)^2 + B^5*a*b^3*cos(d*x + c)*sin(d*x + c))*sqrt((a*cos(d*x + c
) + b*sin(d*x + c))/cos(d*x + c)))/((B^4*a^6 - B^4*a^2*b^4)*d*cos(d*x + c)^
2 + 2*(B^4*a^5*b + B^4*a^3*b^3)*d*cos(d*x + c)*sin(d*x + c) + (B^4*a^4*b^2
+ B^4*a^2*b^4)*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{\cot (c+dx)}{a\sqrt{a+b\tan (c+dx)}+b\sqrt{a+b\tan (c+dx)}\tan (c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] B*Integral(cot(c + d*x)/(a*sqrt(a + b*tan(c + d*x)) + b*sqrt(a + b*tan(c +
d*x))*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan (dx+c)+Ba)\cot (dx+c)}{(b\tan (dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*cot(d*x + c)/(b*tan(d*x + c) + a)^(5/2),
 x)
```

3.370 $\int \frac{-a+b\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=102

$$\frac{(-b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

```
[Out] ((I*a - b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*
d) - ((I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a +
I*b]*d)
```

Rubi [A] time = 0.149244, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {3539, 3537, 63, 208}

$$\frac{(-b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}-\frac{(b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((I*a - b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*
d) - ((I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a +
I*b]*d)
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
```

```
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{-a+b\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx &= \frac{1}{2}(-a-ib)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx+\frac{1}{2}(-a+ib)\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx \\
&= -\frac{(ia-b)\operatorname{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx,x,i\tan(c+dx)\right)}{2d}+\frac{(ia+b)\operatorname{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx,x,-
\right.}{2d} \\
&= \frac{(a-ib)\operatorname{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx,x,\sqrt{a+b\tan(c+dx)}\right)}{bd}+\frac{(a+ib)\operatorname{Subst}\left(\int \frac{1}{-1-\frac{ia}{b}+\frac{ix^2}{b}}\,dx,x,
\right.}{bd} \\
&= \frac{(ia-b)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}d}-\frac{(ia+b)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}d}
\end{aligned}$$

Mathematica [A] time = 0.167018, size = 109, normalized size = 1.07

$$\frac{i\left((a+ib)^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)-(a-ib)^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)\right)}{d\sqrt{a-ib}\sqrt{a+ib}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-a + b*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] (I*((a + I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]] - (a -
I*b)^(3/2)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]]))/(Sqrt[a - I*b]
```

```
*Sqrt[a + I*b]*d)
```

Maple [B] time = 0.139, size = 1905, normalized size = 18.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] -1/4/d/b/(a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/4/d*b/(
a^2+b^2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/4/d/b/(a^2+b^2)^(3/
2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(
a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4-1/4/d*b^3/(a^2+b^2)^(3/2)
*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^
2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*
a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3+1/d*b/(a^2+b^2)^(1/2)/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2
*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a+1/d*b/(a^2+b^2)/(2*(a^2+b^2)^(1
/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/
2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2-1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(
1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1
/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^5+1/d*b^3/(a^2+b^2)/(2*(a^2+b^2)^(1/2
)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))-3/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)
-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-4/d*b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/
(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3+1/4/d/b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1
/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)*a^3+1/4/d*b/(a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)*a-1/4/d/b/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(
1/2)*a^4+1/4/d*b^3/(a^2+b^2)^(3/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/
2)-1/d/b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
a^3-1/d*b/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2
```

```
)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))
*a-1/d*b/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)
+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2+1/
d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2
)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^5-1
/d*b^3/(a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2
*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+3/d*b^3/
(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*
a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a+4/d*b/(
a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.97254, size = 7656, normalized size = 75.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4*(4*sqrt(2)*(a^2 + b^2)*d^4*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (
a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^
4 + b^6))*((a^2 + b^2)/d^4)^(3/4)*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4
+ 2*a^2*b^2 + b^4)*d^4))*arctan(((3*a^8 + 8*a^6*b^2 + 6*a^4*b^4 - b^8)*d^4*
sqrt((a^2 + b^2)/d^4)*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2
+ b^4)*d^4)) + (3*a^9 + 8*a^7*b^2 + 6*a^5*b^4 - a*b^8)*d^2*sqrt((9*a^4*b^2
- 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + sqrt(2)*(2*a*d^7*sqrt((
a^2 + b^2)/d^4)*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)
*d^4)) + (a^2 + b^2)*d^5*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b
^2 + b^4)*d^4)))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (a^5 - 2*a^3*b^2
```

```
 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^4 + b^6))*sqrt(
((9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10)*d^2*sqrt((a^2 + b^
2)/d^4)*cos(d*x + c) + sqrt(2)*((9*a^6*b^3 + 3*a^4*b^5 - 5*a^2*b^7 + b^9)*d
^3*sqrt((a^2 + b^2)/d^4)*cos(d*x + c) + 2*(9*a^7*b^3 + 3*a^5*b^5 - 5*a^3*b^
7 + a*b^9)*d*cos(d*x + c))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (a^5 -
 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^4 + b
^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^2 + b^2)/d^4)
^(1/4) + (9*a^9*b^2 + 12*a^7*b^4 - 2*a^5*b^6 - 4*a^3*b^8 + a*b^10)*cos(d*x
+ c) + (9*a^8*b^3 + 12*a^6*b^5 - 2*a^4*b^7 - 4*a^2*b^9 + b^11)*sin(d*x + c)
)/cos(d*x + c))*((a^2 + b^2)/d^4)^(3/4) + sqrt(2)*(2*(3*a^5*b + 2*a^3*b^3 -
 a*b^5)*d^7*sqrt((a^2 + b^2)/d^4)*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4
+ 2*a^2*b^2 + b^4)*d^4)) + (3*a^6*b + 5*a^4*b^3 + a^2*b^5 - b^7)*d^5*sqrt((
9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt((a^6 + 3*
a^4*b^2 + 3*a^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2
)/d^4))/(9*a^4*b^2 - 6*a^2*b^4 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c
))/cos(d*x + c))*((a^2 + b^2)/d^4)^(3/4))/(9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b
^6 - 4*a^2*b^8 + b^10)) + 4*sqrt(2)*(a^2 + b^2)*d^4*sqrt((a^6 + 3*a^4*b^2 +
 3*a^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(
9*a^4*b^2 - 6*a^2*b^4 + b^6))*((a^2 + b^2)/d^4)^(3/4)*sqrt((9*a^4*b^2 - 6*a
^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)*d^4))*arctan(-((3*a^8 + 8*a^6*b^2 +
6*a^4*b^4 - b^8)*d^4*sqrt((a^2 + b^2)/d^4)*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^
6)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (3*a^9 + 8*a^7*b^2 + 6*a^5*b^4 - a*b^8)
*d^2*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - sq
rt(2)*(2*a*d^7*sqrt((a^2 + b^2)/d^4)*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a
^4 + 2*a^2*b^2 + b^4)*d^4)) + (a^2 + b^2)*d^5*sqrt((9*a^4*b^2 - 6*a^2*b^4 +
 b^6)/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b
^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*
a^2*b^4 + b^6))*sqrt(((9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^1
0)*d^2*sqrt((a^2 + b^2)/d^4)*cos(d*x + c) - sqrt(2)*((9*a^6*b^3 + 3*a^4*b^5
 - 5*a^2*b^7 + b^9)*d^3*sqrt((a^2 + b^2)/d^4)*cos(d*x + c) + 2*(9*a^7*b^3 +
 3*a^5*b^5 - 5*a^3*b^7 + a*b^9)*d*cos(d*x + c))*sqrt((a^6 + 3*a^4*b^2 + 3*a
^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^
4*b^2 - 6*a^2*b^4 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x +
c))*((a^2 + b^2)/d^4)^(1/4) + (9*a^9*b^2 + 12*a^7*b^4 - 2*a^5*b^6 - 4*a^3*b
^8 + a*b^10)*cos(d*x + c) + (9*a^8*b^3 + 12*a^6*b^5 - 2*a^4*b^7 - 4*a^2*b^9
 + b^11)*sin(d*x + c))/cos(d*x + c))*((a^2 + b^2)/d^4)^(3/4) - sqrt(2)*(2*(
3*a^5*b + 2*a^3*b^3 - a*b^5)*d^7*sqrt((a^2 + b^2)/d^4)*sqrt((9*a^4*b^2 - 6*
a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (3*a^6*b + 5*a^4*b^3 + a^2*
b^5 - b^7)*d^5*sqrt((9*a^4*b^2 - 6*a^2*b^4 + b^6)/((a^4 + 2*a^2*b^2 + b^4)*
d^4)))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4
)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^4 + b^6))*sqrt((a*cos(d*x
 + c) + b*sin(d*x + c))/cos(d*x + c))*((a^2 + b^2)/d^4)^(3/4))/(9*a^8*b^2 +
 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10)) + sqrt(2)*(a^4 + 2*a^2*b^2 + b
^4 - (a^3 - 3*a*b^2)*d^2*sqrt((a^2 + b^2)/d^4))*sqrt((a^6 + 3*a^4*b^2 + 3*a
^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^
```

```
4*b^2 - 6*a^2*b^4 + b^6))*((a^2 + b^2)/d^4)^(1/4)*log(((9*a^8*b^2 + 12*a^6*
b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10)*d^2*sqrt((a^2 + b^2)/d^4)*cos(d*x + c)
+ sqrt(2)*((9*a^6*b^3 + 3*a^4*b^5 - 5*a^2*b^7 + b^9)*d^3*sqrt((a^2 + b^2)/d
^4)*cos(d*x + c) + 2*(9*a^7*b^3 + 3*a^5*b^5 - 5*a^3*b^7 + a*b^9)*d*cos(d*x
+ c))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)
*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^4 + b^6))*sqrt((a*cos(d*x
+ c) + b*sin(d*x + c))/cos(d*x + c))*((a^2 + b^2)/d^4)^(1/4) + (9*a^9*b^2 +
 12*a^7*b^4 - 2*a^5*b^6 - 4*a^3*b^8 + a*b^10)*cos(d*x + c) + (9*a^8*b^3 + 1
2*a^6*b^5 - 2*a^4*b^7 - 4*a^2*b^9 + b^11)*sin(d*x + c))/cos(d*x + c)) - sqr
t(2)*(a^4 + 2*a^2*b^2 + b^4 - (a^3 - 3*a*b^2)*d^2*sqrt((a^2 + b^2)/d^4))*sq
rt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (a^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqr
t((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^4 + b^6))*((a^2 + b^2)/d^4)^(1/4)*
log(((9*a^8*b^2 + 12*a^6*b^4 - 2*a^4*b^6 - 4*a^2*b^8 + b^10)*d^2*sqrt((a^2
+ b^2)/d^4)*cos(d*x + c) - sqrt(2)*((9*a^6*b^3 + 3*a^4*b^5 - 5*a^2*b^7 + b^
9)*d^3*sqrt((a^2 + b^2)/d^4)*cos(d*x + c) + 2*(9*a^7*b^3 + 3*a^5*b^5 - 5*a^
3*b^7 + a*b^9)*d*cos(d*x + c))*sqrt((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6 + (a
^5 - 2*a^3*b^2 - 3*a*b^4)*d^2*sqrt((a^2 + b^2)/d^4))/(9*a^4*b^2 - 6*a^2*b^4
 + b^6))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*((a^2 + b^2)/
d^4)^(1/4) + (9*a^9*b^2 + 12*a^7*b^4 - 2*a^5*b^6 - 4*a^3*b^8 + a*b^10)*cos(
d*x + c) + (9*a^8*b^3 + 12*a^6*b^5 - 2*a^4*b^7 - 4*a^2*b^9 + b^11)*sin(d*x
+ c))/cos(d*x + c)))/(a^4 + 2*a^2*b^2 + b^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{a}{\sqrt{a + b\tan{(c + dx)}}}\,dx - \int -\frac{b\tan{(c + dx)}}{\sqrt{a + b\tan{(c + dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] -Integral(a/sqrt(a + b*tan(c + d*x)), x) - Integral(-b*tan(c + d*x)/sqrt(a
+ b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\tan{(dx + c)} - a}{\sqrt{b\tan{(dx + c)} + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c) - a)/sqrt(b*tan(d*x + c) + a), x)
```

3.371 $\int \frac{-a+b\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=132

$$\frac{4ab}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(-b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

```
[Out] ((I*a - b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2
)*d) - ((I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(3/2)*d) + (4*a*b)/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.225423, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3529, 3539, 3537, 63, 208}

$$\frac{4ab}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(-b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{3/2}}-\frac{(b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d(a+ib)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*Tan[c + d*x])/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((I*a - b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(3/2
)*d) - ((I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(3/2)*d) + (4*a*b)/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
```

```
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{-a+b\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx = \frac{4ab}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{-a^2+b^2+2ab\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{a^2+b^2}$$

$$= \frac{4ab}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{(a-ib)\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(a+ib)} - \frac{(a+ib)\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx}{2(a-ib)}$$

$$= \frac{4ab}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(a+ib)\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x, i\tan(c+dx)\right)}{2(ia+b)d} + \frac{(ia\ \cdots}{\cdots}$$

$$= \frac{4ab}{\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(a-ib)\,\text{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{(a+ib)bd} + \cdots$$

$$= \frac{(ia-b)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{3/2}d} - \frac{(ia+b)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{3/2}d} + \frac{4ab}{\left(a^2+b^2\right)d\sqrt{a+b\tan\cdots}}$$

Mathematica [C] time = 0.321831, size = 154, normalized size = 1.17

$$-\frac{i\cos(c+dx)(a-b\tan(c+dx))\left((a+ib)^2\text{Hypergeometric2F1}\left(-\frac{1}{2},1,\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)-(a-ib)^2\text{Hypergeometric2}\right.}{d(a-ib)(a+ib)\sqrt{a+b\tan(c+dx)}(a\cos(c+dx)-b\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-a + b*Tan[c + d*x])/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((-I)*Cos[c + d*x]*((a + I*b)^2*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*Tan[
c + d*x])/(a - I*b)] - (a - I*b)^2*Hypergeometric2F1[-1/2, 1, 1/2, (a + b*T
an[c + d*x])/(a + I*b)])*(a - b*Tan[c + d*x]))/((a - I*b)*(a + I*b)*d*(a*Co
s[c + d*x] - b*Sin[c + d*x])*Sqrt[a + b*Tan[c + d*x]])
```

Maple [B] time = 0.097, size = 2291, normalized size = 17.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] 1/d*b^3/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^
(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a
^2-1/d/b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*
a^4-2/d*b/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1
/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3
-1/2/d*b/(a^2+b^2)^(5/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-1/4
/d/b/(a^2+b^2)^(5/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2
)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^5-1/d*b^3
/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(
1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2+1/d/
b/(a^2+b^2)^(3/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^
(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^4+2/d
*b/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/
2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3-2/d*b^
3/(a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)
^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a+2/d*b^3/(
a^2+b^2)^2/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(
```

```
2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-1/4/d/b/(a^2
+b^2)^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1
/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4+1/4/d/b/(a^2+b^2)^(5
/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+
(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^5+3/4/d*b^3/(a^2+b^2)^(5/2
)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a
^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+1/d/b/(a^2+b^2)^(5/2)/(2*(a^
2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*
x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^6-1/d/b/(a^2+b^2)^(5/2)/(2*(a
^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2
)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^6+1/2/d*b/(a^2+b^2)^(5/2)*ln
((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b
^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-4/d*b/(a^2+b^2)^(5/2)/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2
*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^4-2/d*b^5/(a^2+b^2)^(5/2)/(2*(a
^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d
*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))-1/d*b^3/(a^2+b^2)^(3/2)/(2*(a^
2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)
+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+2/d*b^5/(a^2+b^2)^(5/2)/(2*(a^2
+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+
2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+1/d*b^3/(a^2+b^2)^(3/2)/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+
c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+1/4/d/b/(a^2+b^2)^2*ln((a+b*tan(d
*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4-3/4/d*b^3/(a^2+b^2)^(5/2)*ln(b*tan(d*x+c)
+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+4/d*b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)
^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(
a^2+b^2)^(1/2)-2*a)^(1/2))*a^4-1/4/d*b^3/(a^2+b^2)^2*ln((a+b*tan(d*x+c))^(1
/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)+1/4/d*b^3/(a^2+b^2)^2*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c
))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+
2*a)^(1/2)+4*a*b/(a^2+b^2)/d/(a+b*tan(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 3.5052, size = 14344, normalized size = 108.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] -1/4*(4*sqrt(2)*((a^8 + 2*a^6*b^2 - 2*a^2*b^6 - b^8)*d^5*cos(d*x + c)^2 + 2
*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d^5*cos(d*x + c)*sin(d*x + c) + (a
^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^5)*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*
b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b^4 - 14*a
^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*a^8*b^2 -
 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqrt((25*a^8*b^2 - 100*a^6
*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 +
20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*(1/((a^2 + b^2)*d^4))^(3
/4)*arctan(((5*a^12 + 10*a^10*b^2 - 9*a^8*b^4 - 36*a^6*b^6 - 29*a^4*b^8 - 6
*a^2*b^10 + b^12)*d^4*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2
*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6
*a^2*b^10 + b^12)*d^4))*sqrt(1/((a^2 + b^2)*d^4)) + (5*a^11 + 5*a^9*b^2 - 1
4*a^7*b^4 - 22*a^5*b^6 - 7*a^3*b^8 + a*b^10)*d^2*sqrt((25*a^8*b^2 - 100*a^6
*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 +
20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) - sqrt(2)*((3*a^6 + 5*a^
4*b^2 + a^2*b^4 - b^6)*d^7*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 2
0*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^
8 + 6*a^2*b^10 + b^12)*d^4))*sqrt(1/((a^2 + b^2)*d^4)) + 2*(a^5 + 2*a^3*b^2
 + a*b^4)*d^5*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b
^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^1
0 + b^12)*d^4)))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b
^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b
^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6
 - 20*a^2*b^8 + b^10))*sqrt(((25*a^14*b^2 - 25*a^12*b^4 - 115*a^10*b^6 + 35
*a^8*b^8 + 171*a^6*b^10 + 53*a^4*b^12 - 17*a^2*b^14 + b^16)*d^2*sqrt(1/((a^
2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*(2*(25*a^13*b^3 - 50*a^11*b^5 - 65*a^
9*b^7 + 100*a^7*b^9 + 71*a^5*b^11 - 18*a^3*b^13 + a*b^15)*d^3*sqrt(1/((a^2
+ b^2)*d^4))*cos(d*x + c) + (75*a^12*b^3 - 250*a^10*b^5 + 105*a^8*b^7 + 260
*a^6*b^9 - 147*a^4*b^11 + 22*a^2*b^13 - b^15)*d*cos(d*x + c))*sqrt((a^10 +
5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2
- 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d
^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqrt((a
```

*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^2 + b^2)*d^4))^(1/4) + (25*a^13*b^2 - 50*a^11*b^4 - 65*a^9*b^6 + 100*a^7*b^8 + 71*a^5*b^10 - 18*a^3*b^12 + a*b^14)*cos(d*x + c) + (25*a^12*b^3 - 50*a^10*b^5 - 65*a^8*b^7 + 100*a^6*b^9 + 71*a^4*b^11 - 18*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x + c))*(1/((a^2 + b^2)*d^4))^(3/4) + sqrt(2)*((15*a^12*b + 10*a^10*b^3 - 47*a^8*b^5 - 52*a^6*b^7 + a^4*b^9 + 10*a^2*b^11 - b^13)*d^7*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*sqrt(1/((a^2 + b^2)*d^4)) + 2*(5*a^11*b + 5*a^9*b^3 - 14*a^7*b^5 - 22*a^5*b^7 - 7*a^3*b^9 + a*b^11)*d^5*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^2 + b^2)*d^4))^(3/4))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)) + 4*sqrt(2)*((a^8 + 2*a^6*b^2 - 2*a^2*b^6 - b^8)*d^5*cos(d*x + c)^2 + 2*(a^7*b + 3*a^5*b^3 + 3*a^3*b^5 + a*b^7)*d^5*cos(d*x + c)*sin(d*x + c) + (a^6*b^2 + 3*a^4*b^4 + 3*a^2*b^6 + b^8)*d^5)*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*(1/((a^2 + b^2)*d^4))^(3/4)*arctan(-((5*a^12 + 10*a^10*b^2 - 9*a^8*b^4 - 36*a^6*b^6 - 29*a^4*b^8 - 6*a^2*b^10 + b^12)*d^4*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*sqrt(1/((a^2 + b^2)*d^4)) + (5*a^11 + 5*a^9*b^2 - 14*a^7*b^4 - 22*a^5*b^6 - 7*a^3*b^8 + a*b^10)*d^2*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)) + sqrt(2)*((3*a^6 + 5*a^4*b^2 + a^2*b^4 - b^6)*d^7*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*sqrt(1/((a^2 + b^2)*d^4)) + 2*(a^5 + 2*a^3*b^2 + a*b^4)*d^5*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4)))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqrt(((25*a^14*b^2 - 25*a^12*b^4 - 115*a^10*b^6 + 35*a^8*b^8 + 171*a^6*b^10 + 53*a^4*b^12 - 17*a^2*b^14 + b^16)*d^2*sqrt(1/((a^2 + b^2)*d^4))*cos(d*x + c) - sqrt(2)*(2*(25*a^13*b^3 - 50*a^11*b^5 - 65*a^9*b^7 + 100*a^7*b^9 + 71*a^5*b^11 - 18*a^3*b^13 + a*b^15)*d^3*sqrt(1/((a^2 + b^2)*d^4))*cos(d*x + c) + (75*a^12*b^3 - 250*a^10*b^5 + 105*a^8*b^7 + 260*a^6*b^9 - 147*a^4*b^11 + 22*a^2*b^13 - b^15)*d*cos(d*x + c))*sqrt(

(a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*
a^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2
+ b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))
*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^2 + b^2)*d^4))
^(1/4) + (25*a^13*b^2 - 50*a^11*b^4 - 65*a^9*b^6 + 100*a^7*b^8 + 71*a^5*b^1
0 - 18*a^3*b^12 + a*b^14)*cos(d*x + c) + (25*a^12*b^3 - 50*a^10*b^5 - 65*a^
8*b^7 + 100*a^6*b^9 + 71*a^4*b^11 - 18*a^2*b^13 + b^15)*sin(d*x + c))/cos(d
x + c))(1/((a^2 + b^2)*d^4))^(3/4) - sqrt(2)*((15*a^12*b + 10*a^10*b^3 -
47*a^8*b^5 - 52*a^6*b^7 + a^4*b^9 + 10*a^2*b^11 - b^13)*d^7*sqrt((25*a^8*b^
2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10)/((a^12 + 6*a^10*b^2 + 15
*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b^10 + b^12)*d^4))*sqrt(1/((a^2
+ b^2)*d^4)) + 2*(5*a^11*b + 5*a^9*b^3 - 14*a^7*b^5 - 22*a^5*b^7 - 7*a^3*b^
9 + a*b^11)*d^5*sqrt((25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 +
 b^10)/((a^12 + 6*a^10*b^2 + 15*a^8*b^4 + 20*a^6*b^6 + 15*a^4*b^8 + 6*a^2*b
^10 + b^12)*d^4)))*sqrt((a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2
*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a
*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b
^6 - 20*a^2*b^8 + b^10))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c
))*(1/((a^2 + b^2)*d^4))^(3/4))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 2
0*a^2*b^8 + b^10)) + sqrt(2)*((a^6 + a^4*b^2 - a^2*b^4 - b^6)*d*cos(d*x + c
)^2 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d*cos(d*x + c)*sin(d*x + c) + (a^4*b^2
+ 2*a^2*b^4 + b^6)*d - ((a^7 - 11*a^5*b^2 + 15*a^3*b^4 - 5*a*b^6)*d^3*cos(d
x + c)^2 + 2(a^6*b - 10*a^4*b^3 + 5*a^2*b^5)*d^3*cos(d*x + c)*sin(d*x + c
) + (a^5*b^2 - 10*a^3*b^4 + 5*a*b^6)*d^3)*sqrt(1/((a^2 + b^2)*d^4)))*sqrt((
a^10 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a
^9*b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 +
 b^2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*
(1/((a^2 + b^2)*d^4))^(1/4)*log(((25*a^14*b^2 - 25*a^12*b^4 - 115*a^10*b^6
+ 35*a^8*b^8 + 171*a^6*b^10 + 53*a^4*b^12 - 17*a^2*b^14 + b^16)*d^2*sqrt(1/
((a^2 + b^2)*d^4))*cos(d*x + c) + sqrt(2)*(2*(25*a^13*b^3 - 50*a^11*b^5 - 6
5*a^9*b^7 + 100*a^7*b^9 + 71*a^5*b^11 - 18*a^3*b^13 + a*b^15)*d^3*sqrt(1/((
a^2 + b^2)*d^4))*cos(d*x + c) + (75*a^12*b^3 - 250*a^10*b^5 + 105*a^8*b^7 +
 260*a^6*b^9 - 147*a^4*b^11 + 22*a^2*b^13 - b^15)*d*cos(d*x + c))*sqrt((a^1
0 + 5*a^8*b^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*
b^2 - 22*a^7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^
2)*d^4)))/(25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqr
t((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^2 + b^2)*d^4))^(1/
4) + (25*a^13*b^2 - 50*a^11*b^4 - 65*a^9*b^6 + 100*a^7*b^8 + 71*a^5*b^10 -
18*a^3*b^12 + a*b^14)*cos(d*x + c) + (25*a^12*b^3 - 50*a^10*b^5 - 65*a^8*b^
7 + 100*a^6*b^9 + 71*a^4*b^11 - 18*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x +
 c)) - sqrt(2)*((a^6 + a^4*b^2 - a^2*b^4 - b^6)*d*cos(d*x + c)^2 + 2*(a^5*b
 + 2*a^3*b^3 + a*b^5)*d*cos(d*x + c)*sin(d*x + c) + (a^4*b^2 + 2*a^2*b^4 +
b^6)*d - ((a^7 - 11*a^5*b^2 + 15*a^3*b^4 - 5*a*b^6)*d^3*cos(d*x + c)^2 + 2*
(a^6*b - 10*a^4*b^3 + 5*a^2*b^5)*d^3*cos(d*x + c)*sin(d*x + c) + (a^5*b^2 -
 10*a^3*b^4 + 5*a*b^6)*d^3)*sqrt(1/((a^2 + b^2)*d^4)))*sqrt((a^10 + 5*a^8*b

```
^2 + 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^
7*b^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(
25*a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*(1/((a^2 + b^2
)*d^4))^(1/4)*log(((25*a^14*b^2 - 25*a^12*b^4 - 115*a^10*b^6 + 35*a^8*b^8 +
 171*a^6*b^10 + 53*a^4*b^12 - 17*a^2*b^14 + b^16)*d^2*sqrt(1/((a^2 + b^2)*d
^4))*cos(d*x + c) - sqrt(2)*(2*(25*a^13*b^3 - 50*a^11*b^5 - 65*a^9*b^7 + 10
0*a^7*b^9 + 71*a^5*b^11 - 18*a^3*b^13 + a*b^15)*d^3*sqrt(1/((a^2 + b^2)*d^4
))*cos(d*x + c) + (75*a^12*b^3 - 250*a^10*b^5 + 105*a^8*b^7 + 260*a^6*b^9 -
 147*a^4*b^11 + 22*a^2*b^13 - b^15)*d*cos(d*x + c))*sqrt((a^10 + 5*a^8*b^2
+ 10*a^6*b^4 + 10*a^4*b^6 + 5*a^2*b^8 + b^10 + (a^11 - 7*a^9*b^2 - 22*a^7*b
^4 - 14*a^5*b^6 + 5*a^3*b^8 + 5*a*b^10)*d^2*sqrt(1/((a^2 + b^2)*d^4)))/(25*
a^8*b^2 - 100*a^6*b^4 + 110*a^4*b^6 - 20*a^2*b^8 + b^10))*sqrt((a*cos(d*x +
 c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^2 + b^2)*d^4))^(1/4) + (25*a^13*
b^2 - 50*a^11*b^4 - 65*a^9*b^6 + 100*a^7*b^8 + 71*a^5*b^10 - 18*a^3*b^12 +
a*b^14)*cos(d*x + c) + (25*a^12*b^3 - 50*a^10*b^5 - 65*a^8*b^7 + 100*a^6*b^
9 + 71*a^4*b^11 - 18*a^2*b^13 + b^15)*sin(d*x + c))/cos(d*x + c)) - 16*((a^
4*b + a^2*b^3)*cos(d*x + c)^2 + (a^3*b^2 + a*b^4)*cos(d*x + c)*sin(d*x + c)
)*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)))/((a^6 + a^4*b^2 - a
^2*b^4 - b^6)*d*cos(d*x + c)^2 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d*cos(d*x +
c)*sin(d*x + c) + (a^4*b^2 + 2*a^2*b^4 + b^6)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{a}{a\sqrt{a+b\tan(c+dx)}+b\sqrt{a+b\tan(c+dx)}\tan(c+dx)}\,dx-\int -\frac{b\tan(c+dx)}{a\sqrt{a+b\tan(c+dx)}+b\sqrt{a+b\tan(c+dx)}\tan(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] -Integral(a/(a*sqrt(a + b*tan(c + d*x)) + b*sqrt(a + b*tan(c + d*x))*tan(c
+ d*x)), x) - Integral(-b*tan(c + d*x)/(a*sqrt(a + b*tan(c + d*x)) + b*sqrt
(a + b*tan(c + d*x))*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\tan(dx+c)-a}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c) - a)/(b*tan(d*x + c) + a)^(3/2), x)
```

3.372 $\int \frac{-a+b\tan(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=174

$$\frac{2b\left(3a^2-b^2\right)}{d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{4ab}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{(-b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}-\frac{(b+ia)\tanh}{d(a}$$

```
[Out] ((I*a - b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2
)*d) - ((I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(5/2)*d) + (4*a*b)/(3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(
3*a^2 - b^2))/((a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.338075, antiderivative size = 174, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3529, 3539, 3537, 63, 208}

$$\frac{2b\left(3a^2-b^2\right)}{d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{4ab}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{(-b+ia)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d(a-ib)^{5/2}}-\frac{(b+ia)\tanh}{d(a}$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*Tan[c + d*x])/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((I*a - b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/((a - I*b)^(5/2
)*d) - ((I*a + b)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/((a + I*
b)^(5/2)*d) + (4*a*b)/(3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(
3*a^2 - b^2))/((a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
```

```
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{-a+b\tan(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{4ab}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{\int \frac{-a^2+b^2+2ab\tan(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx}{a^2+b^2}$$

$$= \frac{4ab}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} + \frac{\int \frac{-a\left(a^2-3b^2\right)+b\left(3a^2-b\right.}{\sqrt{a+b\tan(c\right.}}}{\left(a^2+b^2\right.}$$

$$= \frac{4ab}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \frac{(a-ib)\int \frac{1-i\tan(c}{\sqrt{a+b\tan(}}}{2(a+ib)^2}$$

$$= \frac{4ab}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \frac{(ia-b)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{4ab}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(3a^2-b^2\right)}{\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}} - \frac{(a+ib)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{(ia-b)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{(a-ib)^{5/2}d} - \frac{(ia+b)\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{(a+ib)^{5/2}d} + \frac{4ab}{3\left(a^2+b^2\right)d(a+b\tan\right.}$$

Mathematica [C] time = 0.268903, size = 156, normalized size = 0.9

$$-\frac{i\cos(c+dx)(a-b\tan(c+dx))\left((a+ib)^2\text{Hypergeometric2F1}\left(-\frac{3}{2},1,-\frac{1}{2},\frac{a+b\tan(c+dx)}{a-ib}\right)-(a-ib)^2\text{Hypergeometric2}\right.}{3d(a-ib)(a+ib)(a+b\tan(c+dx))^{3/2}(a\cos(c+dx)-b\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-a + b*Tan[c + d*x])/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((-I/3)*Cos[c + d*x]*((a + I*b)^2*Hypergeometric2F1[-3/2, 1, -1/2, (a + b*T
an[c + d*x])/(a - I*b)] - (a - I*b)^2*Hypergeometric2F1[-3/2, 1, -1/2, (a +
 b*Tan[c + d*x])/(a + I*b)])*(a - b*Tan[c + d*x]))/((a - I*b)*(a + I*b)*d*(
a*Cos[c + d*x] - b*Sin[c + d*x])*(a + b*Tan[c + d*x])^(3/2))
```

Maple [B] time = 0.101, size = 3055, normalized size = 17.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)

[Out] -2/d*b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3-2/d*b^3/(a^2+b^2)^2/(a+b*tan(d*x+c))^(1/2)-1/4/d*b^5/(a^2+b^2)^(7/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+1/4/d*b^5/(a^2+b^2)^(7/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+6/d*b/(a^2+b^2)^2/(a+b*tan(d*x+c))^(1/2)*a^2+1/d*b^5/(a^2+b^2)^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))-1/d*b^5/(a^2+b^2)^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+2/d*b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3+3/d*b^3/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a+1/d/b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^5-3/d*b^3/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-1/d/b/(a^2+b^2)^(5/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^5+4/3*a*b/(a^2+b^2)/d/(a+b*tan(d*x+c))^(3/2)+1/4/d/b/(a^2+b^2)^(7/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^6-5/4/d*b^3/(a^2+b^2)^(7/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2+1/d/b/(a^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^7+3/4/d*b^3/(a^2+b^2)^3*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a+2/d*b^3/(a^2+b^2)^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2-7/d*b^5/(a^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-3/d*b/(a^2+b^2)^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^4+1/2/d*b/(a^2+b^2)^3*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3-2/d*b^3/(a^2+b^2)^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^2-3/4/d*b^3/(a^2+b^2)^3*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2

```
)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^
(1/2)*a-1/4/d/b/(a^2+b^2)^3*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^5+
1/4/d/b/(a^2+b^2)^3*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)
-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^5-1/d/b/(a
^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2
)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^7+3/d*b/(
a^2+b^2)^3/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(
2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^4-5/d*b^3/(a
^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)
^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3+5/d*b^3
/(a^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(
1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^3-5/4/
d*b/(a^2+b^2)^(7/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4-3/d*b/(a
^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2
)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^5+3/d*b/(
a^2+b^2)^(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a
)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a^5+5/4/d*
b/(a^2+b^2)^(7/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b
*tan(d*x+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^4-1/2/d*b/(a
^2+b^2)^3*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x
+c)-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^3+7/d*b^5/(a^2+b^2)^
(7/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^
2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-1/4/d/b/(a^2+b^2)
^(7/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)
-a-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^6+5/4/d*b^3/(a^2+b^2)^(
7/2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a
-(a^2+b^2)^(1/2))*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)*a^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 6.20353, size = 23711, normalized size = 136.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*sqrt(2)*((a^14 - a^12*b^2 - 19*a^10*b^4 - 45*a^8*b^6 - 45*a^6*b^8
- 19*a^4*b^10 - a^2*b^12 + b^14)*d^5*cos(d*x + c)^4 + 2*(3*a^12*b^2 + 14*a^
10*b^4 + 25*a^8*b^6 + 20*a^6*b^8 + 5*a^4*b^10 - 2*a^2*b^12 - b^14)*d^5*cos(
d*x + c)^2 + (a^10*b^4 + 5*a^8*b^6 + 10*a^6*b^8 + 10*a^4*b^10 + 5*a^2*b^12
+ b^14)*d^5 + 4*((a^13*b + 4*a^11*b^3 + 5*a^9*b^5 - 5*a^5*b^9 - 4*a^3*b^11
- a*b^13)*d^5*cos(d*x + c)^3 + (a^11*b^3 + 5*a^9*b^5 + 10*a^7*b^7 + 10*a^5*
b^9 + 5*a^3*b^11 + a*b^13)*d^5*cos(d*x + c))*sin(d*x + c))*sqrt((a^14 + 7*a
^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12
+ b^14 + (a^17 - 16*a^15*b^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 17
6*a^7*b^10 + 84*a^5*b^12 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b
^4 + b^6)*d^4)))/(49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8
+ 511*a^4*b^10 - 42*a^2*b^12 + b^14))*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 15
19*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*
a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*
a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*d^4))*(1/((a^6
+ 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4)*arctan(-((7*a^20 + 14*a^18*b^2 -
 77*a^16*b^4 - 344*a^14*b^6 - 546*a^12*b^8 - 364*a^10*b^10 + 14*a^8*b^12 +
168*a^6*b^14 + 91*a^4*b^16 + 14*a^2*b^18 - b^20)*d^4*sqrt((49*a^12*b^2 - 49
0*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^1
4)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*a^12*b^8 + 252*a
^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*
d^4))*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)) + (7*a^17 - 84*a^13
*b^4 - 176*a^11*b^6 - 110*a^9*b^8 + 32*a^7*b^10 + 60*a^5*b^12 + 16*a^3*b^14
 - a*b^16)*d^2*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b
^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4
+ 120*a^14*b^6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14
 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*d^4)) + sqrt(2)*(4*(a^15 + 5*a^13*b^2
+ 9*a^11*b^4 + 5*a^9*b^6 - 5*a^7*b^8 - 9*a^5*b^10 - 5*a^3*b^12 - a*b^14)*d^
7*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*
b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^
6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^1
6 + 10*a^2*b^18 + b^20)*d^4))*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d
^4)) + (3*a^12 + 14*a^10*b^2 + 25*a^8*b^4 + 20*a^6*b^6 + 5*a^4*b^8 - 2*a^2*
b^10 - b^12)*d^5*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6
*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^
4 + 120*a^14*b^6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^
```

14 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*d^4)))*sqrt((a^14 + 7*a^12*b^2 + 21*
a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^1
7 - 16*a^15*b^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 +
84*a^5*b^12 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4
)))/(49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^1
0 - 42*a^2*b^12 + b^14))*sqrt(((49*a^20*b^2 - 294*a^18*b^4 - 147*a^16*b^6 +
1848*a^14*b^8 + 1778*a^12*b^10 - 1316*a^10*b^12 - 1518*a^8*b^14 + 312*a^6*
b^16 + 349*a^4*b^18 - 38*a^2*b^20 + b^22)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*
a^2*b^4 + b^6)*d^4))*cos(d*x + c) + sqrt(2)*((147*a^20*b^3 - 1078*a^18*b^5
+ 931*a^16*b^7 + 4760*a^14*b^9 - 1274*a^12*b^11 - 4452*a^10*b^13 + 1214*a^8
*b^15 + 1240*a^6*b^17 - 505*a^4*b^19 + 42*a^2*b^21 - b^23)*d^3*sqrt(1/((a^6
+ 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + 4*(49*a^17*b^3 - 490*a
^15*b^5 + 1470*a^13*b^7 - 994*a^11*b^9 - 1008*a^9*b^11 + 1442*a^7*b^13 - 51
0*a^5*b^15 + 42*a^3*b^17 - a*b^19)*d*cos(d*x + c))*sqrt((a^14 + 7*a^12*b^2
+ 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 +
(a^17 - 16*a^15*b^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^
10 + 84*a^5*b^12 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6
)*d^4)))/(49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^
4*b^10 - 42*a^2*b^12 + b^14))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*
x + c))*(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (49*a^17*b^2
- 392*a^15*b^4 + 588*a^13*b^6 + 1064*a^11*b^8 - 938*a^9*b^10 - 504*a^7*b^12
+ 428*a^5*b^14 - 40*a^3*b^16 + a*b^18)*cos(d*x + c) + (49*a^16*b^3 - 392*a
^14*b^5 + 588*a^12*b^7 + 1064*a^10*b^9 - 938*a^8*b^11 - 504*a^6*b^13 + 428*
a^4*b^15 - 40*a^2*b^17 + b^19)*sin(d*x + c))/cos(d*x + c))*(1/((a^6 + 3*a^4
*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4) + sqrt(2)*(4*(7*a^23*b + 7*a^21*b^3 - 9
1*a^19*b^5 - 267*a^17*b^7 - 202*a^15*b^9 + 182*a^13*b^11 + 378*a^11*b^13 +
154*a^9*b^15 - 77*a^7*b^17 - 77*a^5*b^19 - 15*a^3*b^21 + a*b^23)*d^7*sqrt((
49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 4
2*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*
a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a
^2*b^18 + b^20)*d^4))*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)) + (
21*a^20*b + 14*a^18*b^3 - 259*a^16*b^5 - 696*a^14*b^7 - 598*a^12*b^9 + 52*a
^10*b^11 + 354*a^8*b^13 + 136*a^6*b^15 - 31*a^4*b^17 - 18*a^2*b^19 + b^21)*
d^5*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^
4*b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*
b^6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b
^16 + 10*a^2*b^18 + b^20)*d^4)))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35
*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15*b
^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12 -
7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^12*
b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^
12 + b^14))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^6 +
3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(3/4))/(49*a^12*b^2 - 490*a^10*b^4 + 15
19*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)) + 12*sqrt(2
)*((a^14 - a^12*b^2 - 19*a^10*b^4 - 45*a^8*b^6 - 45*a^6*b^8 - 19*a^4*b^10 -

a^2*b^12 + b^14)*d^5*cos(d*x + c)^4 + 2*(3*a^12*b^2 + 14*a^10*b^4 + 25*a^8
*b^6 + 20*a^6*b^8 + 5*a^4*b^10 - 2*a^2*b^12 - b^14)*d^5*cos(d*x + c)^2 + (a
^10*b^4 + 5*a^8*b^6 + 10*a^6*b^8 + 10*a^4*b^10 + 5*a^2*b^12 + b^14)*d^5 + 4
*((a^13*b + 4*a^11*b^3 + 5*a^9*b^5 - 5*a^5*b^9 - 4*a^3*b^11 - a*b^13)*d^5*c
os(d*x + c)^3 + (a^11*b^3 + 5*a^9*b^5 + 10*a^7*b^7 + 10*a^5*b^9 + 5*a^3*b^1
1 + a*b^13)*d^5*cos(d*x + c))*sin(d*x + c))*sqrt((a^14 + 7*a^12*b^2 + 21*a^
10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17
- 16*a^15*b^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84
*a^5*b^12 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))
)/(49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10
- 42*a^2*b^12 + b^14))*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 14
84*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a
^16*b^4 + 120*a^14*b^6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*
a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*d^4))*(1/((a^6 + 3*a^4*b^2 + 3
*a^2*b^4 + b^6)*d^4))^(3/4)*arctan(((7*a^20 + 14*a^18*b^2 - 77*a^16*b^4 - 3
44*a^14*b^6 - 546*a^12*b^8 - 364*a^10*b^10 + 14*a^8*b^12 + 168*a^6*b^14 + 9
1*a^4*b^16 + 14*a^2*b^18 - b^20)*d^4*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 151
9*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a
^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*a^12*b^8 + 252*a^10*b^10 + 210*a
^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*d^4))*sqrt(1/((a
^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)) + (7*a^17 - 84*a^13*b^4 - 176*a^11*
b^6 - 110*a^9*b^8 + 32*a^7*b^10 + 60*a^5*b^12 + 16*a^3*b^14 - a*b^16)*d^2*s
qrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^1
0 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 +
210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 +
10*a^2*b^18 + b^20)*d^4)) - sqrt(2)*(4*(a^15 + 5*a^13*b^2 + 9*a^11*b^4 + 5
*a^9*b^6 - 5*a^7*b^8 - 9*a^5*b^10 - 5*a^3*b^12 - a*b^14)*d^7*sqrt((49*a^12*
b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^
12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*a^12*b^8
+ 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^18
+ b^20)*d^4))*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)) + (3*a^12 +
14*a^10*b^2 + 25*a^8*b^4 + 20*a^6*b^6 + 5*a^4*b^8 - 2*a^2*b^10 - b^12)*d^5
*sqrt((49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b
^10 - 42*a^2*b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6
+ 210*a^12*b^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16
+ 10*a^2*b^18 + b^20)*d^4)))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^
8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15*b^2
- 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12 - 7*
a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^12*b^2
- 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12
+ b^14))*sqrt(((49*a^20*b^2 - 294*a^18*b^4 - 147*a^16*b^6 + 1848*a^14*b^8 +
1778*a^12*b^10 - 1316*a^10*b^12 - 1518*a^8*b^14 + 312*a^6*b^16 + 349*a^4*b
^18 - 38*a^2*b^20 + b^22)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d
^4))*cos(d*x + c) - sqrt(2)*((147*a^20*b^3 - 1078*a^18*b^5 + 931*a^16*b^7 +
4760*a^14*b^9 - 1274*a^12*b^11 - 4452*a^10*b^13 + 1214*a^8*b^15 + 1240*a^6

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*b^17 - 505*a^4*b^19 + 42*a^2*b^21 - b^23)*d^3*sqrt(1/((a^6 + 3*a^4*b^2 + 3
*a^2*b^4 + b^6)*d^4))*cos(d*x + c) + 4*(49*a^17*b^3 - 490*a^15*b^5 + 1470*a
^13*b^7 - 994*a^11*b^9 - 1008*a^9*b^11 + 1442*a^7*b^13 - 510*a^5*b^15 + 42*
a^3*b^17 - a*b^19)*d*cos(d*x + c))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 +
35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15
*b^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12
 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^1
2*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*
b^12 + b^14))*sqrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^6
 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4) + (49*a^17*b^2 - 392*a^15*b^4 +
 588*a^13*b^6 + 1064*a^11*b^8 - 938*a^9*b^10 - 504*a^7*b^12 + 428*a^5*b^14
- 40*a^3*b^16 + a*b^18)*cos(d*x + c) + (49*a^16*b^3 - 392*a^14*b^5 + 588*a^
12*b^7 + 1064*a^10*b^9 - 938*a^8*b^11 - 504*a^6*b^13 + 428*a^4*b^15 - 40*a^
2*b^17 + b^19)*sin(d*x + c))/cos(d*x + c))*(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4
 + b^6)*d^4))^(3/4) - sqrt(2)*(4*(7*a^23*b + 7*a^21*b^3 - 91*a^19*b^5 - 267
*a^17*b^7 - 202*a^15*b^9 + 182*a^13*b^11 + 378*a^11*b^13 + 154*a^9*b^15 - 7
7*a^7*b^17 - 77*a^5*b^19 - 15*a^3*b^21 + a*b^23)*d^7*sqrt((49*a^12*b^2 - 49
0*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^1
4)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*a^12*b^8 + 252*a
^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^18 + b^20)*
d^4))*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)) + (21*a^20*b + 14*a
^18*b^3 - 259*a^16*b^5 - 696*a^14*b^7 - 598*a^12*b^9 + 52*a^10*b^11 + 354*a
^8*b^13 + 136*a^6*b^15 - 31*a^4*b^17 - 18*a^2*b^19 + b^21)*d^5*sqrt((49*a^1
2*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*
b^12 + b^14)/((a^20 + 10*a^18*b^2 + 45*a^16*b^4 + 120*a^14*b^6 + 210*a^12*b
^8 + 252*a^10*b^10 + 210*a^8*b^12 + 120*a^6*b^14 + 45*a^4*b^16 + 10*a^2*b^1
8 + b^20)*d^4)))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^
6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15*b^2 - 60*a^13*b^4
 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12 - 7*a*b^16)*d^2*s
qrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^12*b^2 - 490*a^10*b
^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14))*sqrt
((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^6 + 3*a^4*b^2 + 3*a
^2*b^4 + b^6)*d^4))^(3/4))/(49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 148
4*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14)) - 3*sqrt(2)*((a^8 - 4*a^6*b
^2 - 10*a^4*b^4 - 4*a^2*b^6 + b^8)*d*cos(d*x + c)^4 + 2*(3*a^6*b^2 + 5*a^4*
b^4 + a^2*b^6 - b^8)*d*cos(d*x + c)^2 + (a^4*b^4 + 2*a^2*b^6 + b^8)*d + 4*(
(a^7*b + a^5*b^3 - a^3*b^5 - a*b^7)*d*cos(d*x + c)^3 + (a^5*b^3 + 2*a^3*b^5
 + a*b^7)*d*cos(d*x + c))*sin(d*x + c) - ((a^11 - 27*a^9*b^2 + 162*a^7*b^4
- 238*a^5*b^6 + 77*a^3*b^8 - 7*a*b^10)*d^3*cos(d*x + c)^4 + 2*(3*a^9*b^2 -
64*a^7*b^4 + 126*a^5*b^6 - 56*a^3*b^8 + 7*a*b^10)*d^3*cos(d*x + c)^2 + (a^7
*b^4 - 21*a^5*b^6 + 35*a^3*b^8 - 7*a*b^10)*d^3 + 4*((a^10*b - 22*a^8*b^3 +
56*a^6*b^5 - 42*a^4*b^7 + 7*a^2*b^9)*d^3*cos(d*x + c)^3 + (a^8*b^3 - 21*a^6
*b^5 + 35*a^4*b^7 - 7*a^2*b^9)*d^3*cos(d*x + c))*sin(d*x + c))*sqrt(1/((a^6
 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^
4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*
```

a^15*b^2 - 60*a^13*b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*
b^12 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49
*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*
a^2*b^12 + b^14))*(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log((
(49*a^20*b^2 - 294*a^18*b^4 - 147*a^16*b^6 + 1848*a^14*b^8 + 1778*a^12*b^10
 - 1316*a^10*b^12 - 1518*a^8*b^14 + 312*a^6*b^16 + 349*a^4*b^18 - 38*a^2*b^
20 + b^22)*d^2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x +
c) + sqrt(2)*((147*a^20*b^3 - 1078*a^18*b^5 + 931*a^16*b^7 + 4760*a^14*b^9
- 1274*a^12*b^11 - 4452*a^10*b^13 + 1214*a^8*b^15 + 1240*a^6*b^17 - 505*a^4
*b^19 + 42*a^2*b^21 - b^23)*d^3*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)
*d^4))*cos(d*x + c) + 4*(49*a^17*b^3 - 490*a^15*b^5 + 1470*a^13*b^7 - 994*a
^11*b^9 - 1008*a^9*b^11 + 1442*a^7*b^13 - 510*a^5*b^15 + 42*a^3*b^17 - a*b^
19)*d*cos(d*x + c))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35
*a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15*b^2 - 60*a^13*
b^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12 - 7*a*b^16)*d^
2*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^12*b^2 - 490*a^1
0*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14))*s
qrt((a*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/((a^6 + 3*a^4*b^2 +
3*a^2*b^4 + b^6)*d^4))^(1/4) + (49*a^17*b^2 - 392*a^15*b^4 + 588*a^13*b^6 +
 1064*a^11*b^8 - 938*a^9*b^10 - 504*a^7*b^12 + 428*a^5*b^14 - 40*a^3*b^16 +
 a*b^18)*cos(d*x + c) + (49*a^16*b^3 - 392*a^14*b^5 + 588*a^12*b^7 + 1064*a
^10*b^9 - 938*a^8*b^11 - 504*a^6*b^13 + 428*a^4*b^15 - 40*a^2*b^17 + b^19)*
sin(d*x + c))/cos(d*x + c)) + 3*sqrt(2)*((a^8 - 4*a^6*b^2 - 10*a^4*b^4 - 4*
a^2*b^6 + b^8)*d*cos(d*x + c)^4 + 2*(3*a^6*b^2 + 5*a^4*b^4 + a^2*b^6 - b^8)
*d*cos(d*x + c)^2 + (a^4*b^4 + 2*a^2*b^6 + b^8)*d + 4*((a^7*b + a^5*b^3 - a
^3*b^5 - a*b^7)*d*cos(d*x + c)^3 + (a^5*b^3 + 2*a^3*b^5 + a*b^7)*d*cos(d*x
+ c))*sin(d*x + c) - ((a^11 - 27*a^9*b^2 + 162*a^7*b^4 - 238*a^5*b^6 + 77*a
^3*b^8 - 7*a*b^10)*d^3*cos(d*x + c)^4 + 2*(3*a^9*b^2 - 64*a^7*b^4 + 126*a^5
*b^6 - 56*a^3*b^8 + 7*a*b^10)*d^3*cos(d*x + c)^2 + (a^7*b^4 - 21*a^5*b^6 +
35*a^3*b^8 - 7*a*b^10)*d^3 + 4*((a^10*b - 22*a^8*b^3 + 56*a^6*b^5 - 42*a^4*
b^7 + 7*a^2*b^9)*d^3*cos(d*x + c)^3 + (a^8*b^3 - 21*a^6*b^5 + 35*a^4*b^7 -
7*a^2*b^9)*d^3*cos(d*x + c))*sin(d*x + c))*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2
*b^4 + b^6)*d^4)))*sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*
a^6*b^8 + 21*a^4*b^10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15*b^2 - 60*a^13*b
^4 - 32*a^11*b^6 + 110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12 - 7*a*b^16)*d^2
*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^12*b^2 - 490*a^10
*b^4 + 1519*a^8*b^6 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14))*(1
/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))^(1/4)*log(((49*a^20*b^2 - 294*a
^18*b^4 - 147*a^16*b^6 + 1848*a^14*b^8 + 1778*a^12*b^10 - 1316*a^10*b^12 -
1518*a^8*b^14 + 312*a^6*b^16 + 349*a^4*b^18 - 38*a^2*b^20 + b^22)*d^2*sqrt(
1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c) - sqrt(2)*((147*a
^20*b^3 - 1078*a^18*b^5 + 931*a^16*b^7 + 4760*a^14*b^9 - 1274*a^12*b^11 - 4
452*a^10*b^13 + 1214*a^8*b^15 + 1240*a^6*b^17 - 505*a^4*b^19 + 42*a^2*b^21
- b^23)*d^3*sqrt(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4))*cos(d*x + c)
+ 4*(49*a^17*b^3 - 490*a^15*b^5 + 1470*a^13*b^7 - 994*a^11*b^9 - 1008*a^9*b

```
^11 + 1442*a^7*b^13 - 510*a^5*b^15 + 42*a^3*b^17 - a*b^19)*d*cos(d*x + c))*
sqrt((a^14 + 7*a^12*b^2 + 21*a^10*b^4 + 35*a^8*b^6 + 35*a^6*b^8 + 21*a^4*b^
10 + 7*a^2*b^12 + b^14 + (a^17 - 16*a^15*b^2 - 60*a^13*b^4 - 32*a^11*b^6 +
110*a^9*b^8 + 176*a^7*b^10 + 84*a^5*b^12 - 7*a*b^16)*d^2*sqrt(1/((a^6 + 3*a
^4*b^2 + 3*a^2*b^4 + b^6)*d^4)))/(49*a^12*b^2 - 490*a^10*b^4 + 1519*a^8*b^6
 - 1484*a^6*b^8 + 511*a^4*b^10 - 42*a^2*b^12 + b^14))*sqrt((a*cos(d*x + c)
+ b*sin(d*x + c))/cos(d*x + c))*(1/((a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^4
))^(1/4) + (49*a^17*b^2 - 392*a^15*b^4 + 588*a^13*b^6 + 1064*a^11*b^8 - 938
*a^9*b^10 - 504*a^7*b^12 + 428*a^5*b^14 - 40*a^3*b^16 + a*b^18)*cos(d*x + c
) + (49*a^16*b^3 - 392*a^14*b^5 + 588*a^12*b^7 + 1064*a^10*b^9 - 938*a^8*b^
11 - 504*a^6*b^13 + 428*a^4*b^15 - 40*a^2*b^17 + b^19)*sin(d*x + c))/cos(d*
x + c)) + 8*((11*a^5*b - 30*a^3*b^3 + 7*a*b^5)*cos(d*x + c)^4 + (29*a^3*b^3
 - 7*a*b^5)*cos(d*x + c)^2 + ((31*a^4*b^2 - 14*a^2*b^4 + 3*b^6)*cos(d*x + c
)^3 + 3*(3*a^2*b^4 - b^6)*cos(d*x + c))*sin(d*x + c))*sqrt((a*cos(d*x + c)
+ b*sin(d*x + c))/cos(d*x + c)))/((a^8 - 4*a^6*b^2 - 10*a^4*b^4 - 4*a^2*b^6
 + b^8)*d*cos(d*x + c)^4 + 2*(3*a^6*b^2 + 5*a^4*b^4 + a^2*b^6 - b^8)*d*cos(
d*x + c)^2 + (a^4*b^4 + 2*a^2*b^6 + b^8)*d + 4*((a^7*b + a^5*b^3 - a^3*b^5
- a*b^7)*d*cos(d*x + c)^3 + (a^5*b^3 + 2*a^3*b^5 + a*b^7)*d*cos(d*x + c))*s
in(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{a}{a^2\sqrt{a+b\tan(c+dx)}+2ab\sqrt{a+b\tan(c+dx)}\tan(c+dx)+b^2\sqrt{a+b\tan(c+dx)}\tan^2(c+dx)}\,dx-\int -\frac{}{a^2\sqrt{a+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] -Integral(a/(a**2*sqrt(a + b*tan(c + d*x)) + 2*a*b*sqrt(a + b*tan(c + d*x))
*tan(c + d*x) + b**2*sqrt(a + b*tan(c + d*x))*tan(c + d*x)**2), x) - Integr
al(-b*tan(c + d*x)/(a**2*sqrt(a + b*tan(c + d*x)) + 2*a*b*sqrt(a + b*tan(c
+ d*x))*tan(c + d*x) + b**2*sqrt(a + b*tan(c + d*x))*tan(c + d*x)**2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{b\tan(dx+c)-a}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a+b*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm="giac")

[Out] integrate((b*tan(d*x + c) - a)/(b*tan(d*x + c) + a)^(5/2), x)
```

3.373 $\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=45

$$-\frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}$$

```
[Out] ((-2*I)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d)
```

Rubi [A] time = 0.0518649, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3537, 63, 208}

$$-\frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + I*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((-2*I)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d)
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{1+i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{i\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a-ibx}}\,dx, x, i\tan(c+dx)\right)}{d}$$
$$= -\frac{2\,\mathrm{Subst}\left(\int \frac{1}{-1-\frac{ia}{b}+\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{bd}$$
$$= -\frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a-ib}}\right)}{\sqrt{a-ib}d}$$

Mathematica [A] time = 1.54624, size = 70, normalized size = 1.56

$$-\frac{2i\tanh^{-1}\left(\frac{\sqrt{a-\frac{ib\left(-1+e^{2i(c+dx)}\right)}{1+e^{2i(c+dx)}}}}{\sqrt{a-ib}}\right)}{d\sqrt{a-ib}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + I*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((-2*I)*ArcTanh[Sqrt[a - (I*b*(-1 + E^((2*I)*(c + d*x))))/(1 + E^((2*I)*(c
+ d*x)))]/Sqrt[a - I*b]])/(Sqrt[a - I*b]*d)
```

Maple [B] time = 0.115, size = 1624, normalized size = 36.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1+I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] -I/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c
))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-1/
2*I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/2)*ln(b*tan(d*x+c)+a+(a+b*
tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*a+1/2/d/(2
*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+
c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*b-1/2*I/d/(2*(a^2+
b^2)^(1/2)+2*a)^(1/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))-I/d/((a^2+b^2)^(1/2)*a+a^2+b^2)/(2*(a^2+
b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+
c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*b^2+1/d/(a^2+b^2)^(1/2)/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*
a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*b+I/d/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2))+1/2*I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/((a^2+b^2)^(1/2
)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(
d*x+c)-a-(a^2+b^2)^(1/2))*b^2+I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(
1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a^3+I/d/(2*(a^2+b^2)^(1/2)+2*
a)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)
^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a^2-1/2/d/(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^
2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a*b-1/2/d/(2*(a^2+b
^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*ta
n(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2
))*b*a^2-1/2/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/2)/((a^2+b^2)^(1/
2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan
(d*x+c)-a-(a^2+b^2)^(1/2))*b^3+I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^
(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1
/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a*b^2-1/d/((a^2+b^2)^(1/2)*a
+a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/
2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a*b-1/d/(a^2+b^
2)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((
(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-
2*a)^(1/2))*a^2*b-1/d/(a^2+b^2)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c
))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*b^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.06496, size = 682, normalized size = 15.16

$$\frac{1}{4}\sqrt{-\frac{4i}{(ia+b)d^2}}\log\left(\left(\left((ia+b)de^{(2idx+2ic)}+(ia+b)d\right)\sqrt{\frac{(a-ib)e^{(2idx+2ic)}+a+ib}{e^{(2idx+2ic)}+1}}\sqrt{-\frac{4i}{(ia+b)d^2}}+(2a-2ib)e^{(2idx+\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*sqrt(-4*I/((I*a + b)*d^2))*log((((I*a + b)*d*e^(2*I*d*x + 2*I*c) + (I*a
 + b)*d)*sqrt(((a - I*b)*e^(2*I*d*x + 2*I*c) + a + I*b)/(e^(2*I*d*x + 2*I*c
) + 1))*sqrt(-4*I/((I*a + b)*d^2)) + (2*a - 2*I*b)*e^(2*I*d*x + 2*I*c) + 2*
a)*e^(-2*I*d*x - 2*I*c)) - 1/4*sqrt(-4*I/((I*a + b)*d^2))*log((((-I*a - b)*
d*e^(2*I*d*x + 2*I*c) + (-I*a - b)*d)*sqrt(((a - I*b)*e^(2*I*d*x + 2*I*c) +
 a + I*b)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(-4*I/((I*a + b)*d^2)) + (2*a - 2*
I*b)*e^(2*I*d*x + 2*I*c) + 2*a)*e^(-2*I*d*x - 2*I*c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{i\tan(c+dx)+1}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+I*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((I*tan(c + d*x) + 1)/sqrt(a + b*tan(c + d*x)), x)
```

Giac [B] time = 1.46208, size = 203, normalized size = 4.51

$$\frac{2\sqrt{2}\arctan\left(\frac{-16i\sqrt{b\tan(dx+c)+a}a-16i\sqrt{a^2+b^2}\sqrt{b\tan(dx+c)+a}}{8\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}a-8i\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}b+8\sqrt{2}\sqrt{a^2+b^2}\sqrt{a+\sqrt{a^2+b^2}}}\right)}{\sqrt{a+\sqrt{a^2+b^2}}d\left(-\frac{ib}{a+\sqrt{a^2+b^2}}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(2)*arctan((-16*I*sqrt(b*tan(d*x + c) + a)*a - 16*I*sqrt(a^2 + b^2)*s
qrt(b*tan(d*x + c) + a))/(8*sqrt(2)*sqrt(a + sqrt(a^2 + b^2))*a - 8*I*sqrt(
2)*sqrt(a + sqrt(a^2 + b^2))*b + 8*sqrt(2)*sqrt(a^2 + b^2)*sqrt(a + sqrt(a^
2 + b^2))))/(sqrt(a + sqrt(a^2 + b^2))*d*(-I*b/(a + sqrt(a^2 + b^2)) + 1))
```

3.374 $\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=45

$$\frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

```
[Out] ((2*I)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```

Rubi [A] time = 0.0520216, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3537, 63, 208}

$$\frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - I*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((2*I)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{1-i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx = -\frac{i\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt{a+ibx}}\,dx, x, -i\tan(c+dx)\right)}{d}$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{-1+\frac{ia}{b}-\frac{ix^2}{b}}\,dx, x, \sqrt{a+b\tan(c+dx)}\right)}{bd}$$
$$= \frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{\sqrt{a+ib}d}$$

Mathematica [A] time = 0.0438025, size = 45, normalized size = 1.

$$\frac{2i\tanh^{-1}\left(\frac{\sqrt{a+b\tan(c+dx)}}{\sqrt{a+ib}}\right)}{d\sqrt{a+ib}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - I*Tan[c + d*x])/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((2*I)*ArcTanh[Sqrt[a + b*Tan[c + d*x]]/Sqrt[a + I*b]])/(Sqrt[a + I*b]*d)
```

Maple [B] time = 0.102, size = 1624, normalized size = 36.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1-I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] I/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c)
)^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a-1/2
*I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(
```

```
d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))
*b^2+1/2/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/2)*ln(b*tan(d*x+c)+a+
(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(a^2+b^2)^(1/2))*b-I/d
/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2
)^(1/2)+2*a)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))+1/2*I/d/(2*(a^2+b^2)^(1/
2)+2*a)^(1/2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2
*a)^(1/2)+(a^2+b^2)^(1/2))+1/d/(a^2+b^2)^(1/2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2
)*arctan((2*(a+b*tan(d*x+c))^(1/2)+(2*(a^2+b^2)^(1/2)+2*a)^(1/2))/(2*(a^2+b
^2)^(1/2)-2*a)^(1/2))*b+1/2*I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/
2)*ln(b*tan(d*x+c)+a+(a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)+(
a^2+b^2)^(1/2))*a+I/d/((a^2+b^2)^(1/2)*a+a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(
1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^
2+b^2)^(1/2)-2*a)^(1/2))*b^2-I/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1
/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2
)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a^3-I/d/(2*(a^2+b^2)^(1/2)+2*a
)^(1/2)/(a^2+b^2)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/
2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a*b^2-1/2/
d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x
+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a*
b-1/2/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/2)/((a^2+b^2)^(1/2)*a+a^
2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)+2*a)^(1/2)-b*tan(d*x+c)
-a-(a^2+b^2)^(1/2))*b*a^2-1/2/d/(2*(a^2+b^2)^(1/2)+2*a)^(1/2)/(a^2+b^2)^(1/
2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(1/2)
+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*b^3-I/d/(2*(a^2+b^2)^(1/2)+2*a)
^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)*ln((a+b*tan(d*x+c))^(1/2)*(2*(a^2+b^2)^(
1/2)+2*a)^(1/2)-b*tan(d*x+c)-a-(a^2+b^2)^(1/2))*a^2-1/d/((a^2+b^2)^(1/2)*a+
a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2
)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*a*b-1/d/(a^2+b^2
)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)/(2*(a^2+b^2)^(1/2)-2*a)^(1/2)*arctan(((
2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c))^(1/2))/(2*(a^2+b^2)^(1/2)-2
*a)^(1/2))*a^2*b-1/d/(a^2+b^2)^(1/2)/((a^2+b^2)^(1/2)*a+a^2+b^2)/(2*(a^2+b^
2)^(1/2)-2*a)^(1/2)*arctan(((2*(a^2+b^2)^(1/2)+2*a)^(1/2)-2*(a+b*tan(d*x+c)
)^(1/2))/(2*(a^2+b^2)^(1/2)-2*a)^(1/2))*b^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

[Out] Exception raised: ValueError

Fricas [B] time = 1.11101, size = 718, normalized size = 15.96

$$-\frac{1}{4}\sqrt{\frac{4i}{(-ia+b)d^2}}\log\left(\frac{\left(\left((ia-b)de^{(2idx+2ic)}+(ia-b)d\right)\sqrt{\frac{(a-ib)e^{(2idx+2ic)}+a+ib}{e^{(2idx+2ic)}+1}}\sqrt{\frac{4i}{(-ia+b)d^2}}+2ae^{(2idx+2ic)}+2a+2ib\right)e^{(-2i}}{(-ia+b)d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4*sqrt(4*I/((-I*a + b)*d^2))*log((((I*a - b)*d*e^(2*I*d*x + 2*I*c) + (I*
a - b)*d)*sqrt(((a - I*b)*e^(2*I*d*x + 2*I*c) + a + I*b)/(e^(2*I*d*x + 2*I*
c) + 1))*sqrt(4*I/((-I*a + b)*d^2)) + 2*a*e^(2*I*d*x + 2*I*c) + 2*a + 2*I*b
)*e^(-2*I*d*x - 2*I*c)/((-I*a + b)*d)) + 1/4*sqrt(4*I/((-I*a + b)*d^2))*log
((((-I*a + b)*d*e^(2*I*d*x + 2*I*c) + (-I*a + b)*d)*sqrt(((a - I*b)*e^(2*I*
d*x + 2*I*c) + a + I*b)/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(4*I/((-I*a + b)*d^2
)) + 2*a*e^(2*I*d*x + 2*I*c) + 2*a + 2*I*b)*e^(-2*I*d*x - 2*I*c)/((-I*a + b
)*d))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{i\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx-\int-\frac{1}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-I*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] -Integral(I*tan(c + d*x)/sqrt(a + b*tan(c + d*x)), x) - Integral(-1/sqrt(a
+ b*tan(c + d*x)), x)
```

Giac [B] time = 1.38913, size = 203, normalized size = 4.51

$$\frac{2\sqrt{2}\arctan\left(\frac{16i\sqrt{b\tan(dx+c)+a}a+16i\sqrt{a^2+b^2}\sqrt{b\tan(dx+c)+a}}{8\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}a+8i\sqrt{2}\sqrt{a+\sqrt{a^2+b^2}}b+8\sqrt{2}\sqrt{a^2+b^2}\sqrt{a+\sqrt{a^2+b^2}}}\right)}{\sqrt{a+\sqrt{a^2+b^2}}d\left(\frac{ib}{a+\sqrt{a^2+b^2}}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-I*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(2)*arctan((16*I*sqrt(b*tan(d*x + c) + a)*a + 16*I*sqrt(a^2 + b^2)*sq
rt(b*tan(d*x + c) + a))/(8*sqrt(2)*sqrt(a + sqrt(a^2 + b^2))*a + 8*I*sqrt(2
)*sqrt(a + sqrt(a^2 + b^2))*b + 8*sqrt(2)*sqrt(a^2 + b^2)*sqrt(a + sqrt(a^2
 + b^2))))/(sqrt(a + sqrt(a^2 + b^2))*d*(I*b/(a + sqrt(a^2 + b^2)) + 1))
```

3.375 $\int \frac{3+\tan(x)}{\sqrt{4+3\tan(x)}}\,dx$

Optimal. Leaf size=30

$$-\sqrt{2}\tan^{-1}\left(\frac{1-3\tan(x)}{\sqrt{2}\sqrt{3\tan(x)+4}}\right)$$

```
[Out] -(Sqrt[2]*ArcTan[(1 - 3*Tan[x])/(Sqrt[2]*Sqrt[4 + 3*Tan[x]])])
```

Rubi [A] time = 0.0306788, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3535, 203}

$$-\sqrt{2}\tan^{-1}\left(\frac{1-3\tan(x)}{\sqrt{2}\sqrt{3\tan(x)+4}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(3 + Tan[x])/Sqrt[4 + 3*Tan[x]],x]
```

```
[Out] -(Sqrt[2]*ArcTan[(1 - 3*Tan[x])/(Sqrt[2]*Sqrt[4 + 3*Tan[x]])])
```

Rule 3535

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(a_) + (b_.)*tan[(e_.) + (
f_.)*(x_)]], x_Symbol] :> Dist[(-2*d^2)/f, Subst[Int[1/(2*b*c*d - 4*a*d^2 +
 x^2), x], x, (b*c - 2*a*d - b*d*Tan[e + f*x])/Sqrt[a + b*Tan[e + f*x]]], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
 && NeQ[c^2 + d^2, 0] && EqQ[2*a*c*d - b*(c^2 - d^2), 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{3+\tan(x)}{\sqrt{4+3\tan(x)}}\,dx = -\left(2\,\mathrm{Subst}\left(\int \frac{1}{2+x^2}\,dx, x, \frac{1-3\tan(x)}{\sqrt{4+3\tan(x)}}\right)\right)$$
$$= -\sqrt{2}\tan^{-1}\left(\frac{1-3\tan(x)}{\sqrt{2}\sqrt{4+3\tan(x)}}\right)$$

Mathematica [C] time = 0.172503, size = 69, normalized size = 2.3

$$\left(\frac{1}{5}-\frac{3i}{5}\right)\sqrt{4-3i}\tanh^{-1}\left(\frac{\sqrt{3\tan(x)+4}}{\sqrt{4-3i}}\right)+\left(\frac{1}{5}+\frac{3i}{5}\right)\sqrt{4+3i}\tanh^{-1}\left(\frac{\sqrt{3\tan(x)+4}}{\sqrt{4+3i}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + Tan[x])/Sqrt[4 + 3*Tan[x]],x]
```

```
[Out] (1/5 - (3*I)/5)*Sqrt[4 - 3*I]*ArcTanh[Sqrt[4 + 3*Tan[x]]/Sqrt[4 - 3*I]] + (
1/5 + (3*I)/5)*Sqrt[4 + 3*I]*ArcTanh[Sqrt[4 + 3*Tan[x]]/Sqrt[4 + 3*I]]
```

Maple [B] time = 0.095, size = 54, normalized size = 1.8

$$\sqrt{2}\arctan\left(\frac{\sqrt{2}}{2}\left(2\sqrt{4+3\tan(x)}+3\sqrt{2}\right)\right)+\sqrt{2}\arctan\left(\frac{\sqrt{2}}{2}\left(2\sqrt{4+3\tan(x)}-3\sqrt{2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3+tan(x))/(4+3*tan(x))^(1/2),x)
```

```
[Out] 2^(1/2)*arctan(1/2*(2*(4+3*tan(x))^(1/2)+3*2^(1/2))*2^(1/2))+2^(1/2)*arctan
(1/2*(2*(4+3*tan(x))^(1/2)-3*2^(1/2))*2^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\tan(x)+3}{\sqrt{3\tan(x)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(x))/(4+3*tan(x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((tan(x) + 3)/sqrt(3*tan(x) + 4), x)
```

Fricas [A] time = 1.03952, size = 93, normalized size = 3.1

$$\sqrt{2}\arctan\left(\frac{3\sqrt{2}\tan\left(x\right)-\sqrt{2}}{2\sqrt{3\tan\left(x\right)+4}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(x))/(4+3*tan(x))^(1/2),x, algorithm="fricas")
```

```
[Out] sqrt(2)*arctan(1/2*(3*sqrt(2)*tan(x) - sqrt(2))/sqrt(3*tan(x) + 4))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\tan\left(x\right)+3}{\sqrt{3\tan\left(x\right)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(x))/(4+3*tan(x))**(1/2),x)
```

```
[Out] Integral((tan(x) + 3)/sqrt(3*tan(x) + 4), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\tan\left(x\right)+3}{\sqrt{3\tan\left(x\right)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+tan(x))/(4+3*tan(x))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((tan(x) + 3)/sqrt(3*tan(x) + 4), x)
```

3.376 $\int \frac{1-3\tan(x)}{\sqrt{4+3\tan(x)}}\,dx$

Optimal. Leaf size=27

$$\sqrt{2}\tanh^{-1}\left(\frac{\tan(x)+3}{\sqrt{2}\sqrt{3\tan(x)+4}}\right)$$

```
[Out] Sqrt[2]*ArcTanh[(3 + Tan[x])/(Sqrt[2]*Sqrt[4 + 3*Tan[x]])]
```

Rubi [A] time = 0.0316424, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3535, 207}

$$\sqrt{2}\tanh^{-1}\left(\frac{\tan(x)+3}{\sqrt{2}\sqrt{3\tan(x)+4}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(1 - 3*Tan[x])/Sqrt[4 + 3*Tan[x]],x]

[Out] Sqrt[2]*ArcTanh[(3 + Tan[x])/(Sqrt[2]*Sqrt[4 + 3*Tan[x]])]
```

Rule 3535

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(a_) + (b_.)*tan[(e_.) + (
f_.)*(x_)]], x_Symbol] :> Dist[(-2*d^2)/f, Subst[Int[1/(2*b*c*d - 4*a*d^2 +
 x^2), x], x, (b*c - 2*a*d - b*d*Tan[e + f*x])/Sqrt[a + b*Tan[e + f*x]]], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
 && NeQ[c^2 + d^2, 0] && EqQ[2*a*c*d - b*(c^2 - d^2), 0]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{1-3\tan(x)}{\sqrt{4+3\tan(x)}}\,dx = -\left(18\,\mathrm{Subst}\left(\int \frac{1}{-162+x^2}\,dx, x, \frac{27+9\tan(x)}{\sqrt{4+3\tan(x)}}\right)\right)$$
$$= \sqrt{2}\tanh^{-1}\left(\frac{3+\tan(x)}{\sqrt{2}\sqrt{4+3\tan(x)}}\right)$$

Mathematica [C] time = 0.115579, size = 65, normalized size = 2.41

$$\frac{1}{5}\left((3+i)\sqrt{4-3i}\tanh^{-1}\left(\frac{\sqrt{3\tan(x)+4}}{\sqrt{4-3i}}\right)+(3-i)\sqrt{4+3i}\tanh^{-1}\left(\frac{\sqrt{3\tan(x)+4}}{\sqrt{4+3i}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - 3*Tan[x])/Sqrt[4 + 3*Tan[x]],x]
```

```
[Out] ((3 + I)*Sqrt[4 - 3*I]*ArcTanh[Sqrt[4 + 3*Tan[x]]/Sqrt[4 - 3*I]] + (3 - I)*
Sqrt[4 + 3*I]*ArcTanh[Sqrt[4 + 3*Tan[x]]/Sqrt[4 + 3*I]])/5
```

Maple [B] time = 0.076, size = 52, normalized size = 1.9

$$\frac{\sqrt{2}}{2}\ln\left(9+3\tan(x)+3\sqrt{4+3\tan(x)}\sqrt{2}\right)-\frac{\sqrt{2}}{2}\ln\left(9+3\tan(x)-3\sqrt{4+3\tan(x)}\sqrt{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1-3*tan(x))/(4+3*tan(x))^(1/2),x)
```

```
[Out] 1/2*2^(1/2)*ln(9+3*tan(x)+3*(4+3*tan(x))^(1/2)*2^(1/2))-1/2*2^(1/2)*ln(9+3*
tan(x)-3*(4+3*tan(x))^(1/2)*2^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{3\tan(x)-1}{\sqrt{3\tan(x)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*tan(x))/(4+3*tan(x))^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*tan(x) - 1)/sqrt(3*tan(x) + 4), x)
```

Fricas [B] time = 1.01568, size = 153, normalized size = 5.67

$$\frac{1}{2}\sqrt{2}\log\left(\frac{\tan\left(x\right)^{2}+2\left(\sqrt{2}\tan\left(x\right)+3\sqrt{2}\right)\sqrt{3\tan\left(x\right)+4}+12\tan\left(x\right)+17}{\tan\left(x\right)^{2}+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*tan(x))/(4+3*tan(x))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*log((tan(x)^2 + 2*(sqrt(2)*tan(x) + 3*sqrt(2))*sqrt(3*tan(x) +
4) + 12*tan(x) + 17)/(tan(x)^2 + 1))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{3\tan\left(x\right)}{\sqrt{3\tan\left(x\right)+4}}\,dx-\int-\frac{1}{\sqrt{3\tan\left(x\right)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*tan(x))/(4+3*tan(x))**(1/2),x)
```

```
[Out] -Integral(3*tan(x)/sqrt(3*tan(x) + 4), x) - Integral(-1/sqrt(3*tan(x) + 4),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int-\frac{3\tan\left(x\right)-1}{\sqrt{3\tan\left(x\right)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*tan(x))/(4+3*tan(x))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*tan(x) - 1)/sqrt(3*tan(x) + 4), x)
```

3.377 $\int \frac{4-3\tan(a+bx)}{\sqrt{4+3\tan(a+bx)}}\,dx$

Optimal. Leaf size=85

$$\frac{13\tanh^{-1}\left(\frac{\tan(a+bx)+3}{\sqrt{2}\sqrt{3\tan(a+bx)+4}}\right)}{5\sqrt{2}b}-\frac{9\tan^{-1}\left(\frac{1-3\tan(a+bx)}{\sqrt{2}\sqrt{3\tan(a+bx)+4}}\right)}{5\sqrt{2}b}$$

```
[Out] (-9*ArcTan[(1 - 3*Tan[a + b*x])/(Sqrt[2]*Sqrt[4 + 3*Tan[a + b*x]])])/(5*Sqr
t[2]*b) + (13*ArcTanh[(3 + Tan[a + b*x])/(Sqrt[2]*Sqrt[4 + 3*Tan[a + b*x]])
])/(5*Sqrt[2]*b)
```

Rubi [A] time = 0.107589, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16, Rules used = {3536, 3535, 203, 207}

$$\frac{13\tanh^{-1}\left(\frac{\tan(a+bx)+3}{\sqrt{2}\sqrt{3\tan(a+bx)+4}}\right)}{5\sqrt{2}b}-\frac{9\tan^{-1}\left(\frac{1-3\tan(a+bx)}{\sqrt{2}\sqrt{3\tan(a+bx)+4}}\right)}{5\sqrt{2}b}$$

Antiderivative was successfully verified.

```
[In] Int[(4 - 3*Tan[a + b*x])/Sqrt[4 + 3*Tan[a + b*x]],x]
```


```
[Out] (-9*ArcTan[(1 - 3*Tan[a + b*x])/(Sqrt[2]*Sqrt[4 + 3*Tan[a + b*x]])])/(5*Sqr
t[2]*b) + (13*ArcTanh[(3 + Tan[a + b*x])/(Sqrt[2]*Sqrt[4 + 3*Tan[a + b*x]])
])/(5*Sqrt[2]*b)
```


Rule 3536

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(a_) + (b_.)*tan[(e_.) + (
f_.)*(x_)]], x_Symbol] :> With[{q = Rt[a^2 + b^2, 2]}, Dist[1/(2*q), Int[(a
*c + b*d + c*q + (b*c - a*d + d*q)*Tan[e + f*x])/Sqrt[a + b*Tan[e + f*x]],
x], x] - Dist[1/(2*q), Int[(a*c + b*d - c*q + (b*c - a*d - d*q)*Tan[e + f*x
])/Sqrt[a + b*Tan[e + f*x]], x], x]] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ
[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && NeQ[2*a*c*d - b
*(c^2 - d^2), 0] && (PerfectSquareQ[a^2 + b^2] || RationalQ[a, b, c, d])
```

Rule 3535

```
Int[((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(a_) + (b_.)*tan[(e_.) + (
f_.)*(x_)]], x_Symbol] :> Dist[(-2*d^2)/f, Subst[Int[1/(2*b*c*d - 4*a*d^2 +
```

```
 x^2), x], x, (b*c - 2*a*d - b*d*Tan[e + f*x])/Sqrt[a + b*Tan[e + f*x]]], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
 && NeQ[c^2 + d^2, 0] && EqQ[2*a*c*d - b*(c^2 - d^2), 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{4-3\tan(a+bx)}{\sqrt{4+3\tan(a+bx)}}\,dx &= \frac{1}{10}\int \frac{27+9\tan(a+bx)}{\sqrt{4+3\tan(a+bx)}}\,dx-\frac{1}{10}\int \frac{-13+39\tan(a+bx)}{\sqrt{4+3\tan(a+bx)}}\,dx\\
&= -\frac{81\,\text{Subst}\left(\int \frac{1}{162+x^2}\,dx,x,\frac{9-27\tan(a+bx)}{\sqrt{4+3\tan(a+bx)}}\right)}{5b}+\frac{1521\,\text{Subst}\left(\int \frac{1}{-27378+x^2}\,dx,x,\frac{-351-117\tan(a+bx)}{\sqrt{4+3\tan(a+bx)}}\right)}{5b}\\
&= -\frac{9\tan^{-1}\left(\frac{1-3\tan(a+bx)}{\sqrt{2}\sqrt{4+3\tan(a+bx)}}\right)}{5\sqrt{2}b}+\frac{13\tanh^{-1}\left(\frac{3+\tan(a+bx)}{\sqrt{2}\sqrt{4+3\tan(a+bx)}}\right)}{5\sqrt{2}b}
\end{aligned}
$$

Mathematica [C] time = 0.0910901, size = 75, normalized size = 0.88

$$
\frac{(3-4i)\tanh^{-1}\left(\frac{\sqrt{3\tan(a+bx)+4}}{\sqrt{4-3i}}\right)}{\sqrt{4-3i}b}+\frac{(3+4i)\tanh^{-1}\left(\frac{\sqrt{3\tan(a+bx)+4}}{\sqrt{4+3i}}\right)}{\sqrt{4+3i}b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(4 - 3*Tan[a + b*x])/Sqrt[4 + 3*Tan[a + b*x]],x]
```

```
[Out] ((3 - 4*I)*ArcTanh[Sqrt[4 + 3*Tan[a + b*x]]/Sqrt[4 - 3*I]])/(Sqrt[4 - 3*I]*
b) + ((3 + 4*I)*ArcTanh[Sqrt[4 + 3*Tan[a + b*x]]/Sqrt[4 + 3*I]])/(Sqrt[4 +
3*I]*b)
```

Maple [A] time = 0.105, size = 142, normalized size = 1.7

$$\frac{13\sqrt{2}}{20\,b}\ln\left(9+3\,\tan\left(bx+a\right)+3\sqrt{4+3\,\tan\left(bx+a\right)}\sqrt{2}\right)+\frac{9\sqrt{2}}{10\,b}\arctan\left(\frac{\sqrt{2}}{2}\left(2\sqrt{4+3\,\tan\left(bx+a\right)}+3\sqrt{2}\right)\right)-\frac{13\sqrt{}}{20\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((4-3*tan(b*x+a))/(4+3*tan(b*x+a))^(1/2),x)
```

```
[Out] 13/20/b*2^(1/2)*ln(9+3*tan(b*x+a)+3*(4+3*tan(b*x+a))^(1/2)*2^(1/2))+9/10/b*
2^(1/2)*arctan(1/2*(2*(4+3*tan(b*x+a))^(1/2)+3*2^(1/2))*2^(1/2))-13/20/b*2^
(1/2)*ln(9+3*tan(b*x+a)-3*(4+3*tan(b*x+a))^(1/2)*2^(1/2))+9/10/b*2^(1/2)*ar
ctan(1/2*(2*(4+3*tan(b*x+a))^(1/2)-3*2^(1/2))*2^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{3\,\tan\left(bx+a\right)-4}{\sqrt{3\,\tan\left(bx+a\right)+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4-3*tan(b*x+a))/(4+3*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*tan(b*x + a) - 4)/sqrt(3*tan(b*x + a) + 4), x)
```

Fricas [B] time = 1.26366, size = 2720, normalized size = 32.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4-3*tan(b*x+a))/(4+3*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/58500*25^(1/4)*(44*b^2*sqrt(b^(-4)) + 125)*sqrt(-11000*b^2*sqrt(b^(-4)) +
 31250)*(b^(-4))^(1/4)*log(25/39*(4875*b^2*sqrt(b^(-4))*cos(b*x + a) + 25^(
1/4)*(5*b^3*sqrt(b^(-4))*cos(b*x + a) + 8*b*cos(b*x + a))*sqrt(-11000*b^2*s
qrt(b^(-4)) + 31250)*sqrt((4*cos(b*x + a) + 3*sin(b*x + a))/cos(b*x + a))*(
```

```
b^(-4))^(1/4) + 3900*cos(b*x + a) + 2925*sin(b*x + a))/cos(b*x + a)) - 1/58
500*25^(1/4)*(44*b^2*sqrt(b^(-4)) + 125)*sqrt(-11000*b^2*sqrt(b^(-4)) + 312
50)*(b^(-4))^(1/4)*log(25/39*(4875*b^2*sqrt(b^(-4))*cos(b*x + a) - 25^(1/4)
*(5*b^3*sqrt(b^(-4))*cos(b*x + a) + 8*b*cos(b*x + a))*sqrt(-11000*b^2*sqrt(
b^(-4)) + 31250)*sqrt((4*cos(b*x + a) + 3*sin(b*x + a))/cos(b*x + a))*(b^(-
4))^(1/4) + 3900*cos(b*x + a) + 2925*sin(b*x + a))/cos(b*x + a)) - 1/125*25
^(1/4)*sqrt(-11000*b^2*sqrt(b^(-4)) + 31250)*(b^(-4))^(1/4)*arctan(1/73125*
25^(3/4)*sqrt(1/39)*(5*b^5*sqrt(b^(-4)) + 8*b^3)*sqrt(-11000*b^2*sqrt(b^(-4
)) + 31250)*sqrt((4875*b^2*sqrt(b^(-4))*cos(b*x + a) + 25^(1/4)*(5*b^3*sqrt
(b^(-4))*cos(b*x + a) + 8*b*cos(b*x + a))*sqrt(-11000*b^2*sqrt(b^(-4)) + 31
250)*sqrt((4*cos(b*x + a) + 3*sin(b*x + a))/cos(b*x + a))*(b^(-4))^(1/4) +
3900*cos(b*x + a) + 2925*sin(b*x + a))/cos(b*x + a))*(b^(-4))^(3/4) - 1/146
25*25^(3/4)*(5*b^5*sqrt(b^(-4)) + 8*b^3)*sqrt(-11000*b^2*sqrt(b^(-4)) + 312
50)*sqrt((4*cos(b*x + a) + 3*sin(b*x + a))/cos(b*x + a))*(b^(-4))^(3/4) - 4
/3*b^2*sqrt(b^(-4)) - 5/3) - 1/125*25^(1/4)*sqrt(-11000*b^2*sqrt(b^(-4)) +
31250)*(b^(-4))^(1/4)*arctan(1/73125*25^(3/4)*sqrt(1/39)*(5*b^5*sqrt(b^(-4)
) + 8*b^3)*sqrt(-11000*b^2*sqrt(b^(-4)) + 31250)*sqrt((4875*b^2*sqrt(b^(-4)
)*cos(b*x + a) - 25^(1/4)*(5*b^3*sqrt(b^(-4))*cos(b*x + a) + 8*b*cos(b*x +
a))*sqrt(-11000*b^2*sqrt(b^(-4)) + 31250)*sqrt((4*cos(b*x + a) + 3*sin(b*x
+ a))/cos(b*x + a))*(b^(-4))^(1/4) + 3900*cos(b*x + a) + 2925*sin(b*x + a))
/cos(b*x + a))*(b^(-4))^(3/4) - 1/14625*25^(3/4)*(5*b^5*sqrt(b^(-4)) + 8*b^
3)*sqrt(-11000*b^2*sqrt(b^(-4)) + 31250)*sqrt((4*cos(b*x + a) + 3*sin(b*x +
 a))/cos(b*x + a))*(b^(-4))^(3/4) + 4/3*b^2*sqrt(b^(-4)) + 5/3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{3\tan{(a+bx)}}{\sqrt{3\tan{(a+bx)}+4}}\,dx - \int -\frac{4}{\sqrt{3\tan{(a+bx)}+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4-3*tan(b*x+a))/(4+3*tan(b*x+a))**(1/2),x)
```

```
[Out] -Integral(3*tan(a + b*x)/sqrt(3*tan(a + b*x) + 4), x) - Integral(-4/sqrt(3*
tan(a + b*x) + 4), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{3\,\tan{(bx+a)}-4}{\sqrt{3\,\tan{(bx+a)}+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4-3*tan(b*x+a))/(4+3*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*tan(b*x + a) - 4)/sqrt(3*tan(b*x + a) + 4), x)
```

3.378 $\int \tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=278

$$\frac{2(aB+Ab)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A-B)}{}$$

```
[Out] ((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) - ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*(A*b + a*B)*Sqrt[Tan[c + d*x
]])/d + (2*(a*A - b*B)*Tan[c + d*x]^(3/2))/(3*d) + (2*(A*b + a*B)*Tan[c + d
*x]^(5/2))/(5*d) + (2*b*B*Tan[c + d*x]^(7/2))/(7*d)
```

Rubi [A] time = 0.321337, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3592, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2(aB+Ab)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A-B)}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) - ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*(A*b + a*B)*Sqrt[Tan[c + d*x
]])/d + (2*(a*A - b*B)*Tan[c + d*x]^(3/2))/(3*d) + (2*(A*b + a*B)*Tan[c + d
*x]^(5/2))/(5*d) + (2*b*B*Tan[c + d*x]^(7/2))/(7*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
```

```
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{7}{2}}(c+dx)}{7d} + \int \tan^{\frac{5}{2}}(c+dx)(aA-bB+(Ab+aB)\,\mathrm{t}$$

$$= \frac{2(Ab+aB)\tan^{\frac{5}{2}}(c+dx)}{5d} + \frac{2bB\tan^{\frac{7}{2}}(c+dx)}{7d} + \int \tan^{\frac{3}{2}}(c$$

$$= \frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2(Ab+aB)\tan^{\frac{5}{2}}(c+dx)}{5d} + \frac{2bE}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2(}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2(}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2(}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2(aA-bB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2(}{}$$

$$= -\frac{(b(A-B)+a(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+\right.}{2\sqrt{2}d}$$

$$= \frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{(a(A}{}$$

Mathematica [C] time = 1.5936, size = 151, normalized size = 0.54

$$\frac{-105\sqrt[4]{-1}(b+ia)(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+2\sqrt{\tan(c+dx)}\left(21(aB+Ab)\tan^2(c+dx)+35(aA-bB)\tan\right.}{105d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-105*(-1)^(1/4)*(I*a + b)*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
+ 105*(-1)^(3/4)*(a + I*b)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
 + 2*Sqrt[Tan[c + d*x]]*(-105*(A*b + a*B) + 35*(a*A - b*B)*Tan[c + d*x] + 2
1*(A*b + a*B)*Tan[c + d*x]^2 + 15*b*B*Tan[c + d*x]^3))/(105*d)
```

Maple [B] time = 0.02, size = 527, normalized size = 1.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/7*b*B*tan(d*x+c)^(7/2)/d+2/5/d*A*tan(d*x+c)^(5/2)*b+2/5/d*a*B*tan(d*x+c)^
(5/2)+2/3/d*a*A*tan(d*x+c)^(3/2)-2/3*b*B*tan(d*x+c)^(3/2)/d-2/d*A*tan(d*x+c
)^(1/2)*b-2/d*a*B*tan(d*x+c)^(1/2)+1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*b+1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1
-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*t
an(d*x+c)^(1/2))*b+1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/
4/d*a*B*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c)))*2^(1/2)+1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/
2)-1/4/d*a*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*2^(1/2)-1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*B*2^(1/
2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+t
an(d*x+c)))*b+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d*B
*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b
```

Maxima [A] time = 1.78624, size = 306, normalized size = 1.1

$$120\,Bb\tan\left(dx+c\right)^{\frac{7}{2}}+168\left(Ba+Ab\right)\tan\left(dx+c\right)^{\frac{5}{2}}-210\,\sqrt{2}((A-B)a-(A+B)b)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/420*(120*B*b*tan(d*x + c)^(7/2) + 168*(B*a + A*b)*tan(d*x + c)^(5/2) - 21
0*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(
d*x + c)))) - 210*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(-1/2*sqrt(2)*(sqrt
(2) - 2*sqrt(tan(d*x + c)))) + 105*sqrt(2)*((A + B)*a + (A - B)*b)*log(sqrt
(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 105*sqrt(2)*((A + B)*a + (A -
B)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 280*(A*a - B*b)
*tan(d*x + c)^(3/2) - 840*(B*a + A*b)*sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 95.2061, size = 28355, normalized size = 102.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/420*(420*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A
^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
 B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)
*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^
3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4
)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^
4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A
^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2
 + B^4)*b^4)/d^4)*arctan(-(((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^
7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6
 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(
A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2
*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^
8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sq
rt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2
*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4
)/d^4) - sqrt(2)*((B*a + A*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^
4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4
```

- 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B
^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) +
((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b + (A^3 + A*B^2)*a*b^2 - (A^2*B +
B^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b -
2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^
2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*
B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (
A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4
)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A
^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 -
A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*
B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5
*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (
9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2
+ 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b
^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(
d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*
B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 -
(A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*
A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5
+ (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 +
A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2
+ (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*
B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 +
B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +
8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/c
os(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*
b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^
8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 +
A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8
- 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3
- A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8
*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*s
in(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) + sqrt(2)*(((A^
4*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^4)*a^4*b - 4*(A^4*B + A^2*B^3)*a^
3*b^2 - 4*(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A^4*B + 4*A^2*B^3 - B^5)*a*b^4 - (
A^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2
+ B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2

+ 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A^7 + A^5 *B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^5*b^2 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a^3*b ^4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^2*b^5 - (A^7 - 3*A^5*B^2 - 9 *A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^7)*d^5*sqrt (((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B ^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/ d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^ 2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^ 3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^ 8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6 *B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 1 6*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B ^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^ 3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7 *B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31 *A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11 *B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12))*c os(d*x + c)^3 + 420*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B *b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2* A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B ^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^ 2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2* B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3 *b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan((((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2 *A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^ 3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b ^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 +

B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)
/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4
- 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 +
B^4)*b^4)/d^4) + sqrt(2)*((B*a + A*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sq
rt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2
*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4
)/d^4) + ((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b + (A^3 + A*B^2)*a*b^2 - (
A^2*B + B^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)
*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^
4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B
*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B
^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^
2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A
^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 -
 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4
+ 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)
*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*
a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*
B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^
4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d
^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^
2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^
5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B
^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*
a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^
3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(
A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 -
 A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A
^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^
2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*
x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B
^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 +
 B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A
^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 -
 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B +
A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2
b^6 + 8(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8
)*b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) - sqrt(

2)*(((A^4*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^4)*a^4*b - 4*(A^4*B + A^2
*B^3)*a^3*b^2 - 4*(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A^4*B + 4*A^2*B^3 - B^5)*a
*b^4 - (A^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2
*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*
a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A
^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^
7)*a^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^5*b^2 - (9*A^6*B + 17*
A^4*B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^
6)*a^3*b^4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^2*b^5 - (A^7 - 3*A^5
*B^2 - 9*A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^7)*
d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^
4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)
*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)
*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2
*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*
(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B
^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(
((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6
- A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2
*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4
+ 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A
^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A
^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8
b^4 - 16(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)
*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 -
22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^
7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A
^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3
 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*
B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 +
 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11
 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*
b^12))*cos(d*x + c)^3 + 105*sqrt(2)*(2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b
)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c)^3 + ((A^4 + 2*A^2*B^2 + B
^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*
d*cos(d*x + c)^3)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 -
B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)
*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4
- 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B -
 A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4

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 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1
/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (
A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B
^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^
6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a
^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^5 -
2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A
^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 -
 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^
4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2
*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7
 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25
*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 -
 (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A
^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (
A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^
2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)
/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10
*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)
*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A
^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + (
(A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b +
 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5
- A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4
*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*
B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8
 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - 105*sqrt(2)*(2*(A*B*
a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*
(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x
 + c)^3 + ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^3)*sqrt(((A^4 + 2*A^2*B^2 + B
^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 -
 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*
a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)
)/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*
B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)
)*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^
6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2
 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5
+ (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^
4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*c
os(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B
```

```
^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*
A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^
2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B
 - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6
*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2
- 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3
*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B
^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(
d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2
*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b
)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3
*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*
a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^
4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2
*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5
*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2
- 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*
A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3
- A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d
*x + c)) - 8*(126*((A^4*B + 2*A^2*B^3 + B^5)*a^5 + (A^5 + 2*A^3*B^2 + A*B^4
)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5)*a^3*b^2 + 2*(A^5 + 2*A^3*B^2 + A*B^4)
*a^2*b^3 + (A^4*B + 2*A^2*B^3 + B^5)*a*b^4 + (A^5 + 2*A^3*B^2 + A*B^4)*b^5)
*cos(d*x + c)^3 - 21*((A^4*B + 2*A^2*B^3 + B^5)*a^5 + (A^5 + 2*A^3*B^2 + A*
B^4)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5)*a^3*b^2 + 2*(A^5 + 2*A^3*B^2 + A*B
^4)*a^2*b^3 + (A^4*B + 2*A^2*B^3 + B^5)*a*b^4 + (A^5 + 2*A^3*B^2 + A*B^4)*b
^5)*cos(d*x + c) - 5*(3*(A^4*B + 2*A^2*B^3 + B^5)*a^4*b + 6*(A^4*B + 2*A^2*
B^3 + B^5)*a^2*b^3 + 3*(A^4*B + 2*A^2*B^3 + B^5)*b^5 + (7*(A^5 + 2*A^3*B^2
+ A*B^4)*a^5 - 10*(A^4*B + 2*A^2*B^3 + B^5)*a^4*b + 14*(A^5 + 2*A^3*B^2 + A
*B^4)*a^3*b^2 - 20*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + 7*(A^5 + 2*A^3*B^2 +
 A*B^4)*a*b^4 - 10*(A^4*B + 2*A^2*B^3 + B^5)*b^5)*cos(d*x + c)^2)*sin(d*x +
 c))*sqrt(sin(d*x + c)/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^
4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^
3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.379 $\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=254

$$\frac{2(aB+Ab)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{(a(A+B)+b(A-B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A+B)+b(A-B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}\right.}{\sqrt{2}d}$$

```
[Out] ((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) + ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(a*A - b*B)*Sqrt[Tan[c + d*x
]])/d + (2*(A*b + a*B)*Tan[c + d*x]^(3/2))/(3*d) + (2*b*B*Tan[c + d*x]^(5/2
))/(5*d)
```

Rubi [A] time = 0.263097, antiderivative size = 254, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3592, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2(aB+Ab)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{(a(A+B)+b(A-B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A+B)+b(A-B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) + ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(a*A - b*B)*Sqrt[Tan[c + d*x
]])/d + (2*(A*b + a*B)*Tan[c + d*x]^(3/2))/(3*d) + (2*b*B*Tan[c + d*x]^(5/2
))/(5*d)
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
```

```
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{5}{2}}(c+dx)}{5d} + \int \tan^{\frac{3}{2}}(c+dx)(aA-bB+(Ab+aB)\,\mathrm{t}$$

$$= \frac{2(Ab+aB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2bB\tan^{\frac{5}{2}}(c+dx)}{5d} + \int \sqrt{\tan(c}$$

$$= \frac{2(aA-bB)\sqrt{\tan(c+dx)}}{d} + \frac{2(Ab+aB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2bE}{}$$

$$= \frac{2(aA-bB)\sqrt{\tan(c+dx)}}{d} + \frac{2(Ab+aB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2bE}{}$$

$$= \frac{2(aA-bB)\sqrt{\tan(c+dx)}}{d} + \frac{2(Ab+aB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2bE}{}$$

$$= \frac{2(aA-bB)\sqrt{\tan(c+dx)}}{d} + \frac{2(Ab+aB)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2bE}{}$$

$$= \frac{(a(A-B)-b(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+a\right.}{2\sqrt{2}d}$$

$$= \frac{(b(A-B)+a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{(b(A}{}$$

Mathematica [C] time = 1.00207, size = 134, normalized size = 0.53

$$\frac{15\sqrt[4]{-1}(a-ib)(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+2\sqrt{\tan(c+dx)}\left(5(aB+Ab)\tan(c+dx)+15(aA-bB)+3bB\tan\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (15*(-1)^(1/4)*(a - I*b)*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] +
15*(-1)^(1/4)*(a + I*b)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] +
2*Sqrt[Tan[c + d*x]]*(15*(a*A - b*B) + 5*(A*b + a*B)*Tan[c + d*x] + 3*b*B*T
an[c + d*x]^2))/(15*d)
```

Maple [B] time = 0.021, size = 497, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/5*b*B*tan(d*x+c)^(5/2)/d+2/3/d*A*tan(d*x+c)^(3/2)*b+2/3/d*a*B*tan(d*x+c)^
(3/2)+2/d*a*A*tan(d*x+c)^(1/2)-2*b*B*tan(d*x+c)^(1/2)/d-1/2/d*a*A*arctan(-1
+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/2/d*a*A*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*t
an(d*x+c)^(1/2))*b+1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/2/d*B*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*b-1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d*A*2^(1/2)*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(
1/2))*b-1/4/d*a*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(
1/2))*2^(1/2)-1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 1.85645, size = 284, normalized size = 1.12

$$24\,Bb\tan\left(dx+c\right)^{\frac{5}{2}}-30\,\sqrt{2}((A+B)a+(A-B)b)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)-30\,\sqrt{2}((A+B)a+(A-B)b$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/60*(24*B*b*tan(d*x + c)^(5/2) - 30*sqrt(2)*((A + B)*a + (A - B)*b)*arctan
(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) - 30*sqrt(2)*((A + B)*a + (A
 - B)*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - 15*sqrt(2)
*((A - B)*a - (A + B)*b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)
 + 15*sqrt(2)*((A - B)*a - (A + B)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan
(d*x + c) + 1) + 40*(B*a + A*b)*tan(d*x + c)^(3/2) + 120*(A*a - B*b)*sqrt(t
an(d*x + c)))/d
```

Fricas [B] time = 122.131, size = 28034, normalized size = 110.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/60*(60*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^
2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*
a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3
*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)
*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4
)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^
4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2
+ B^4)*b^4)/d^4)*arctan(-(((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7
*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6
- B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A
^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*
B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8
 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqr
t(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*
B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)
/d^4) + sqrt(2)*((A*a - B*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4
```

- 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^
4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) -
((A^2*B + B^3)*a^3 + (A^3 + A*B^2)*a^2*b + (A^2*B + B^3)*a*b^2 + (A^3 + A*B
^2)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b -
2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2
*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A
^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)
a^4 - 8(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^
3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 -
A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B
^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*
B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*
A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 +
B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A
^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 -
2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^
4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d
*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A
^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (
A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3
*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 +
(A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 +
B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A
^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2
+ (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 +
B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8
*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/co
s(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8
- 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 +
A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 -
16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*
(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*si
n(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) - sqrt(2)*(((A^5
- A*B^4)*a^5 - (5*A^4*B + 4*A^2*B^3 - B^5)*a^4*b + 4*(A^3*B^2 + A*B^4)*a^3
b^2 - 4(A^4*B + A^2*B^3)*a^2*b^3 - (A^5 - 4*A^3*B^2 - 5*A*B^4)*a*b^4 + (A
^4*B - B^5)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2
+ B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +

8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^7 + (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a^6*b - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^5*b^2 + (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a^4*b^3 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^3*b^4 - (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^2*b^5 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a*b^6 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^7)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12))*cos(d*x + c)^2 + 60*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan((((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^

4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d
^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^
4)*b^4)/d^4) - sqrt(2)*((A*a - B*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt
(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B
^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/
d^4) - ((A^2*B + B^3)*a^3 + (A^3 + A*B^2)*a^2*b + (A^2*B + B^3)*a*b^2 + (A^
3 + A*B^2)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a
^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4
- 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b
^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^
2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2
+ B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2
+ 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4
*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 1
7*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 +
8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A
^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a
^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^
3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^
5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)
a^4 + 2(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4
)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^
3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*
b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 -
17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^
2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^
2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^
4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A
*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2
*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*
b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x
+ c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4
)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B
^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4
*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2
*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^
5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b
^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*
b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2
*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) + sqrt(2)

*(((A^5 - A*B^4)*a^5 - (5*A^4*B + 4*A^2*B^3 - B^5)*a^4*b + 4*(A^3*B^2 + A*B
^4)*a^3*b^2 - 4*(A^4*B + A^2*B^3)*a^2*b^3 - (A^5 - 4*A^3*B^2 - 5*A*B^4)*a*b
^4 + (A^4*B - B^5)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A
^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^
2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^6
*B + A^4*B^3 - A^2*B^5 - B^7)*a^7 + (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)
*a^6*b - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^5*b^2 + (A^7 - 7*A^5*B^2
 - 17*A^3*B^4 - 9*A*B^6)*a^4*b^3 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)
*a^3*b^4 - (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^2*b^5 - (5*A^6*B + 9*A
^4*B^3 + 3*A^2*B^5 - B^7)*a*b^6 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^7)*d^
5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10
*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)
*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a
^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a
*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A
^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3
)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 -
A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A
^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 +
44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9
*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^1
0*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b
^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a
^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22
*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7
 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6
*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 +
 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^
2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8
*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 +
 (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^
12))*cos(d*x + c)^2 + 15*sqrt(2)*(2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d
^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 +
(A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c)^2 - ((A^4 + 2*A^2*B^2 + B^4)
a^4 + 2(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*c
os(d*x + c)^2)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4
)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2
)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^
2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8
*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*
B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 +

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2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)
*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6
 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4
+ B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*
b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*
b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^4*B - 2
*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*
A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B
- 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 +
 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^
2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 -
(9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^
4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A
^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*
A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6
*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 +
 B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4
 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4
)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^
4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^
2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^
4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^
8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16
*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A
*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^
4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4
 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 -
2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - 15*sqrt(2)*(2*(A*B*a^2
- A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c
)^2 - ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*
a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(
A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((
A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2
+ B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 -
8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (
A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A
^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d
*x + c) - sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A
```

```
*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2
+ 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2
+ A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5
*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b -
 (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 -
17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4
 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A
^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x
+ c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^
2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B -
 A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^
3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 +
2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3
 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*
(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*
B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3
*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^
3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x +
 c)) - 8*(3*(A^4*B + 2*A^2*B^3 + B^5)*a^4*b + 6*(A^4*B + 2*A^2*B^3 + B^5)*a
^2*b^3 + 3*(A^4*B + 2*A^2*B^3 + B^5)*b^5 + 3*(5*(A^5 + 2*A^3*B^2 + A*B^4)*a
^5 - 6*(A^4*B + 2*A^2*B^3 + B^5)*a^4*b + 10*(A^5 + 2*A^3*B^2 + A*B^4)*a^3*b
^2 - 12*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + 5*(A^5 + 2*A^3*B^2 + A*B^4)*a*b
^4 - 6*(A^4*B + 2*A^2*B^3 + B^5)*b^5)*cos(d*x + c)^2 + 5*((A^4*B + 2*A^2*B^
3 + B^5)*a^5 + (A^5 + 2*A^3*B^2 + A*B^4)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5
)*a^3*b^2 + 2*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^3 + (A^4*B + 2*A^2*B^3 + B^5)
*a*b^4 + (A^5 + 2*A^3*B^2 + A*B^4)*b^5)*cos(d*x + c)*sin(d*x + c))*sqrt(sin
(d*x + c)/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))\tan^{\frac{3}{2}}(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))*tan(c + d*x)**(3/2), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.380 $\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=229

$$-\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(a(A-B)-b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}+\frac{2(aB+A}{}$$

```
[Out] -(((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*d)) + ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sq
rt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*d) - ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(A*b + a*B)*Sqrt[Tan[c +
d*x]])/d + (2*b*B*Tan[c + d*x]^(3/2))/(3*d)
```

Rubi [A] time = 0.232655, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3592, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(a(A-B)-b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}+\frac{2(aB+A}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*d)) + ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sq
rt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*d) - ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(A*b + a*B)*Sqrt[Tan[c +
d*x]])/d + (2*b*B*Tan[c + d*x]^(3/2))/(3*d)
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{3}{2}}(c+dx)}{3d} + \int \sqrt{\tan(c+dx)}(aA-bB+(Ab+aB)$$

$$= \frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2bB\tan^{\frac{3}{2}}(c+dx)}{3d} + \int \frac{-Ab-}{}$$

$$= \frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2bB\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2\,\mathrm{Subst}\Big(}{}$$

$$= \frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2bB\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{(b(A-B)}{}$$

$$= \frac{2(Ab+aB)\sqrt{\tan(c+dx)}}{d} + \frac{2bB\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{(b(A-B)}{}$$

$$= \frac{(b(A-B)+a(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+\right.}{2\sqrt{2}d}$$

$$= -\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{(a(}{}$$

Mathematica [C] time = 0.395821, size = 114, normalized size = 0.5

$$\frac{3\sqrt[4]{-1}(b+ia)(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+2\sqrt{\tan(c+dx)}(3aB+3Ab+bB\tan(c+dx))-3(-1)^{3/4}(a+ib)(A-}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (3*(-1)^(1/4)*(I*a + b)*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] - 3
*(-1)^(3/4)*(a + I*b)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + 2*
Sqrt[Tan[c + d*x]]*(3*A*b + 3*a*B + b*B*Tan[c + d*x]))/(3*d)
```

Maple [B] time = 0.021, size = 467, normalized size = 2.

$$\frac{2\,Bb}{3\,d}\left(\tan\left(dx+c\right)\right)^{\frac{3}{2}}+2\,\frac{A\sqrt{\tan\left(dx+c\right)}b}{d}+2\,\frac{aB\sqrt{\tan\left(dx+c\right)}}{d}-\frac{A\sqrt{2}b}{2\,d}\arctan\left(-1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)-\frac{A\sqrt{2}b}{4\,d}\ln\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/3*b*B*tan(d*x+c)^(3/2)/d+2/d*A*tan(d*x+c)^(1/2)*b+2/d*a*B*tan(d*x+c)^(1/2
)-1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d*A*2^(1/2)*ln(
(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c)))*b-1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*a*B*arct
an(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*B*ln((1+2^(1/2)*tan(d*x+c)^
(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/2/d*a*
B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*A*ln((1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2
/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a*A*arctan(1+2^(1/
2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)
+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d*B*2^(1/2)*arc
tan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x
+c)^(1/2))*b
```

Maxima [A] time = 1.74469, size = 259, normalized size = 1.13

$$\frac{8\,Bb\tan\left(dx+c\right)^{\frac{3}{2}}+6\,\sqrt{2}\left(\left(A-B\right)a-\left(A+B\right)b\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)+6\,\sqrt{2}\left(\left(A-B\right)a-\left(A+B\right)b\right)\mathrm{ar}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/12*(8*B*b*tan(d*x + c)^(3/2) + 6*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(1
/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 6*sqrt(2)*((A - B)*a - (A +
```

```
B)*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - 3*sqrt(2)*((A
 + B)*a + (A - B)*b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 3
*sqrt(2)*((A + B)*a + (A - B)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
+ c) + 1) + 24*(B*a + A*b)*sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 104.72, size = 27690, normalized size = 120.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/12*(12*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^
2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*
a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3
*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)
*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4
)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^
4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2
+ B^4)*b^4)/d^4)*arctan(-(((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7
*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6
- B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A
^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*
B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8
 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqr
t(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*
B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)
/d^4) - sqrt(2)*((B*a + A*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4
- 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^
4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) +
((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b + (A^3 + A*B^2)*a*b^2 - (A^2*B + B
^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b -
2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2
*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A
^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
```

B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)
a^4 - 8(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^
3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 -
A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B
^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*
B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*
A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 +
B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9
*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 +
2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^
4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d
*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B
^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (
A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A
^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 +
(9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A
*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A
^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2
+ (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 +
B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8
*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/co
s(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8
- 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 +
A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 -
16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*
(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*si
n(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) + sqrt(2)*(((A^4
*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^4)*a^4*b - 4*(A^4*B + A^2*B^3)*a^3
b^2 - 4(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A^4*B + 4*A^2*B^3 - B^5)*a*b^4 - (A
^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2
+ B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +
8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A^7 + A^5*
B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a^6*b
+ (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^5*b^2 - (9*A^6*B + 17*A^4*B^3 +
7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a^3*b^
4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^2*b^5 - (A^7 - 3*A^5*B^2 - 9*
A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^7)*d^5*sqrt(
((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^
2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d

```
^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2
*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B -
A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3
 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2
*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8
 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7
- 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*
B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 +
2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 -
 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16
*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5
- 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^
10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3
*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 -
257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*
B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*
A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*
B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12
+ 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12))*co
s(d*x + c) + 12*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2
 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*
B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 +
 B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +
8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2
+ B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^
4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b -
 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^
2*B^2 + B^4)*b^4)/d^4)*arctan((((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4
*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2
*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 -
12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2
*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 -
 (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)
*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4
)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10
*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)
*b^4)/d^4) + sqrt(2)*((B*a + A*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2
*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt((
(A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2
 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^
4) + ((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b + (A^3 + A*B^2)*a*b^2 - (A^2*
```

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B + B^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3
*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 -
2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2
 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*
B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 +
 B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +
8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B
^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*
A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*
(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4
 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*
B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5
 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*
b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)
*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a
^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*
cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 -
A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^
2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 -
 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*
b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^
4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B
*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B
^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^
2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x +
c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*
a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8
)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B
^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(
A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*
B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6
 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^
8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A
^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) - sqrt(2)*(
((A^4*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^4)*a^4*b - 4*(A^4*B + A^2*B^3
)*a^3*b^2 - 4*(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A^4*B + 4*A^2*B^3 - B^5)*a*b^4
 - (A^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^
2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2
*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*
b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A^7 +
 A^5*B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a
^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^5*b^2 - (9*A^6*B + 17*A^4*
```

B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a
^3*b^4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^2*b^5 - (A^7 - 3*A^5*B^2
 - 9*A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^7)*d^5*
sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A
^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b
^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2
*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b
)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3
*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*
a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^
4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2
*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^
4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5
*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44
*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B
^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*
B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4
 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7
b^5 - 4(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A
^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 -
3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B
^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2
*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2
+ 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(
A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (
A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12
))*cos(d*x + c) + 3*sqrt(2)*(2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sq
rt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x
+ c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^
2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B -
 A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^
3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A
^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4
*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^
2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*
sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^
4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^5 - 2*A^3*B^2 +
A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A
*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2

+ 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - 3*sqrt(2)*(2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B

```
^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A
^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 +
 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^
2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b
- 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A
^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^
4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d
^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A
*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B
^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B
^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6
*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - 8*(3*((
A^4*B + 2*A^2*B^3 + B^5)*a^5 + (A^5 + 2*A^3*B^2 + A*B^4)*a^4*b + 2*(A^4*B +
 2*A^2*B^3 + B^5)*a^3*b^2 + 2*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^3 + (A^4*B +
2*A^2*B^3 + B^5)*a*b^4 + (A^5 + 2*A^3*B^2 + A*B^4)*b^5)*cos(d*x + c) + ((A^
4*B + 2*A^2*B^3 + B^5)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + (A^4*B
 + 2*A^2*B^3 + B^5)*b^5)*sin(d*x + c))*sqrt(sin(d*x + c)/cos(d*x + c)))/(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)*d*cos(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))\sqrt{\tan(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))*sqrt(tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.381 $\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=205

$$-\frac{(a(A+B)+b(A-B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(a(A+B)+b(A-B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{(a(A-B)$$

```
[Out] -(((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*d)) + ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sq
rt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*d) + ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*B*Sqrt[Tan[c + d*x]])/d
```

Rubi [A] time = 0.198887, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3592, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(a(A+B)+b(A-B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(a(A+B)+b(A-B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{(a(A-B)$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] -(((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*d)) + ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sq
rt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*d) + ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*B*Sqrt[Tan[c + d*x]])/d
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
```

```
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{2bB\sqrt{\tan(c+dx)}}{d}+\int \frac{aA-bB+(Ab+aB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx$$
$$= \frac{2bB\sqrt{\tan(c+dx)}}{d}+\frac{2\,\text{Subst}\left(\int \frac{aA-bB+(Ab+aB)x^2}{1+x^4}\,dx,x,\sqrt{\tan(c+dx)}\right)}{d}$$
$$= \frac{2bB\sqrt{\tan(c+dx)}}{d}+\frac{(b(A-B)+a(A+B))\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx,x,\sqrt{\tan(c\right.}{d}$$
$$= \frac{2bB\sqrt{\tan(c+dx)}}{d}+\frac{(b(A-B)+a(A+B))\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx,x,\sqrt{\text{ta}\right.}{2d}$$
$$= -\frac{(a(A-B)-b(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d}+\frac{(a(A}{}$$
$$= -\frac{(b(A-B)+a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(b(A-B)+a(A}{}$$

Mathematica [C] time = 0.167372, size = 94, normalized size = 0.46

$$-\frac{\sqrt[4]{-1}(a-ib)(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+\sqrt[4]{-1}(a+ib)(A+iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)-2bB\sqrt{\tan(c+}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```

```
[Out] -(((-1)^(1/4)*(a - I*b)*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + (
-1)^(1/4)*(a + I*b)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] - 2*b*
B*Sqrt[Tan[c + d*x]])/d)
```

Maple [B] time = 0.022, size = 437, normalized size = 2.1

$$2\,\frac{Bb\sqrt{\tan(dx+c)}}{d}+\frac{Aa\sqrt{2}}{2\,d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)+\frac{Aa\sqrt{2}}{2\,d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)+\frac{Aa\sqrt{2}}{4\,d}\ln\left(\left(1+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 2*b*B*tan(d*x+c)^(1/2)/d+1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/
2)+1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*A*2^(1/2)*
ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c)))-1/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*B*2^(1/
2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(
d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/4/d*A
*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*b+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/
2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/4/d*a*B*2^(1/2)*ln((1
-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
)))+1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a*B*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)
```

Maxima [A] time = 1.70534, size = 235, normalized size = 1.15

$$2\sqrt{2}((A+B)a+(A-B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}((A+B)a+(A-B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm="
maxima")
```

```
[Out] 1/4*(2*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt
(tan(d*x + c)))) + 2*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(-1/2*sqrt(2)*(s
qrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((A - B)*a - (A + B)*b)*log(sqrt(
2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((A - B)*a - (A + B)*b)
*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 8*B*b*sqrt(tan(d*x +
 c)))/d
```

Fricas [B] time = 90.482, size = 27232, normalized size = 132.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm="
fricas")
```

```
[Out] 1/4*(4*sqrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
 B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 -
 B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4
)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4
 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B
- A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^
4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(
3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B
^4)*b^4)/d^4)*arctan(-(((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B
+ 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B
^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A^7*
B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6
 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8 +
2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2
*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt((
(A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2
 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^
4) + sqrt(2)*((A*a - B*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2
*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*
a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A
^2*B + B^3)*a^3 + (A^3 + A*B^2)*a^2*b + (A^2*B + B^3)*a*b^2 + (A^3 + A*B^2)
*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(
A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^
2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2
- B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^
4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^
4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B
 - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 - A^2
*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4
+ B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B -
 A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2
*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5
- 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*
(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 +
 (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(
A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x
+ c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*
```

B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6
*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^
4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A
^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^
7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*
B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (
A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4
)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A
^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d
x + c))(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 -
8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2
*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16
*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^
3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^
7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d
*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) - sqrt(2)*(((A^5 -
A*B^4)*a^5 - (5*A^4*B + 4*A^2*B^3 - B^5)*a^4*b + 4*(A^3*B^2 + A*B^4)*a^3*b^
2 - 4*(A^4*B + A^2*B^3)*a^2*b^3 - (A^5 - 4*A^3*B^2 - 5*A*B^4)*a*b^4 + (A^4*
B - B^5)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B
^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*
(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^6*B + A^4*B
^3 - A^2*B^5 - B^7)*a^7 + (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a^6*b - (
3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^5*b^2 + (A^7 - 7*A^5*B^2 - 17*A^3*
B^4 - 9*A*B^6)*a^4*b^3 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^3*b^4 -
(A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^2*b^5 - (5*A^6*B + 9*A^4*B^3 + 3
*A^2*B^5 - B^7)*a*b^6 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^7)*d^5*sqrt(((A
^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 +
B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)
)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sq
rt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B
^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 +
(A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^
2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B
^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 +
2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3
*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6
+ 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A
^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 25
7*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A

^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4
*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10
+ B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^
9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257
*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5
 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8
*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B +
 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2
*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12)) + 4*s
qrt(2)*d^5*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^
2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*
b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^
3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)
*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A
^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqr
t(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*
B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)
/d^4)*arctan((((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B
^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b
^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5
*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a
^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2
 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2
*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*
A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a
^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - sqrt
(2)*((A*a - B*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2
+ B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +
 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^2*B + B^
3)*a^3 + (A^3 + A*B^2)*a^2*b + (A^2*B + B^3)*a*b^2 + (A^3 + A*B^2)*b^3)*d^5
*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*
A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*
b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^
2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*
b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^
2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^
3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)
*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 - A^2*B^4 + B^
6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^
4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a
*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^
4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d
^4)*cos(d*x + c) - sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*

```
B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14
*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2
*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A
^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((
A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7
)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A
^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6
)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^
5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d
*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4
)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2
)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^
2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8
*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*
B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*
(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 +
2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B
+ A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6
*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2
- 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A
*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5
*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/
cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2
*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) + sqrt(2)*(((A^5 - A*B^4)*a^
5 - (5*A^4*B + 4*A^2*B^3 - B^5)*a^4*b + 4*(A^3*B^2 + A*B^4)*a^3*b^2 - 4*(A^
4*B + A^2*B^3)*a^2*b^3 - (A^5 - 4*A^3*B^2 - 5*A*B^4)*a*b^4 + (A^4*B - B^5)*
b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*
b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 -
 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B -
A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^6*B + A^4*B^3 - A^2*
B^5 - B^7)*a^7 + (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a^6*b - (3*A^6*B +
 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^5*b^2 + (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A
*B^6)*a^4*b^3 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^3*b^4 - (A^7 + 5
*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^2*b^5 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5
- B^7)*a*b^6 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^7)*d^5*sqrt(((A^4 - 2*A^
2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2
*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4
+ 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B
^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b
 - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*
A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B
^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/
d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^1
```

0 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12)) + sqrt(2)*(2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 +

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2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4
) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^
7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3
*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8
)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2
*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 +
 (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - sqrt(2)*(2*(A*B
*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2
*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^
4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2
*B^2 + B^4)*b^4)*d)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2
- B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^
4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^
4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B
 - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a
^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^
(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b -
 (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2
*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 +
B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)
*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^4*
B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B
- 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A
^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a
^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A
^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3
 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3
- 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 -
 (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*
B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2
+ B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^
4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^
4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*
(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) +
 ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b
 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a
^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^
4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A
^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) + 8*((A^4*B + 2*A^2*
```

```
B^3 + B^5)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + (A^4*B + 2*A^2*B^3
 + B^5)*b^5)*sqrt(sin(d*x + c)/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^4
 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})(a + b\tan{(c + dx)})}{\sqrt{\tan{(c + dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))/sqrt(tan(c + d*x)), x)
```

Giac [A] time = 2.12289, size = 306, normalized size = 1.49

$$\frac{2\,Bb\sqrt{\tan{(dx+c)}}}{d} + \frac{\left(\sqrt{2}Aa + \sqrt{2}Ba + \sqrt{2}Ab - \sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan{(dx+c)}}\right)\right)}{2\,d} + \frac{\left(\sqrt{2}Aa + \sqrt{2}Ba + \sqrt{2}A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm="
giac")
```

```
[Out] 2*B*b*sqrt(tan(d*x + c))/d + 1/2*(sqrt(2)*A*a + sqrt(2)*B*a + sqrt(2)*A*b -
 sqrt(2)*B*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d + 1/2*
(sqrt(2)*A*a + sqrt(2)*B*a + sqrt(2)*A*b - sqrt(2)*B*b)*arctan(-1/2*sqrt(2)
*(sqrt(2) - 2*sqrt(tan(d*x + c))))/d + 1/4*(sqrt(2)*A*a - sqrt(2)*B*a - sqr
t(2)*A*b - sqrt(2)*B*b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/
d - 1/4*(sqrt(2)*A*a - sqrt(2)*B*a - sqrt(2)*A*b - sqrt(2)*B*b)*log(-sqrt(2
)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d
```

3.382 $\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=205

$$\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A-B)-b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{(a(A+B)}{}$$

```
[Out] ((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) - ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a*A)/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.213831, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3591, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A-B)-b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{(a(A+B)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```


```
[Out] ((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) - ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a*A)/(d*Sqrt[Tan[c + d*x]])
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA}{d\sqrt{\tan(c+dx)}} + \int \frac{Ab+aB-(aA-bB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx$$

$$= -\frac{2aA}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int \frac{Ab+aB+(-aA+bB)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$

$$= -\frac{2aA}{d\sqrt{\tan(c+dx)}} + \frac{(b(A-B)+a(A+B))\,\mathrm{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c$$

$$= -\frac{2aA}{d\sqrt{\tan(c+dx)}} - \frac{(b(A-B)+a(A+B))\,\mathrm{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2}\,dx, x, \sqrt{t}\right.}{2\sqrt{2}d}$$

$$= -\frac{(b(A-B)+a(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} + \frac{(b($$

$$= \frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{(a(A-B)-b(A$$

Mathematica [A] time = 0.631964, size = 158, normalized size = 0.77

$$-\frac{-2\sqrt{2}(a(A-B)-b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)+\sqrt{2}(a(A+B)+b(A-B}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```

```
[Out] -(-2*Sqrt[2]*(a*(A - B) - b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]
] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + Sqrt[2]*(b*(A - B) + a*(A + B
))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sq
rt[Tan[c + d*x]] + Tan[c + d*x]]) + (8*a*A)/Sqrt[Tan[c + d*x]])/(4*d)
```

Maple [B] time = 0.023, size = 437, normalized size = 2.1

$$-2\,\frac{Aa}{d\sqrt{\tan(dx+c)}} + \frac{A\sqrt{2}b}{2\,d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right) + \frac{A\sqrt{2}b}{4\,d}\ln\left(\left(1+\sqrt{2}\sqrt{\tan(dx+c)}+\tan(dx+c)\right)\left(1-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] -2*a*A/d/tan(d*x+c)^(1/2)+1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2
))*b+1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))*b+1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*a*B*l
n((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*2^(1/2)+1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*
a*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+
tan(d*x+c)))*2^(1/2)-1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-
1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*B*2^(1/2)*ln((1-
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
))*b+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d*B*2^(1/2)*
arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b
```

Maxima [A] time = 1.78399, size = 235, normalized size = 1.15

$$-\frac{2\sqrt{2}((A-B)a-(A+B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}((A-B)a-(A+B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(2*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqr
t(tan(d*x + c)))) + 2*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(-1/2*sqrt(2)*(
sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*((A + B)*a + (A - B)*b)*log(sqrt
(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*((A + B)*a + (A - B)*b
)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 8*A*a/sqrt(tan(d*x
+ c)))/d
```

Fricas [B] time = 101.37, size = 27960, normalized size = 136.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(4*sqrt(2)*(d^5*cos(d*x + c)^2 - d^5)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B
*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2
*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4
 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B
^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^
4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2
*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B -
A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3
 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan(-(((A^8 + 2*A^6*B^2 - 2*A^2*B^6
 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*
A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*
B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8
+ 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 +
 A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*
b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2
*A^2*B^2 + B^4)*b^4)/d^4) - sqrt(2)*((B*a + A*b)*d^7*sqrt(((A^4 + 2*A^2*B^2
 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A
^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2
 + B^4)*b^4)/d^4) + ((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b + (A^3 + A*B^2
)*a*b^2 - (A^2*B + B^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3
*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*
a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^
4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*
B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^
4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 +
B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt
((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 1
7*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^
6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)
*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^5 - 2*A^3*B
^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2
+ 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3
*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A
^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 +
B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7
```

- 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^
5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B
- 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4
+ 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A
^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4
)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2
*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^
4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/
((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^
2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*
sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 -
2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^
6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7
)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 +
8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A
^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^
4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3
/4) + sqrt(2)*(((A^4*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^4)*a^4*b - 4*(
A^4*B + A^2*B^3)*a^3*b^2 - 4*(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A^4*B + 4*A^2*B
^3 - B^5)*a*b^4 - (A^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqr
t(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*
B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)
/d^4) + ((A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9*A^4*B^3 + 3*A
^2*B^5 - B^7)*a^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^5*b^2 - (9*
A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*B^2 - 17*A^3*B
^4 - 9*A*B^6)*a^3*b^4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^2*b^5 - (
A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B^3 - A^2*B^5 -
B^7)*b^7)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b
- 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A
^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2
*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 +
(A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^
4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(
A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(
d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 -
4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*
A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 +
31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A
^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (
A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10

+ B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^
9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97
*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5
 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*
B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B
+ 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12
 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)
*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B
^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^
10 + B^12)*b^12)) + 4*sqrt(2)*(d^5*cos(d*x + c)^2 - d^5)*sqrt(((A^4 + 2*A^2
*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2
 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B
^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^
4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B
 - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan((((A^8 + 2*A^6*B
^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b
 + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 +
3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3
b^5 - 2(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3
 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*
sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^
4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B
 - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*
b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + sqrt(2)*((B*a + A*b)*d^7*sqrt(((A
^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3
)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A
^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b
+ (A^3 + A*B^2)*a*b^2 - (A^2*B + B^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4
)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A
^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2
*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2
 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B
^4)*b^4))*sqrt((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^
5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 1
7*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B
^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
 B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*((

(A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5
 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 +
 (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sq
rt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B
^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B
^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^
4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2
 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*
b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2
*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A
^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2
 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4
 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1
/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*
a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A
^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B
^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 +
 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7
 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*
B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^4)/d^4)^(3/4) - sqrt(2)*(((A^4*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^
4)*a^4*b - 4*(A^4*B + A^2*B^3)*a^3*b^2 - 4*(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A
^4*B + 4*A^2*B^3 - B^5)*a*b^4 - (A^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B
^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)
*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*
(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B
^2 + B^4)*b^4)/d^4) + ((A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9
*A^4*B^3 + 3*A^2*B^5 - B^7)*a^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)
*a^5*b^2 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*
B^2 - 17*A^3*B^4 - 9*A*B^6)*a^3*b^4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^
7)*a^2*b^5 - (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B
^3 - A^2*B^5 - B^7)*b^7)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B -
 A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^
3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 +
2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^
2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A
^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 -
2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)
*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin
(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B

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^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B +
3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 +
10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^
10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^1
1)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8
- 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*
B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 14
8*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B
^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*
B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8
 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3
*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^
2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3
*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*
B^8 + 2*A^2*B^10 + B^12)*b^12)) + 8*((A^5 + 2*A^3*B^2 + A*B^4)*a^5 + 2*(A^5
 + 2*A^3*B^2 + A*B^4)*a^3*b^2 + (A^5 + 2*A^3*B^2 + A*B^4)*a*b^4)*sqrt(sin(d
*x + c)/cos(d*x + c))*cos(d*x + c)*sin(d*x + c) + sqrt(2)*(((A^4 + 2*A^2*B^
2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^4)*d*cos(d*x + c)^2 - ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
 B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d + 2*((A*B*a^2 - A*B*b^2 + (A
^2 - B^2)*a*b)*d^3*cos(d*x + c)^2 - (A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d
^3)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(
A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 -
 A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A
^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^
2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*
A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 +
 B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B
- A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*
A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*
B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) +
 sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4
*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5
)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*
b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*
b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 -
A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B
 - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4
+ A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 -
 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^
5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqr
t(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 +
```

2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a
^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4
- 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2
+ B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B +
A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*
A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16
*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A
*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - sq
rt(2)*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2 - ((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d + 2*(
(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*cos(d*x + c)^2 - (A*B*a^2 - A*B*b
^2 + (A^2 - B^2)*a*b)*d^3)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A
^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A
^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 +
B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B
^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)
*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4
- 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 +
B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4
+ B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^
6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B
^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2
+ B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B
- 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A
^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^
4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c)
+ ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*
A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 1
7*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5
+ B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6
*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b
^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2
- B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^
4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^
4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B
- A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x +

```
c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A
^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6
)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6
*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B
+ A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x +
c))/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^
4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2 - ((A^4 + 2*A^2*
B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^4)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))(a+b\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))/tan(c + d*x)**(3/2), x)
```

Giac [A] time = 2.08164, size = 306, normalized size = 1.49

$$-\frac{\left(\sqrt{2}Aa-\sqrt{2}Ba-\sqrt{2}Ab-\sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)}{2d}-\frac{\left(\sqrt{2}Aa-\sqrt{2}Ba-\sqrt{2}Ab-\sqrt{2}Bb\right)\arctan}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(sqrt(2)*A*a - sqrt(2)*B*a - sqrt(2)*A*b - sqrt(2)*B*b)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d - 1/2*(sqrt(2)*A*a - sqrt(2)*B*a -
sqrt(2)*A*b - sqrt(2)*B*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x +
c))))/d + 1/4*(sqrt(2)*A*a + sqrt(2)*B*a + sqrt(2)*A*b - sqrt(2)*B*b)*log(
sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d - 1/4*(sqrt(2)*A*a + sqrt(
2)*B*a + sqrt(2)*A*b - sqrt(2)*B*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d
```

```
*x + c) + 1)/d - 2*A*a/(d*sqrt(tan(d*x + c)))
```

3.383 $\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=229

$$\frac{(a(A+B)+b(A-B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A+B)+b(A-B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2(aB+}{d\sqrt{\tan(c}$$

```
[Out] ((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) + ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a*A)/(3*d*Tan[c + d*x]^(3/2)
) - (2*(A*b + a*B))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.227881, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3591, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(a(A+B)+b(A-B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{(a(A+B)+b(A-B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2(aB+}{d\sqrt{\tan(c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] ((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d
) - ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[
2]*d) + ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
 + d*x]])/(2*Sqrt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a*A)/(3*d*Tan[c + d*x]^(3/2)
) - (2*(A*b + a*B))/(d*Sqrt[Tan[c + d*x]])
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
```

```
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} + \int \frac{Ab+aB-(aA-bB)\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

$$= -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+aB)}{d\sqrt{\tan(c+dx)}} + \int \frac{-aA+bB-(Ab+aB)\tan(c}{\sqrt{\tan(c+dx)}}$$

$$= -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+aB)}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int \frac{-aA+bB+(-Ab-aB)x^2}{1+x^4}\,dx\right.}{d}$$

$$= -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+aB)}{d\sqrt{\tan(c+dx)}} - \frac{(b(A-B)+a(A+B))\,\mathrm{Subst}\left(\int\right.}{d}$$

$$= -\frac{2aA}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+aB)}{d\sqrt{\tan(c+dx)}} - \frac{(b(A-B)+a(A+B))\,\mathrm{Subst}\left(\int\right.}{2a}$$

$$= \frac{(a(A-B)-b(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} - \frac{(a(A}{}$$

$$= \frac{(b(A-B)+a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{(b(A-B)+a(A}{}$$

Mathematica [A] time = 0.77227, size = 178, normalized size = 0.78

$$\frac{6\sqrt{2}(a(A+B)+b(A-B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)-\frac{24(aB+Ab)}{\sqrt{\tan(c+dx)}}+3\sqrt{2}(a(A-B)-}{12d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```

```
[Out] (6*Sqrt[2]*(b*(A - B) + a*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]]
- ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + 3*Sqrt[2]*(a*(A - B) - b*(A + B
))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sq
rt[Tan[c + d*x]] + Tan[c + d*x]]) - (8*a*A)/Tan[c + d*x]^(3/2) - (24*(A*b +
 a*B))/Sqrt[Tan[c + d*x]])/(12*d)
```

Maple [B] time = 0.025, size = 467, normalized size = 2.

$$-2\,{\frac{Ab}{d\sqrt{\tan\left(dx+c\right)}}}-2\,{\frac{aB}{d\sqrt{\tan\left(dx+c\right)}}}-{\frac{2\,Aa}{3\,d}\left(\tan\left(dx+c\right)\right)^{-{\frac{3}{2}}}}-{\frac{Aa\sqrt{2}}{2\,d}\arctan\left(-1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)}-{\frac{Aa\sqrt{2}}{4\,d}\ln\left(\left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -2/d/tan(d*x+c)^(1/2)*A*b-2/d*a/tan(d*x+c)^(1/2)*B-2/3*a*A/d/tan(d*x+c)^(3/
2)-1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a*A*2^(1/2)*
ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c)))-1/2/d*a*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*B*2^(1/
2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(
d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/2/d*B
*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*A*2^(1/2)*arctan(-1+2^(
1/2)*tan(d*x+c)^(1/2))*b-1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan
(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d*A*2^(1/2)*arctan(
1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*2^(1/2)-1/4/d*a*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x+c)^(
1/2))*2^(1/2)
```

Maxima [A] time = 1.76537, size = 259, normalized size = 1.13

$$-\frac{6\sqrt{2}((A+B)a+(A-B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+6\sqrt{2}((A+B)a+(A-B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm="
maxima")
```

```
[Out] -1/12*(6*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sq
rt(tan(d*x + c)))) + 6*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(-1/2*sqrt(2)*
(sqrt(2) - 2*sqrt(tan(d*x + c)))) + 3*sqrt(2)*((A - B)*a - (A + B)*b)*log(s
qrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 3*sqrt(2)*((A - B)*a - (A +
 B)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 8*(A*a + 3*(B*
a + A*b)*tan(d*x + c))/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 128.221, size = 28280, normalized size = 123.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm="
fricas")
```

```
[Out] -1/12*(12*sqrt(2)*(d^5*cos(d*x + c)^2 - d^5)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*
a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(
A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((
A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2
+ B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B
 - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*
b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan(-(((A^8 + 2*A^6*B^2 - 2*A^2*
B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 +
 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 +
 A*B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A
^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^
5 + A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4
```

+ 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B
^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a
^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4
- 2*A^2*B^2 + B^4)*b^4)/d^4) + sqrt(2)*((A*a - B*b)*d^7*sqrt(((A^4 + 2*A^2*
B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2
*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*
B^2 + B^4)*b^4)/d^4) - ((A^2*B + B^3)*a^3 + (A^3 + A*B^2)*a^2*b + (A^2*B +
B^3)*a*b^2 + (A^3 + A*B^2)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(
A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^
3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)
a^4 + 2(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*
(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/(
(A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2
 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*s
qrt((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6
- 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 +
 B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b
^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(((A^4*B - 2*
A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A
^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B -
 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 +
2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (
9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4
 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^
7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A
^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*
B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4
+ 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)
a^4 + 2(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4
))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2
*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4
))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8
 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*
(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*
B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4
 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4
+ A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2
*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*
a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)

^(3/4) - sqrt(2)*(((A^5 - A*B^4)*a^5 - (5*A^4*B + 4*A^2*B^3 - B^5)*a^4*b + 4*(A^3*B^2 + A*B^4)*a^3*b^2 - 4*(A^4*B + A^2*B^3)*a^2*b^3 - (A^5 - 4*A^3*B^2 - 5*A*B^4)*a*b^4 + (A^4*B - B^5)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^7 + (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a^6*b - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^5*b^2 + (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a^4*b^3 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^3*b^4 - (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^2*b^5 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a*b^6 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^7)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12)) + 12*sqrt(2)*(d^5*cos(d*x + c)^2 - d^5)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan((((A^8 + 2*A

^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a
^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^
3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)
*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5
*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*
d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A
^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3
)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - sqrt(2)*((A*a - B*b)*d^7*sqrt
(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 +
2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A
*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3
 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^2*B + B^3)*a^3 + (A^3 + A*B^2)*a^
2*b + (A^2*B + B^3)*a*b^2 + (A^3 + A*B^2)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 +
 B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 +
8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2
*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^
4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A
^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2
 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5
)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2
 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A
^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2
)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*
(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b
^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^
3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 +
 A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B
^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7
)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17
*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6
)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4
 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*
B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b -
2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2
*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)
a^4 + 2(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4
)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B
^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3

- A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) + sqrt(2)*(((A^5 - A*B^4)*a^5 - (5*A^4*B + 4*A^2*B^3 - B^5)*a^4*b + 4*(A^3*B^2 + A*B^4)*a^3*b^2 - 4*(A^4*B + A^2*B^3)*a^2*b^3 - (A^5 - 4*A^3*B^2 - 5*A*B^4)*a*b^4 + (A^4*B - B^5)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - ((A^6*B + A^4*B^3 - A^2*B^5 - B^7)*a^7 + (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a^6*b - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^5*b^2 + (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a^4*b^3 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^3*b^4 - (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^2*b^5 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a*b^6 - (A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*b^7)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12)) - 3*sqrt(2)*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2 - ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d - 2*((A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*cos(d*x + c)^2 - (A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3)*sqrt((

(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^
2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 +
 (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B
^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*
(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 +
B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)
/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a
^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 -
17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*
B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(
((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a^4*b - 2*(5*
A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^2*b^3
+ (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^3*B^2 + A*B^4)*b^5)*d^3*s
qrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7 - A^5*B^2 - A^3*B^4 + A*
B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a^6*b - (A^7 - 25*A^5*B^2
- 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a
^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^3*b^4 + (9*A^6*B - 17*A^
4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a
*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*cos(d*x + c))*sqrt(((A^4 +
2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^
2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B
^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(
A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^
2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^
4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(
1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 +
B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2
+ 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^
7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) + 3*sqrt(2)*((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2 - ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^
4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d - 2*((A*B*a^2
 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*cos(d*x + c)^2 - (A*B*a^2 - A*B*b^2 + (A^
2 - B^2)*a*b)*d^3)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 +
 B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 +
 B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4
 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4
)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^

4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^
2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^
4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^
4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*
a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b
^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^
5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*
a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)
*cos(d*x + c) - sqrt(2)*(((A^4*B - 2*A^2*B^3 + B^5)*a^5 + (A^5 - 10*A^3*B^2
 + 9*A*B^4)*a^4*b - 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^3*b^2 - 2*(A^5 - 14*A^
3*B^2 + 5*A*B^4)*a^2*b^3 + (9*A^4*B - 10*A^2*B^3 + B^5)*a*b^4 + (A^5 - 2*A^
3*B^2 + A*B^4)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*
B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - ((A^7
 - A^5*B^2 - A^3*B^4 + A*B^6)*a^7 - (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a
^6*b - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^5*b^2 + (A^6*B - 17*A^4*
B^3 - 17*A^2*B^5 + B^7)*a^4*b^3 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a
^3*b^4 + (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^2*b^5 + (A^7 - 9*A^5*B
^2 - A^3*B^4 + 9*A*B^6)*a*b^6 - (A^6*B - A^4*B^3 - A^2*B^5 + B^7)*b^7)*d*co
s(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a
^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 + 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a
*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b
^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A
^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3
)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A
^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^
2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 3
4*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^
7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^
3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos
(d*x + c)) - 8*(((A^5 + 2*A^3*B^2 + A*B^4)*a^5 + 2*(A^5 + 2*A^3*B^2 + A*B^4
)*a^3*b^2 + (A^5 + 2*A^3*B^2 + A*B^4)*a*b^4)*cos(d*x + c)^2 + 3*((A^4*B + 2
*A^2*B^3 + B^5)*a^5 + (A^5 + 2*A^3*B^2 + A*B^4)*a^4*b + 2*(A^4*B + 2*A^2*B^
3 + B^5)*a^3*b^2 + 2*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^3 + (A^4*B + 2*A^2*B^3
 + B^5)*a*b^4 + (A^5 + 2*A^3*B^2 + A*B^4)*b^5)*cos(d*x + c)*sin(d*x + c))*s
qrt(sin(d*x + c)/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2 - ((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)*d)

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))}{\tan^{\frac{5}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))/tan(c + d*x)**(5/2), x)
```

Giac [A] time = 1.76784, size = 336, normalized size = 1.47

$$-\frac{\left(\sqrt{2}Aa + \sqrt{2}Ba + \sqrt{2}Ab - \sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(dx + c)}\right)\right)}{2d} - \frac{\left(\sqrt{2}Aa + \sqrt{2}Ba + \sqrt{2}Ab - \sqrt{2}Bb\right)\arctan\left(\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm="
giac")
```

```
[Out] -1/2*(sqrt(2)*A*a + sqrt(2)*B*a + sqrt(2)*A*b - sqrt(2)*B*b)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d - 1/2*(sqrt(2)*A*a + sqrt(2)*B*a +
 sqrt(2)*A*b - sqrt(2)*B*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x +
 c))))/d - 1/4*(sqrt(2)*A*a - sqrt(2)*B*a - sqrt(2)*A*b - sqrt(2)*B*b)*log(
sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 1/4*(sqrt(2)*A*a - sqrt(
2)*B*a - sqrt(2)*A*b - sqrt(2)*B*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d
*x + c) + 1)/d - 2/3*(3*B*a*tan(d*x + c) + 3*A*b*tan(d*x + c) + A*a)/(d*tan
(d*x + c)^(3/2))
```

3.384 $\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=254

$$-\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(a(A-B)-b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2(aB}{3d\tan^{\frac{3}{2}}}$$

```
[Out] -(((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*d)) + ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sq
rt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*d) - ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a*A)/(5*d*Tan[c + d*x]^(5
/2)) - (2*(A*b + a*B))/(3*d*Tan[c + d*x]^(3/2)) + (2*(a*A - b*B))/(d*Sqrt[T
an[c + d*x]])
```

Rubi [A] time = 0.26259, antiderivative size = 254, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3591, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{(a(A-B)-b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2(aB}{3d\tan^{\frac{3}{2}}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] -(((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*d)) + ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sq
rt[2]*d) + ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*d) - ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a*A)/(5*d*Tan[c + d*x]^(5
/2)) - (2*(A*b + a*B))/(3*d*Tan[c + d*x]^(3/2)) + (2*(a*A - b*B))/(d*Sqrt[T
an[c + d*x]])
```


Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
```

```
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} + \int \frac{Ab+aB-(aA-bB)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)}\,dx$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \int \frac{-aA+bB-(Ab+aB)\tan(}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(aA-bB)}{d\sqrt{\tan(c+dx)}} + \int \frac{-Ab-aB}{}$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(aA-bB)}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(aA-bB)}{d\sqrt{\tan(c+dx)}} - \frac{(b(A-B)+}{}$$

$$= -\frac{2aA}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2(aA-bB)}{d\sqrt{\tan(c+dx)}} + \frac{(b(A-B)+}{}$$

$$= \frac{(b(A-B)+a(A+B))\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} - \frac{(b(A}{}$$

$$= -\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{(a(A-B)-b(}{}$$

Mathematica [A] time = 1.19663, size = 198, normalized size = 0.78

$$-\frac{30\sqrt{2}(a(A-B)-b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)+\frac{40(aB+Ab)}{\tan^{\frac{3}{2}}(c+dx)}-\frac{120(aA-bB)}{\sqrt{\tan(c+dx)}}-1}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```

```
[Out] -(30*Sqrt[2]*(a*(A - B) - b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]
] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) - 15*Sqrt[2]*(b*(A - B) + a*(A
+ B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]
*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) + (24*a*A)/Tan[c + d*x]^(5/2) + (40*(A
*b + a*B))/Tan[c + d*x]^(3/2) - (120*(a*A - b*B))/Sqrt[Tan[c + d*x]])/(60*d
)
```

Maple [B] time = 0.026, size = 497, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -2/3/d/tan(d*x+c)^(3/2)*A*b-2/3/d*a/tan(d*x+c)^(3/2)*B+2*a*A/d/tan(d*x+c)^(
1/2)-2/d/tan(d*x+c)^(1/2)*B*b-2/5*a*A/d/tan(d*x+c)^(5/2)-1/2/d*A*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*b-1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1
-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d*a*B*arctan(1+2^(1/2)*tan(d*x
+c)^(1/2))*2^(1/2)-1/2/d*a*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/
4/d*a*B*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c)))*2^(1/2)+1/4/d*a*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2/d*a*A*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*2^(1/2)-1/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*
x+c)^(1/2))*b-1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b
```

Maxima [A] time = 1.7522, size = 285, normalized size = 1.12

$$30\sqrt{2}((A-B)a-(A+B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+30\sqrt{2}((A-B)a-(A+B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm="
maxima")
```

```
[Out] 1/60*(30*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sq
rt(tan(d*x + c)))) + 30*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(-1/2*sqrt(2)
*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - 15*sqrt(2)*((A + B)*a + (A - B)*b)*log
(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 15*sqrt(2)*((A + B)*a + (
A - B)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 8*(15*(A*a
- B*b)*tan(d*x + c)^2 - 3*A*a - 5*(B*a + A*b)*tan(d*x + c))/tan(d*x + c)^(5
/2))/d
```

Fricas [B] time = 115.376, size = 29755, normalized size = 117.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm="
fricas")
```

```
[Out] -1/60*(60*sqrt(2)*(d^5*cos(d*x + c)^4 - 2*d^5*cos(d*x + c)^2 + d^5)*sqrt(((
A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4
+ 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B
^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b
 - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*
A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B
^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^
2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2
 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4)*arctan(-(((A
^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 +
A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B +
3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5
+ A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B
```

+ 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^
8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a
^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^
4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B
 - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) - sqrt(2)*((B*a + A*b)*
d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 +
 (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A
^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3
)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A^3 + A*B^2)*a^3 - (A^2*B +
 B^3)*a^2*b + (A^3 + A*B^2)*a*b^2 - (A^2*B + B^3)*b^3)*d^5*sqrt(((A^4 - 2*A
^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^
2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4
 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*
B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*
b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2
*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B
 - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17
*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4
*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c)
+ sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^
4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^
5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)
*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2
*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 -
 A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*
B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4
 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7
- 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B
^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sq
rt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*
a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4
 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^
2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*
b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B
^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B +
 A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16
*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 1
6*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 -
A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c))*(((

A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A
^2*B^2 + B^4)*b^4)/d^4)^(3/4) + sqrt(2)*(((A^4*B - B^5)*a^5 + (A^5 - 4*A^3*
B^2 - 5*A*B^4)*a^4*b - 4*(A^4*B + A^2*B^3)*a^3*b^2 - 4*(A^3*B^2 + A*B^4)*a^
2*b^3 - (5*A^4*B + 4*A^2*B^3 - B^5)*a*b^4 - (A^5 - A*B^4)*b^5)*d^7*sqrt(((A
^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^
2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3
)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A
^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^7 -
(5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^7)*a^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^
4 + 3*A*B^6)*a^5*b^2 - (9*A^6*B + 17*A^4*B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (
A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^6)*a^3*b^4 - (3*A^6*B + 7*A^4*B^3 + 5*
A^2*B^5 + B^7)*a^2*b^5 - (A^7 - 3*A^5*B^2 - 9*A^3*B^4 - 5*A*B^6)*a*b^6 + (A
^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^7)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4
- 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B -
A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4
- 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4
)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^
4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^
2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^
4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^1
2 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 -
8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b
+ 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^1
0 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3
*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 -
257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8*b^4 - 16*(A^11*B + 3*A^9*B^3 + 2*A^7*
B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*
A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 - 22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11
*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^1
2 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B
^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 -
A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4
*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 + 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2
*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^
6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*b^12)) + 60*sqrt(2)*(d^5*cos(d*x + c)^
4 - 2*d^5*cos(d*x + c)^2 + d^5)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B
*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B
^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^
2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*
B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4
)*b^4)/d^4)^(3/4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3

b - 2(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 -
2*A^2*B^2 + B^4)*b^4)/d^4)*arctan((((A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*a^8
- 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^7*b + 2*(A^8 + 2*A^6*B^2 - 2
*A^2*B^6 - B^8)*a^6*b^2 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^5*b^
3 - 12*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a^3*b^5 - 2*(A^8 + 2*A^6*B^2
- 2*A^2*B^6 - B^8)*a^2*b^6 - 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*a*b
^7 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*b^8)*d^4*sqrt(((A^4 + 2*A^2*B^2 +
B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)
/d^4)*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4
- 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 +
B^4)*b^4)/d^4) + sqrt(2)*((B*a + A*b)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sq
rt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2
*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4
)/d^4) + ((A^3 + A*B^2)*a^3 - (A^2*B + B^3)*a^2*b + (A^3 + A*B^2)*a*b^2 - (
A^2*B + B^3)*b^3)*d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)
*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^
4 - 2*A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B
*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*
A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B
^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^
2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt((((A^6 - A
^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*B^2 -
17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2*b^4
+ 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A*B^4)
*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*B^4)*
a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 + 9*A*
B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2 + B^
4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d
^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A^5*B^
2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^7)*a^
5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*A^4*B
^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*B^6)*
a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2 - A^
3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(
A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 -
A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4
+ 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A
^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^
2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*
x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B
^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*B^4 +

B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2 + 2*A
^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*b^3 -
2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7*B +
A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^2
b^6 + 8(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4 + B^8
)*b^8)*sin(d*x + c))/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(3/4) - sqrt(
2)*(((A^4*B - B^5)*a^5 + (A^5 - 4*A^3*B^2 - 5*A*B^4)*a^4*b - 4*(A^4*B + A^2
*B^3)*a^3*b^2 - 4*(A^3*B^2 + A*B^4)*a^2*b^3 - (5*A^4*B + 4*A^2*B^3 - B^5)*a
*b^4 - (A^5 - A*B^4)*b^5)*d^7*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 +
2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*sqrt(((A^4 - 2
*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*
a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4)/d^4) + ((A
^7 + A^5*B^2 - A^3*B^4 - A*B^6)*a^7 - (5*A^6*B + 9*A^4*B^3 + 3*A^2*B^5 - B^
7)*a^6*b + (A^7 + 5*A^5*B^2 + 7*A^3*B^4 + 3*A*B^6)*a^5*b^2 - (9*A^6*B + 17*
A^4*B^3 + 7*A^2*B^5 - B^7)*a^4*b^3 - (A^7 - 7*A^5*B^2 - 17*A^3*B^4 - 9*A*B^
6)*a^3*b^4 - (3*A^6*B + 7*A^4*B^3 + 5*A^2*B^5 + B^7)*a^2*b^5 - (A^7 - 3*A^5
*B^2 - 9*A^3*B^4 - 5*A*B^6)*a*b^6 + (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*b^7)*
d^5*sqrt(((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 -
10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^
4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)
*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)
*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2
*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*
(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B
^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(
((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^4)/d^4)^(3/4))/((A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6
- A^4*B^8 + 2*A^2*B^10 + B^12)*a^12 - 8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2
*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^11*b + 2*(A^12 + 10*A^10*B^2 + 31*A^8*B^4
+ 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^10*b^2 - 24*(A^11*B + 3*A
^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^9*b^3 - (A^12 - 62*A
^10*B^2 - 257*A^8*B^4 - 388*A^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^8
b^4 - 16(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)
*a^7*b^5 - 4*(A^12 - 22*A^10*B^2 - 97*A^8*B^4 - 148*A^6*B^6 - 97*A^4*B^8 -
22*A^2*B^10 + B^12)*a^6*b^6 + 16*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^
7 - 3*A^3*B^9 - A*B^11)*a^5*b^7 - (A^12 - 62*A^10*B^2 - 257*A^8*B^4 - 388*A
^6*B^6 - 257*A^4*B^8 - 62*A^2*B^10 + B^12)*a^4*b^8 + 24*(A^11*B + 3*A^9*B^3
+ 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a^3*b^9 + 2*(A^12 + 10*A^10*
B^2 + 31*A^8*B^4 + 44*A^6*B^6 + 31*A^4*B^8 + 10*A^2*B^10 + B^12)*a^2*b^10 +
8*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*a*b^11
+ (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*
b^12)) + 15*sqrt(2)*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^
4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^4 - 2*((A^4 + 2*A^
2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B

^4)*b^4)*d*cos(d*x + c)^2 + ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B
^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d + 2*((A*B*a^2 - A*B*b^2
+ (A^2 - B^2)*a*b)*d^3*cos(d*x + c)^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*
a*b)*d^3*cos(d*x + c)^2 + (A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3)*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*
A^2*B^2 + B^4)*b^4)/d^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^
2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 +
(A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B
^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*
(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 +
B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)
/d^4)^(1/4)*log((((A^6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a
^5*b - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 -
17*A^2*B^4 + B^6)*a^2*b^4 + 8*(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*
B^4 + B^6)*b^6)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2
+ B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + sqrt(2)*(
((A^5 - 2*A^3*B^2 + A*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^
5 - 14*A^3*B^2 + 5*A*B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3
+ (A^5 - 10*A^3*B^2 + 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*s
qrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
+ 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 +
B^7)*a^7 + (A^7 - 9*A^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*
B^3 - 25*A^2*B^5 + B^7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a
^4*b^3 - (A^6*B - 17*A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^
2 - 17*A^3*B^4 + 9*A*B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a
*b^6 + (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 +
2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2
+ B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^
2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B
^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(
A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^
2 + B^4)*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^
4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(
1/4) + ((A^8 - 2*A^4*B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)
*a^7*b + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 -
A^3*B^5 - A*B^7)*a^5*b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 +
B^8)*a^4*b^4 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2
+ 2*A^4*B^4 + A^2*B^6)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^
7 + (A^8 - 2*A^4*B^4 + B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - 15*sqrt(2)*(
((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2
*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^4 - 2*((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*
(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x +
c)^2 + ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (
A^4 + 2*A^2*B^2 + B^4)*b^4)*d + 2*((A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^

3*cos(d*x + c)^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3*cos(d*x + c)
^2 + (A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^3)*sqrt(((A^4 + 2*A^2*B^2 + B^
4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d
^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2
+ (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2
*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A
^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4 - 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B -
A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3
 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2
*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4)*log((((A^
6 - A^4*B^2 - A^2*B^4 + B^6)*a^6 - 8*(A^5*B - A*B^5)*a^5*b - (A^6 - 17*A^4*
B^2 - 17*A^2*B^4 + B^6)*a^4*b^2 - (A^6 - 17*A^4*B^2 - 17*A^2*B^4 + B^6)*a^2
b^4 + 8(A^5*B - A*B^5)*a*b^5 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*b^6)*d^2*s
qrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4
 + 2*A^2*B^2 + B^4)*b^4)/d^4)*cos(d*x + c) - sqrt(2)*(((A^5 - 2*A^3*B^2 + A
*B^4)*a^5 - (9*A^4*B - 10*A^2*B^3 + B^5)*a^4*b - 2*(A^5 - 14*A^3*B^2 + 5*A*
B^4)*a^3*b^2 + 2*(5*A^4*B - 14*A^2*B^3 + B^5)*a^2*b^3 + (A^5 - 10*A^3*B^2 +
 9*A*B^4)*a*b^4 - (A^4*B - 2*A^2*B^3 + B^5)*b^5)*d^3*sqrt(((A^4 + 2*A^2*B^2
 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b
^4)/d^4)*cos(d*x + c) + ((A^6*B - A^4*B^3 - A^2*B^5 + B^7)*a^7 + (A^7 - 9*A
^5*B^2 - A^3*B^4 + 9*A*B^6)*a^6*b - (9*A^6*B - 17*A^4*B^3 - 25*A^2*B^5 + B^
7)*a^5*b^2 - (A^7 - 17*A^5*B^2 - 17*A^3*B^4 + A*B^6)*a^4*b^3 - (A^6*B - 17*
A^4*B^3 - 17*A^2*B^5 + B^7)*a^3*b^4 - (A^7 - 25*A^5*B^2 - 17*A^3*B^4 + 9*A*
B^6)*a^2*b^5 + (9*A^6*B - A^4*B^3 - 9*A^2*B^5 + B^7)*a*b^6 + (A^7 - A^5*B^2
 - A^3*B^4 + A*B^6)*b^7)*d*cos(d*x + c))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4
+ 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4 - 2*(A*B*
a^2 - A*B*b^2 + (A^2 - B^2)*a*b)*d^2*sqrt(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*
(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4))/((A^4
- 2*A^2*B^2 + B^4)*a^4 - 8*(A^3*B - A*B^3)*a^3*b - 2*(A^4 - 10*A^2*B^2 + B^
4)*a^2*b^2 + 8*(A^3*B - A*B^3)*a*b^3 + (A^4 - 2*A^2*B^2 + B^4)*b^4))*sqrt(s
in(d*x + c)/cos(d*x + c))*(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^
2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)/d^4)^(1/4) + ((A^8 - 2*A^4*
B^4 + B^8)*a^8 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^7*b + 16*(A^6*B^2
+ 2*A^4*B^4 + A^2*B^6)*a^6*b^2 - 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^5*
b^3 - 2*(A^8 - 16*A^6*B^2 - 34*A^4*B^4 - 16*A^2*B^6 + B^8)*a^4*b^4 + 8*(A^7
*B + A^5*B^3 - A^3*B^5 - A*B^7)*a^3*b^5 + 16*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6
)*a^2*b^6 + 8*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*a*b^7 + (A^8 - 2*A^4*B^4
+ B^8)*b^8)*sin(d*x + c))/cos(d*x + c)) - 8*(5*((A^4*B + 2*A^2*B^3 + B^5)*a
^5 + (A^5 + 2*A^3*B^2 + A*B^4)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5)*a^3*b^2
+ 2*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^3 + (A^4*B + 2*A^2*B^3 + B^5)*a*b^4 + (
A^5 + 2*A^3*B^2 + A*B^4)*b^5)*cos(d*x + c)^4 - 5*((A^4*B + 2*A^2*B^3 + B^5)
*a^5 + (A^5 + 2*A^3*B^2 + A*B^4)*a^4*b + 2*(A^4*B + 2*A^2*B^3 + B^5)*a^3*b^
2 + 2*(A^5 + 2*A^3*B^2 + A*B^4)*a^2*b^3 + (A^4*B + 2*A^2*B^3 + B^5)*a*b^4 +
 (A^5 + 2*A^3*B^2 + A*B^4)*b^5)*cos(d*x + c)^2 - 3*((6*(A^5 + 2*A^3*B^2 + A
*B^4)*a^5 - 5*(A^4*B + 2*A^2*B^3 + B^5)*a^4*b + 12*(A^5 + 2*A^3*B^2 + A*B^4

```
)*a^3*b^2 - 10*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + 6*(A^5 + 2*A^3*B^2 + A*B
^4)*a*b^4 - 5*(A^4*B + 2*A^2*B^3 + B^5)*b^5)*cos(d*x + c)^3 - 5*((A^5 + 2*A
^3*B^2 + A*B^4)*a^5 - (A^4*B + 2*A^2*B^3 + B^5)*a^4*b + 2*(A^5 + 2*A^3*B^2
+ A*B^4)*a^3*b^2 - 2*(A^4*B + 2*A^2*B^3 + B^5)*a^2*b^3 + (A^5 + 2*A^3*B^2 +
 A*B^4)*a*b^4 - (A^4*B + 2*A^2*B^3 + B^5)*b^5)*cos(d*x + c))*sin(d*x + c))*
sqrt(sin(d*x + c)/cos(d*x + c)))/(((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2
*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^4 - 2
*((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 +
2*A^2*B^2 + B^4)*b^4)*d*cos(d*x + c)^2 + ((A^4 + 2*A^2*B^2 + B^4)*a^4 + 2*(
A^4 + 2*A^2*B^2 + B^4)*a^2*b^2 + (A^4 + 2*A^2*B^2 + B^4)*b^4)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))}{\tan^{\frac{7}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))/tan(c + d*x)**(7/2), x)
```

Giac [A] time = 1.348, size = 370, normalized size = 1.46

$$\frac{\left(\sqrt{2}Aa - \sqrt{2}Ba - \sqrt{2}Ab - \sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(dx + c)}\right)\right)}{2d} + \frac{\left(\sqrt{2}Aa - \sqrt{2}Ba - \sqrt{2}Ab - \sqrt{2}Bb\right)\arctan\left(-\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm="
giac")
```

```
[Out] 1/2*(sqrt(2)*A*a - sqrt(2)*B*a - sqrt(2)*A*b - sqrt(2)*B*b)*arctan(1/2*sqrt
(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d + 1/2*(sqrt(2)*A*a - sqrt(2)*B*a -
sqrt(2)*A*b - sqrt(2)*B*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x +
c))))/d - 1/4*(sqrt(2)*A*a + sqrt(2)*B*a + sqrt(2)*A*b - sqrt(2)*B*b)*log(s
qrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 1/4*(sqrt(2)*A*a + sqrt(2
)*B*a + sqrt(2)*A*b - sqrt(2)*B*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*
```

```
x + c) + 1)/d + 2/15*(15*A*a*tan(d*x + c)^2 - 15*B*b*tan(d*x + c)^2 - 5*B*a
*tan(d*x + c) - 5*A*b*tan(d*x + c) - 3*A*a)/(d*tan(d*x + c)^(5/2))
```

3.385 $\int \tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=394

$$\frac{2\left(a^2B+2aAb-b^2B\right)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{2\left(a^2A-2abB-Ab^2\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan}{\sqrt{2}d}$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A +
B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*(2*a*A*b + a^2*B - b^2*
B)*Sqrt[Tan[c + d*x]])/d + (2*(a^2*A - A*b^2 - 2*a*b*B)*Tan[c + d*x]^(3/2))
/(3*d) + (2*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x]^(5/2))/(5*d) + (2*b*(9*A
*b + 11*a*B)*Tan[c + d*x]^(7/2))/(63*d) + (2*b*B*Tan[c + d*x]^(7/2)*(a + b*
Tan[c + d*x]))/(9*d)
```

Rubi [A] time = 0.667325, antiderivative size = 394, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3607, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2\left(a^2B+2aAb-b^2B\right)\tan^{\frac{5}{2}}(c+dx)}{5d}+\frac{2\left(a^2A-2abB-Ab^2\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A +
B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*(2*a*A*b + a^2*B - b^2*
B)*Sqrt[Tan[c + d*x]])/d + (2*(a^2*A - A*b^2 - 2*a*b*B)*Tan[c + d*x]^(3/2))
/(3*d) + (2*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x]^(5/2))/(5*d) + (2*b*(9*A
*b + 11*a*B)*Tan[c + d*x]^(7/2))/(63*d) + (2*b*B*Tan[c + d*x]^(7/2)*(a + b*
```

```
Tan[c + d*x]))/(9*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
```

```
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))}{9d} + \frac{2}{9}\int \tan^{\frac{5}{2}}(c+dx)$$

$$= \frac{2b(9Ab+11aB)\tan^{\frac{7}{2}}(c+dx)}{63d} + \frac{2bB\tan^{\frac{7}{2}}(c+dx)(a+b\tan}{9d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\tan^{\frac{5}{2}}(c+dx)}{5d} + \frac{2b(9Ab+11aB)\tan}{63d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2\left(2aAb+a^2B-b\right.}{5d}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(a^2A-Ab^2-\right.}{}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(a^2A-Ab^2-\right.}{}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(a^2A-Ab^2-\right.}{}$$

$$= -\frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(a^2A-Ab^2-\right.}{}$$

$$= -\frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan\right.}{2\sqrt{2}d}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan\right.}{\sqrt{2}d}$$

Mathematica [C] time = 6.05628, size = 205, normalized size = 0.52

$$\frac{2\sqrt{\tan(c+dx)}\left(63\left(a^2B+2aAb-b^2B\right)\tan^2(c+dx)+105\left(a^2A-2abB-Ab^2\right)\tan(c+dx)-315\left(a^2B+2aAb-b^2B\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-315*(-1)^(1/4)*(a - I*b)^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]
] + 315*(-1)^(3/4)*(a + I*b)^2*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*
x]]] + 2*Sqrt[Tan[c + d*x]]*(-315*(2*a*A*b + a^2*B - b^2*B) + 105*(a^2*A -
```

```
A*b^2 - 2*a*b*B)*Tan[c + d*x] + 63*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x]^2
 + 45*b*(A*b + 2*a*B)*Tan[c + d*x]^3 + 35*b^2*B*Tan[c + d*x]^4))/(315*d)
```

Maple [B] time = 0.022, size = 858, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/4/d*a^2*A*ln((1-2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
*2^(1/2)-1/2/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^2*
A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+4/7/d*B*tan(d*x+c)^(7/2)*a*b-2
/5/d*B*tan(d*x+c)^(5/2)*b^2+2/9/d*b^2*B*tan(d*x+c)^(9/2)+1/2/d*A*2^(1/2)*ar
ctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-2/3/d*A*tan(d*x+c)^(3/2)*b^2+2/7/d*A*
tan(d*x+c)^(7/2)*b^2+1/2/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2
)+1/4/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^
(1/2))*b^2+2/5/d*a^2*B*tan(d*x+c)^(5/2)+2/3/d*a^2*A*tan(d*x+c)^(3/2)-2/d*a^
2*B*tan(d*x+c)^(1/2)-1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2-1/2/d*B*2^(1/2)*arctan(1+
2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+4/5/d*A*tan(d*x+
c)^(5/2)*a*b-4/3/d*B*tan(d*x+c)^(3/2)*a*b-4/d*A*tan(d*x+c)^(1/2)*a*b-1/2/d*
B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/d*A*2^(1/2)*arctan(-1+2
^(1/2)*tan(d*x+c)^(1/2))*a*b+1/2/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)
+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d*A*2^(1/2)*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x
+c)^(1/2))*a*b+1/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/2/d*A
*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*a*b+2*b^2*B*tan(d*x+c)^(1/2)/d
```

Maptima [A] time = 1.75741, size = 444, normalized size = 1.13

$$\frac{280\,Bb^{2}\tan\left(dx+c\right)^{\frac{9}{2}}+360\left(2\,Bab+Ab^{2}\right)\tan\left(dx+c\right)^{\frac{7}{2}}+504\left(Ba^{2}+2\,Aab-Bb^{2}\right)\tan\left(dx+c\right)^{\frac{5}{2}}-630\,\sqrt{2}\left(\left(A-B\right)a^{2}-\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/1260*(280*B*b^2*tan(d*x + c)^(9/2) + 360*(2*B*a*b + A*b^2)*tan(d*x + c)^(
7/2) + 504*(B*a^2 + 2*A*a*b - B*b^2)*tan(d*x + c)^(5/2) - 630*sqrt(2)*((A -
 B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt
(tan(d*x + c)))) - 630*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*
arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + 315*sqrt(2)*((A + B
)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d
*x + c) + 1) - 315*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(
-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 840*(A*a^2 - 2*B*a*b - A*
b^2)*tan(d*x + c)^(3/2) - 2520*(B*a^2 + 2*A*a*b - B*b^2)*sqrt(tan(d*x + c))
)/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.386 $\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=360

$$\frac{2\left(a^2B+2aAb-b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(a^2(A+\right.}{}$$

```
[Out] ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B)
 - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(a^2*A - A*b^2 - 2*a*b*
B)*Sqrt[Tan[c + d*x]])/d + (2*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x]^(3/2))
/(3*d) + (2*b*(7*A*b + 9*a*B)*Tan[c + d*x]^(5/2))/(35*d) + (2*b*B*Tan[c + d
*x]^(5/2)*(a + b*Tan[c + d*x]))/(7*d)
```

Rubi [A] time = 0.582721, antiderivative size = 360, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3607, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2\left(a^2B+2aAb-b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(a^2(A+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B)
 - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(a^2*A - A*b^2 - 2*a*b*
B)*Sqrt[Tan[c + d*x]])/d + (2*(2*a*A*b + a^2*B - b^2*B)*Tan[c + d*x]^(3/2))
/(3*d) + (2*b*(7*A*b + 9*a*B)*Tan[c + d*x]^(5/2))/(35*d) + (2*b*B*Tan[c + d
*x]^(5/2)*(a + b*Tan[c + d*x]))/(7*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}{7d}+\frac{2}{7}\int \tan^{\frac{3}{2}}(c+dx)\Big($$

$$= \frac{2b(7Ab+9aB)\tan^{\frac{5}{2}}(c+dx)}{35d}+\frac{2bB\tan^{\frac{5}{2}}(c+dx)(a+b\tan$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{2b(7Ab+9aB)\tan^{\frac{5}{2}}}{35d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\tan(c+dx)}}{d}+\frac{2\left(2aAb+a^2B-b^2\right.}{3d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\tan(c+dx)}}{d}+\frac{2\left(2aAb+a^2B-b^2\right.}{3d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\tan(c+dx)}}{d}+\frac{2\left(2aAb+a^2B-b^2\right.}{3d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\tan(c+dx)}}{d}+\frac{2\left(2aAb+a^2B-b^2\right.}{3d}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan(c\right.}{2\sqrt{2}d}$$

$$= \frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan\right.}{\sqrt{2}d}$$

Mathematica [C] time = 2.12916, size = 178, normalized size = 0.49

$$\frac{2\sqrt{\tan(c+dx)}\left(35\left(a^2B+2aAb-b^2B\right)\tan(c+dx)+105\left(a^2A-2abB-Ab^2\right)+21b(2aB+Ab)\tan^2(c+dx)+15b^2B\,\mathrm{ta}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (105*(-1)^(1/4)*(a - I*b)^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
 + 105*(-1)^(1/4)*(a + I*b)^2*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x
]]] + 2*Sqrt[Tan[c + d*x]]*(105*(a^2*A - A*b^2 - 2*a*b*B) + 35*(2*a*A*b + a
^2*B - b^2*B)*Tan[c + d*x] + 21*b*(A*b + 2*a*B)*Tan[c + d*x]^2 + 15*b^2*B*T
an[c + d*x]^3))/(105*d)
```

Maple [B] time = 0.024, size = 810, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2/d*a^2*A*arctan(
-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*t
an(d*x+c)^(1/2))+4/3/d*A*tan(d*x+c)^(3/2)*a*b-1/4/d*a^2*A*2^(1/2)*ln((1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-
1/4/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(
1/2))*b^2-2/d*A*b^2*tan(d*x+c)^(1/2)-2/3/d*b^2*B*tan(d*x+c)^(3/2)+2/7/d*b^2
*B*tan(d*x+c)^(7/2)+2/5/d*A*tan(d*x+c)^(5/2)*b^2-1/2/d*a^2*B*arctan(-1+2^(1
/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/2/d*A*2^(1/2)*
arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+4/5/d*B*tan(d*x+c)^(5/2)*a*b+1/4/d*A
*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*b^2+2/3/d*a^2*B*tan(d*x+c)^(3/2)+2/d*a^2*A*tan(d*x+c)^(1/
2)-4/d*B*a*b*tan(d*x+c)^(1/2)+1/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(
1/2))*b^2+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/d*A*2^(
1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d*A*2^(1/2)*ln((1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1
/2/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))*a*b-1/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2)
)*a*b+1/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/d*B*2^(1/2)*a
rctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b
```

Maxima [A] time = 1.77203, size = 408, normalized size = 1.13

$$\frac{120\, Bb^2 \tan\left(dx+c\right)^{\frac{7}{2}} + 168\left(2\, Bab + Ab^2\right) \tan\left(dx+c\right)^{\frac{5}{2}} - 210\, \sqrt{2}\left(\left(A+B\right)a^2 + 2\left(A-B\right)ab - \left(A+B\right)b^2\right) \arctan\left(\frac{1}{2}\, \sqrt{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/420*(120*B*b^2*tan(d*x + c)^(7/2) + 168*(2*B*a*b + A*b^2)*tan(d*x + c)^(5
/2) - 210*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*arctan(1/2*sq
rt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) - 210*sqrt(2)*((A + B)*a^2 + 2*(A -
 B)*a*b - (A + B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))
) - 105*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*log(sqrt(2)*sqr
t(tan(d*x + c)) + tan(d*x + c) + 1) + 105*sqrt(2)*((A - B)*a^2 - 2*(A + B)*
a*b - (A - B)*b^2)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 28
0*(B*a^2 + 2*A*a*b - B*b^2)*tan(d*x + c)^(3/2) + 840*(A*a^2 - 2*B*a*b - A*b
^2)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.387 $\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=326

$$-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(\sqrt{\right.}{\sqrt{2}d}$$

```
[Out] -(((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*d)) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((2*a*b*(A - B) + a^2*(A
 + B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(2*a*A*b + a^2*B - b
^2*B)*Sqrt[Tan[c + d*x]])/d + (2*b*(5*A*b + 7*a*B)*Tan[c + d*x]^(3/2))/(15*
d) + (2*b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x]))/(5*d)
```

Rubi [A] time = 0.519279, antiderivative size = 326, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3607, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(\sqrt{\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*d)) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((2*a*b*(A - B) + a^2*(A
 + B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(2*a*A*b + a^2*B - b
^2*B)*Sqrt[Tan[c + d*x]])/d + (2*b*(5*A*b + 7*a*B)*Tan[c + d*x]^(3/2))/(15*
d) + (2*b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x]))/(5*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}{5d} + \frac{2}{5}\int \sqrt{\tan(c+d}$$

$$= \frac{2b(5Ab+7aB)\tan^{\frac{3}{2}}(c+dx)}{15d} + \frac{2bB\tan^{\frac{3}{2}}(c+dx)(a+b\,\mathrm{t}}{5d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b(5Ab+7aB)\,\mathrm{ta}}{15d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b(5Ab+7aB)\,\mathrm{ta}}{15d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b(5Ab+7aB)\,\mathrm{ta}}{15d}$$

$$= \frac{2\left(2aAb+a^2B-b^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b(5Ab+7aB)\,\mathrm{ta}}{15d}$$

$$= \frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan}\right.}{2\sqrt{2}d}$$

$$= -\frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{}\right.}{\sqrt{2}d}$$

Mathematica [C] time = 1.19863, size = 151, normalized size = 0.46

$$\frac{2\sqrt{\tan(c+dx)}\left(15\left(a^2B+2aAb-b^2B\right)+5b(2aB+Ab)\tan(c+dx)+3b^2B\tan^2(c+dx)\right)+15\sqrt[4]{-1}(a-ib)^2(B+iA)\,\mathrm{ta}}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (15*(-1)^(1/4)*(a - I*b)^2*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
- 15*(-1)^(3/4)*(a + I*b)^2*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]
] + 2*Sqrt[Tan[c + d*x]]*(15*(2*a*A*b + a^2*B - b^2*B) + 5*b*(A*b + 2*a*B)*
Tan[c + d*x] + 3*b^2*B*Tan[c + d*x]^2))/(15*d)
```

Maple [B] time = 0.022, size = 762, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 2/5/d*B*tan(d*x+c)^(5/2)*b^2+2/3/d*A*tan(d*x+c)^(3/2)*b^2+4/3/d*B*tan(d*x+c
)^(3/2)*a*b+4/d*A*tan(d*x+c)^(1/2)*a*b+2/d*a^2*B*tan(d*x+c)^(1/2)-2*b^2*B*t
an(d*x+c)^(1/2)/d-1/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*
A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d*A*2^(1/2)*ln((1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*
a*b-1/2/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+1/2/d*B*2^(1/2)*
arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d*a^2*B*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*2^(1/2)+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2
-1/4/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))+1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/4/d*a^2*A*ln((
1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c)))*2^(1/2)-1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/2/d*a^2*A*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))-1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^
2+1/2/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*A*2^(1/2)*a
rctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b-1/d*B*2
^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*B*2^(1/2)*arctan(-1+2^(1/
2)*tan(d*x+c)^(1/2))*a*b
```

Maxima [A] time = 1.71455, size = 371, normalized size = 1.14

$$\frac{24\,Bb^2\tan\left(dx+c\right)^{\frac{5}{2}} + 30\,\sqrt{2}\left((A-B)a^2 - 2\,(A+B)ab - (A-B)b^2\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right) + 30\,\sqrt{2}\left((A-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/60*(24*B*b^2*tan(d*x + c)^(5/2) + 30*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b
 - (A - B)*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 30*s
qrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(-1/2*sqrt(2)*(sqr
t(2) - 2*sqrt(tan(d*x + c)))) - 15*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (
A + B)*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 15*sqrt(2)
*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(-sqrt(2)*sqrt(tan(d*x + c)
```

```
) + tan(d*x + c) + 1) + 40*(2*B*a*b + A*b^2)*tan(d*x + c)^(3/2) + 120*(B*a^
2 + 2*A*a*b - B*b^2)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))^2\sqrt{\tan(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2*sqrt(tan(c + d*x)), x
)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.388 $\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=294

$$-\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(\sqrt{\right.}}{\sqrt{2}d}$$

```
[Out] -(((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*d)) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A -
 B) - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*(3*A*b + 5*a*B)*Sq
rt[Tan[c + d*x]])/(3*d) + (2*b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]))/(
3*d)
```

Rubi [A] time = 0.454967, antiderivative size = 294, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {3607, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(\sqrt{\right.}}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] -(((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*d)) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A -
 B) - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*(3*A*b + 5*a*B)*Sq
rt[Tan[c + d*x]])/(3*d) + (2*b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]))/(
3*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}{3d} + \frac{2}{3}\int \frac{\frac{1}{2}a(3aA-bB)+\frac{3}{2}\left(2aAb\right.}{}$$

$$= \frac{2b(3Ab+5aB)\sqrt{\tan(c+dx)}}{3d} + \frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}{3d}$$

$$= \frac{2b(3Ab+5aB)\sqrt{\tan(c+dx)}}{3d} + \frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}{3d}$$

$$= \frac{2b(3Ab+5aB)\sqrt{\tan(c+dx)}}{3d} + \frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}{3d}$$

$$= \frac{2b(3Ab+5aB)\sqrt{\tan(c+dx)}}{3d} + \frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}{3d}$$

$$= -\frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\text{ta}\right.}{2\sqrt{2}d}$$

$$= -\frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}$$

Mathematica [C] time = 0.516029, size = 119, normalized size = 0.4

$$\frac{-3\sqrt[4]{-1}(a-ib)^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+2b\sqrt{\tan(c+dx)}(6aB+3Ab+bB\tan(c+dx))-3\sqrt[4]{-1}(a+ib)^2}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
x]
```

```
[Out] (-3*(-1)^(1/4)*(a - I*b)^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
- 3*(-1)^(1/4)*(a + I*b)^2*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
 + 2*b*Sqrt[Tan[c + d*x]]*(3*A*b + 6*a*B + b*B*Tan[c + d*x]))/(3*d)
```

Maple [B] time = 0.021, size = 710, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 2/3/d*b^2*B*tan(d*x+c)^(3/2)+2/d*A*b^2*tan(d*x+c)^(1/2)+4/d*B*a*b*tan(d*x+c
)^(1/2)+1/2/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2/d*A*2^(1
/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/2/d*a^2*A*arctan(-1+2^(1/2)*ta
n(d*x+c)^(1/2))*2^(1/2)-1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*b^2+1/4/d*a^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^
(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2-1/d*B*2^(1/2
)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*B*2^(1/2)*arctan(-1+2^(1/2)*ta
n(d*x+c)^(1/2))*a*b-1/2/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/2/d*A*2^(1/2)*ln((1-2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a
*b+1/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/d*A*2^(1/2)*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/4/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/4/d*B*2^(
1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)
+tan(d*x+c)))*b^2+1/2/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/
2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/2/d*a^2*B*arctan(-1+
2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x
+c)^(1/2))*b^2
```

Maxima [A] time = 1.67859, size = 335, normalized size = 1.14

$$\frac{8\,Bb^2\tan\left(dx+c\right)^{\frac{3}{2}} + 6\,\sqrt{2}\left((A+B)a^2 + 2\,(A-B)ab - (A+B)b^2\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2} + 2\,\sqrt{\tan\left(dx+c\right)}\right)\right) + 6\,\sqrt{2}\left((A+B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/12*(8*B*b^2*tan(d*x + c)^(3/2) + 6*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b -
 (A + B)*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 6*sqrt
(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2
) - 2*sqrt(tan(d*x + c)))) + 3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A -
B)*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 3*sqrt(2)*((A
- B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*log(-sqrt(2)*sqrt(tan(d*x + c)) + t
an(d*x + c) + 1) + 24*(2*B*a*b + A*b^2)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))^2}{\sqrt{\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2/sqrt(tan(c + d*x)), x
)
```

Giac [A] time = 1.52451, size = 490, normalized size = 1.67

$$\frac{\left(\sqrt{2}Aa^2 + \sqrt{2}Ba^2 + 2\sqrt{2}Aab - 2\sqrt{2}Bab - \sqrt{2}Ab^2 - \sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(dx + c)}\right)\right)}{2d} + \frac{\left(\sqrt{2}Aa^2 + \sqrt{2}B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] 1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b - 2*sqrt(2)*B*a*b - sq
rt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x +
 c))))/d + 1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b - 2*sqrt(2)
*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sq
rt(tan(d*x + c))))/d + 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b
```

```
 - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d*
x + c)) + tan(d*x + c) + 1)/d - 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt
(2)*A*a*b - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(-sqrt(2)*s
qrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 2/3*(B*b^2*d^2*tan(d*x + c)^(3/2)
 + 6*B*a*b*d^2*sqrt(tan(d*x + c)) + 3*A*b^2*d^2*sqrt(tan(d*x + c)))/d^3
```

3.389 $\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=276

$$\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(\sqrt{\right.}{\sqrt{2}d}$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A +
B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*A)/(d*Sqrt[Tan[c +
d*x]]) + (2*b^2*B*Sqrt[Tan[c + d*x]])/d
```

Rubi [A] time = 0.343377, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {3604, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(\sqrt{\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```

```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A +
B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*A)/(d*Sqrt[Tan[c +
d*x]]) + (2*b^2*B*Sqrt[Tan[c + d*x]])/d
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
```

```
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2a^2A}{d\sqrt{\tan(c+dx)}} + \int \frac{a(2Ab+aB)-\left(a^2A-Ab^2-2abB\right)\tan(c+dx}{\sqrt{\tan(c+dx)}}$$

$$= -\frac{2a^2A}{d\sqrt{\tan(c+dx)}} + \frac{2b^2B\sqrt{\tan(c+dx)}}{d} + \int \frac{2aAb+a^2B-b^2B-\left(a^2A\right.}{\sqrt{\tan}}$$

$$= -\frac{2a^2A}{d\sqrt{\tan(c+dx)}} + \frac{2b^2B\sqrt{\tan(c+dx)}}{d} + \frac{2\,\mathrm{Subst}\left(\int \frac{2aAb+a^2B-b^2B+\left(-a^2\right.}{1+x}\right.}{}$$

$$= -\frac{2a^2A}{d\sqrt{\tan(c+dx)}} + \frac{2b^2B\sqrt{\tan(c+dx)}}{d} - \frac{\left(a^2(A-B)-b^2(A-B)-2a\right.}{}$$

$$= -\frac{2a^2A}{d\sqrt{\tan(c+dx)}} + \frac{2b^2B\sqrt{\tan(c+dx)}}{d} - \frac{\left(a^2(A-B)-b^2(A-B)-2a\right.}{}$$

$$= -\frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\mathrm{t}\right.}{2\sqrt{2}d}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} -$$

Mathematica [C] time = 0.896573, size = 211, normalized size = 0.76

$$\frac{-8\left(a^2A-2abB-Ab^2\right)\text{Hypergeometric2F1}\left(-\frac{1}{4},1,\frac{3}{4},-\tan^2(c+dx)\right)-\sqrt{2}\left(a^2B+2aAb-b^2B\right)\sqrt{\tan(c+dx)}\left(2\tan^{-1}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
x]
```

```
[Out] (-8*b*(A*b + 3*a*B) - 8*(a^2*A - A*b^2 - 2*a*b*B)*Hypergeometric2F1[-1/4, 1
, 3/4, -Tan[c + d*x]^2] - Sqrt[2]*(2*a*A*b + a^2*B - b^2*B)*(2*ArcTan[1 - S
qrt[2]*Sqrt[Tan[c + d*x]]] - 2*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] + Log
[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[
c + d*x]] + Tan[c + d*x]])*Sqrt[Tan[c + d*x]] + 8*b*B*(a + b*Tan[c + d*x]))
/(4*d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.026, size = 692, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] 2*b^2*B*tan(d*x+c)^(1/2)/d-2*a^2*A/d/tan(d*x+c)^(1/2)+1/d*A*2^(1/2)*arctan(
-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/2/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d*A*2^(1/2)
*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/2/d*a^2*B*arctan(-1+2^(1/2)*tan(d
*x+c)^(1/2))*2^(1/2)-1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^
2+1/4/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/2/d*a^2*B*2^(
1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))-1/2/d*B*2^(1/2)*arctan(1+2^(1/2)*ta
n(d*x+c)^(1/2))*b^2-1/4/d*a^2*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/
(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/4/d*A*2^(1/2)*ln((1-2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b
^2-1/2/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*A*2^(1/2)*
arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d*a^2*A*2^(1/2)*arctan(1+2^(1/2
)*tan(d*x+c)^(1/2))+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+
1/2/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d
```

```
*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/
2))*a*b+1/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b
```

Maxima [A] time = 1.79203, size = 324, normalized size = 1.17

$$\frac{8\,Bb^2\sqrt{\tan\left(dx+c\right)} - 2\,\sqrt{2}\Big((A-B)a^2 - 2\,(A+B)ab - (A-B)b^2\Big)\arctan\left(\frac{1}{2}\,\sqrt{2}\Big(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\Big)\right) - 2\,\sqrt{2}\Big((A-B\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(8*B*b^2*sqrt(tan(d*x + c)) - 2*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b -
(A - B)*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) - 2*sqrt(
2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2)
 - 2*sqrt(tan(d*x + c)))) + sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*
b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*((A + B)*
a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*
x + c) + 1) - 8*A*a^2/sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(A + B\tan\left(c + dx\right)\right)\left(a + b\tan\left(c + dx\right)\right)^2}{\tan^{\frac{3}{2}}\left(c + dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2/tan(c + d*x)**(3/2),
x)
```

Giac [A] time = 1.63249, size = 462, normalized size = 1.67

$$\frac{2\,Bb^2\sqrt{\tan\left(dx+c\right)}}{d}-\frac{2\,Aa^2}{d\sqrt{\tan\left(dx+c\right)}}-\frac{\left(\sqrt{2}Aa^2-\sqrt{2}Ba^2-2\,\sqrt{2}Aab-2\,\sqrt{2}Bab-\sqrt{2}Ab^2+\sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}\right.\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*B*b^2*sqrt(tan(d*x + c))/d - 2*A*a^2/(d*sqrt(tan(d*x + c))) - 1/2*(sqrt(2
)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2
 + sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d -
1/2*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b - 2*sqrt(2)*B*a*b - sq
rt(2)*A*b^2 + sqrt(2)*B*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x
+ c))))/d + 1/4*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b - 2*sqrt(2
)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + t
an(d*x + c) + 1)/d - 1/4*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b -
 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*log(-sqrt(2)*sqrt(tan(d*x
 + c)) + tan(d*x + c) + 1)/d
```

3.390 $\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=283

$$\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(\sqrt{}\right.}{\sqrt{2}d}$$

```
[Out] ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B)
 - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*A)/(3*d*Tan[c + d*x
]^(3/2)) - (2*a*(2*A*b + a*B))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.354313, antiderivative size = 283, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {3604, 3628, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\tan^{-1}\left(\sqrt{}\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B)
 - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sq
rt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt[2]*Sqr
t[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*A)/(3*d*Tan[c + d*x
]^(3/2)) - (2*a*(2*A*b + a*B))/(d*Sqrt[Tan[c + d*x]])
```


Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
```

```
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2a^2A}{3d\tan^{\frac{3}{2}}(c+dx)} + \int \frac{a(2Ab+aB)-\left(a^2A-Ab^2-2abB\right)\tan(c+d}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2a^2A}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{d\sqrt{\tan(c+dx)}} + \int \frac{-a^2A+Ab^2+2abB+\left(b^2B\right.}{\sqrt{\tan(}}$$

$$= -\frac{2a^2A}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int \frac{-a^2A+Ab^2+2abB+\left(b^2B-\right.}{1+x^4}\right.}{}$$

$$= -\frac{2a^2A}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{d\sqrt{\tan(c+dx)}} - \frac{\left(a^2(A-B)-b^2(A-B)-2ab(\right.}{}$$

$$= -\frac{2a^2A}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{d\sqrt{\tan(c+dx)}} + \frac{\left(a^2(A-B)-b^2(A-B)-2ab(\right.}{}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan\right.}{2\sqrt{2}d}$$

$$= \frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} -$$

Mathematica [C] time = 0.687083, size = 119, normalized size = 0.42

$$\frac{2\left(a^2(-A)+2abB+Ab^2\right)\text{Hypergeometric2F1}\left(-\frac{3}{4},1,\frac{1}{4},-\tan^2(c+dx)\right)-6\left(a^2B+2aAb-b^2B\right)\tan(c+dx)\text{Hyperge}}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),
x]
```

```
[Out] (2*(-(a^2*A) + A*b^2 + 2*a*b*B)*Hypergeometric2F1[-3/4, 1, 1/4, -Tan[c + d*
x]^2] - 6*(2*a*A*b + a^2*B - b^2*B)*Hypergeometric2F1[-1/4, 1, 3/4, -Tan[c
+ d*x]^2]*Tan[c + d*x] - 2*b*(A*b + 2*a*B + 3*b*B*Tan[c + d*x]))/(3*d*Tan[c
 + d*x]^(3/2))
```

Maple [B] time = 0.025, size = 710, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -4/d*a/tan(d*x+c)^(1/2)*A*b-2/d*a^2/tan(d*x+c)^(1/2)*B-2/3*a^2*A/d/tan(d*x+
c)^(3/2)-1/2/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*A*2^
(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/4/d*a^2*A*2^(1/2)*ln((1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))+
1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))*b^2-1/2/d*a^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c
)^(1/2))+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/d*B*2^(1/
2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/2/d*B*2^(1/2)*ln((1+2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d
*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d*A*2^(1/2)*ln((1-2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*
a*b-1/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*A*2^(1/2)*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/4/d*a^2*B*ln((1-2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/4/d*B*2^
(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*b^2-1/2/d*a^2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+
1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d*a^2*B*2^(1/2)
*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+1/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*
```

```
x+c)^(1/2))*b^2
```

Maxima [A] time = 1.69539, size = 335, normalized size = 1.18

$$-\frac{6\sqrt{2}\left((A+B)a^2+2(A-B)ab-(A+B)b^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+6\sqrt{2}\left((A+B)a^2+2(A-B)ab-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="maxima")
```

```
[Out] -1/12*(6*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 6*sqrt(2)*((A + B)*a^2 + 2*(A - B)
*a*b - (A + B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) +
 3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*log(sqrt(2)*sqrt(tan
(d*x + c)) + tan(d*x + c) + 1) - 3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (
A - B)*b^2)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 8*(A*a^2
+ 3*(B*a^2 + 2*A*a*b)*tan(d*x + c))/tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))(a+b\tan(c+dx))^2}{\tan^{\frac{5}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2/tan(c + d*x)**(5/2),
x)
```

Giac [A] time = 1.51921, size = 473, normalized size = 1.67

$$-\frac{\left(\sqrt{2}Aa^2+\sqrt{2}Ba^2+2\sqrt{2}Aab-2\sqrt{2}Bab-\sqrt{2}Ab^2-\sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)}{2d}-\frac{\left(\sqrt{2}Aa^2+\sqrt{2}B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="giac")
```

```
[Out] -1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b - 2*sqrt(2)*B*a*b - s
qrt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x
+ c))))/d - 1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b - 2*sqrt(2
)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*s
qrt(tan(d*x + c))))/d - 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*
b - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d
*x + c)) + tan(d*x + c) + 1)/d + 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqr
t(2)*A*a*b - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(-sqrt(2)*
sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d - 2/3*(3*B*a^2*tan(d*x + c) + 6*A*
a*b*tan(d*x + c) + A*a^2)/(d*tan(d*x + c)^(3/2))
```

3.391 $\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=317

$$-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(\right.}{\sqrt{2}d}$$

```
[Out] -(((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*d)) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((2*a*b*(A - B) + a^2*(A
 + B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*A)/(5*d*Tan[c +
d*x]^(5/2)) - (2*a*(2*A*b + a*B))/(3*d*Tan[c + d*x]^(3/2)) + (2*(a^2*A - A*
b^2 - 2*a*b*B))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.445564, antiderivative size = 317, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3604, 3628, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```

```
[Out] -(((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*d)) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + ((2*a*b*(A - B) + a^2*(A
 + B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*A)/(5*d*Tan[c +
d*x]^(5/2)) - (2*a*(2*A*b + a*B))/(3*d*Tan[c + d*x]^(3/2)) + (2*(a^2*A - A*
b^2 - 2*a*b*B))/(d*Sqrt[Tan[c + d*x]])
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
```

```
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2a^2A}{5d\tan^{\frac{5}{2}}(c+dx)} + \int \frac{a(2Ab+aB)-\left(a^2A-Ab^2-2abB\right)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2a^2A}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \int \frac{-a^2A+Ab^2+2abB+\left(b^2B\right.}{\tan^{\frac{3}{2}}(c}$$

$$= -\frac{2a^2A}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(a^2A-Ab^2-2abB\right)}{d\sqrt{\tan(c+dx)}} + \int \frac{b^2B}{}$$

$$= -\frac{2a^2A}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(a^2A-Ab^2-2abB\right)}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Sub}}{}$$

$$= -\frac{2a^2A}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(a^2A-Ab^2-2abB\right)}{d\sqrt{\tan(c+dx)}} + \frac{\left(a^2(A\right.}{}$$

$$= -\frac{2a^2A}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2a(2Ab+aB)}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(a^2A-Ab^2-2abB\right)}{d\sqrt{\tan(c+dx)}} + \frac{\left(a^2(A\right.}{}$$

$$= \frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan\right.}{2\sqrt{2}d}$$

$$= -\frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} +$$

Mathematica [C] time = 0.597168, size = 120, normalized size = 0.38

$$\frac{2\left(\left(-3a^2A+6abB+3Ab^2\right)\text{Hypergeometric2F1}\left(-\frac{5}{4},1,-\frac{1}{4},-\tan^2(c+dx)\right)-5\left(a^2B+2aAb-b^2B\right)\tan(c+dx)\text{Hype}\right.}{15d\tan^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),
x]
```

```
[Out] (2*((-3*a^2*A + 3*A*b^2 + 6*a*b*B)*Hypergeometric2F1[-5/4, 1, -1/4, -Tan[c
+ d*x]^2] - 5*(2*a*A*b + a^2*B - b^2*B)*Hypergeometric2F1[-3/4, 1, 1/4, -Ta
n[c + d*x]^2]*Tan[c + d*x] - b*(3*A*b + 6*a*B + 5*b*B*Tan[c + d*x])))/(15*d
*Tan[c + d*x]^(5/2))
```

Maple [B] time = 0.029, size = 762, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] 2*a^2*A/d/tan(d*x+c)^(1/2)-2/d/tan(d*x+c)^(1/2)*A*b^2-4/d/tan(d*x+c)^(1/2)*
B*a*b-4/3/d*a/tan(d*x+c)^(3/2)*A*b-2/3/d*a^2/tan(d*x+c)^(3/2)*B-2/5*a^2*A/d
/tan(d*x+c)^(5/2)-1/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*
A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d*A*2^(1/2)*ln((1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*
a*b-1/2/d*a^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))+1/2/d*B*2^(1/2)*
arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d*a^2*B*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*2^(1/2)+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2
-1/4/d*a^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))+1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/4/d*a^2*A*ln((
1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c)))*2^(1/2)-1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/2/d*a^2*A*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))-1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^
2+1/2/d*a^2*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*A*2^(1/2)*a
rctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b-1/d*B*2
^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*B*2^(1/2)*arctan(-1+2^(1/
2)*tan(d*x+c)^(1/2))*a*b
```

Maxima [A] time = 1.82011, size = 373, normalized size = 1.18

$$\frac{30\sqrt{2}\left((A-B)a^2-2\,(A+B)ab-(A-B)b^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)+30\sqrt{2}\left((A-B)a^2-2\,(A+B)ab-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="maxima")
```

```
[Out] 1/60*(30*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 30*sqrt(2)*((A - B)*a^2 - 2*(A + B
)*a*b - (A - B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))
- 15*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(sqrt(2)*sqrt(t
an(d*x + c)) + tan(d*x + c) + 1) + 15*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b
- (A + B)*b^2)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 8*(3*A
*a^2 - 15*(A*a^2 - 2*B*a*b - A*b^2)*tan(d*x + c)^2 + 5*(B*a^2 + 2*A*a*b)*ta
n(d*x + c))/tan(d*x + c)^(5/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})(a + b\tan{(c + dx)})^2}{\tan^{\frac{7}{2}}{(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**2*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2/tan(c + d*x)**(7/2),
x)
```

Giac [A] time = 1.58846, size = 529, normalized size = 1.67

$$\frac{\left(\sqrt{2}Aa^2 - \sqrt{2}Ba^2 - 2\sqrt{2}Aab - 2\sqrt{2}Bab - \sqrt{2}Ab^2 + \sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan{(dx + c)}}\right)\right)}{2d} + \frac{\left(\sqrt{2}Aa^2 - \sqrt{2}Ba^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="giac")
```

```
[Out] 1/2*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b - 2*sqrt(2)*B*a*b - sq
rt(2)*A*b^2 + sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x +
 c))))/d + 1/2*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b - 2*sqrt(2)
*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sq
rt(tan(d*x + c))))/d - 1/4*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b
 - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d*
x + c)) + tan(d*x + c) + 1)/d + 1/4*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 + 2*sqrt
(2)*A*a*b - 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*log(-sqrt(2)*s
qrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 2/15*(15*A*a^2*tan(d*x + c)^2 - 3
0*B*a*b*tan(d*x + c)^2 - 15*A*b^2*tan(d*x + c)^2 - 5*B*a^2*tan(d*x + c) - 1
0*A*a*b*tan(d*x + c) - 3*A*a^2)/(d*tan(d*x + c)^(5/2))
```

3.392 $\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=463

$$\frac{2b\left(22a^2B+27aAb-9b^2B\right)\tan^{\frac{5}{2}}(c+dx)}{45d}+\frac{2\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{\left(3a^2b(A-B)+a^3(A+B)\right.}{}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(
Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B
))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - ((a^
3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(a^3*A - 3*a*A*b^2
 - 3*a^2*b*B + b^3*B)*Sqrt[Tan[c + d*x]])/d + (2*(3*a^2*A*b - A*b^3 + a^3*B
 - 3*a*b^2*B)*Tan[c + d*x]^(3/2))/(3*d) + (2*b*(27*a*A*b + 22*a^2*B - 9*b^2
*B)*Tan[c + d*x]^(5/2))/(45*d) + (2*b^2*(9*A*b + 13*a*B)*Tan[c + d*x]^(7/2)
)/(63*d) + (2*b*B*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2)/(9*d)
```

Rubi [A] time = 0.91742, antiderivative size = 463, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3607, 3637, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2b\left(22a^2B+27aAb-9b^2B\right)\tan^{\frac{5}{2}}(c+dx)}{45d}+\frac{2\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{\left(3a^2b(A-B)+a^3(A+B)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(
Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B
))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - ((a^
3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(a^3*A - 3*a*A*b^2
 - 3*a^2*b*B + b^3*B)*Sqrt[Tan[c + d*x]])/d + (2*(3*a^2*A*b - A*b^3 + a^3*B
```

```
 - 3*a*b^2*B)*Tan[c + d*x]^(3/2))/(3*d) + (2*b*(27*a*A*b + 22*a^2*B - 9*b^2
*B)*Tan[c + d*x]^(5/2))/(45*d) + (2*b^2*(9*A*b + 13*a*B)*Tan[c + d*x]^(7/2)
)/(63*d) + (2*b*B*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2)/(9*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2}{9d} + \frac{2}{9}\int \tan^{\frac{3}{2}}(c+dx$$

$$= \frac{2b^2(9Ab+13aB)\tan^{\frac{7}{2}}(c+dx)}{63d} + \frac{2bB\tan^{\frac{5}{2}}(c+dx)(a+b}{9d}$$

$$= \frac{2b\left(27aAb+22a^2B-9b^2B\right)\tan^{\frac{5}{2}}(c+dx)}{45d} + \frac{2b^2(9Ab+1}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{2b\left(27a\right.}{}$$

$$= \frac{2\left(a^3A-3aAb^2-3a^2bB+b^3B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(3a^2A\right.}{}$$

$$= \frac{2\left(a^3A-3aAb^2-3a^2bB+b^3B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(3a^2A\right.}{}$$

$$= \frac{2\left(a^3A-3aAb^2-3a^2bB+b^3B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(3a^2A\right.}{}$$

$$= \frac{2\left(a^3A-3aAb^2-3a^2bB+b^3B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2\left(3a^2A\right.}{}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\mathrm{lo}}{2\sqrt{2}d}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\mathrm{ta}}{\sqrt{2}d}$$

Mathematica [C] time = 3.58508, size = 221, normalized size = 0.48

$$2\left(7b\left(22a^2B+27aAb-9b^2B\right)\tan^{\frac{5}{2}}(c+dx)+5b^2(13aB+9Ab)\tan^{\frac{7}{2}}(c+dx)+\frac{105}{2}(a-ib)^3(B+iA)\left(-3(-1)^{3/4}\tan^{-1}\left(\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*(7*b*(27*a*A*b + 22*a^2*B - 9*b^2*B)*Tan[c + d*x]^(5/2) + 5*b^2*(9*A*b +
 13*a*B)*Tan[c + d*x]^(7/2) + 35*b*B*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x]
)^2 + (105*(a - I*b)^3*(I*A + B)*(-3*(-1)^(3/4)*ArcTan[(-1)^(3/4)*Sqrt[Tan[
c + d*x]]] + Sqrt[Tan[c + d*x]]*(-3*I + Tan[c + d*x])))/2 + (105*(a + I*b)^
3*((-I)*A + B)*(3*(-1)^(3/4)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + Sqrt[
Tan[c + d*x]]*(3*I + Tan[c + d*x])))/2))/(315*d)
```

Maple [B] time = 0.026, size = 1147, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d*B*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*a^2*b+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2
+3/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+2/3/d*a^3*B*tan(
d*x+c)^(3/2)+3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-1/2/
d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3*A*arctan(-1+2^
(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/4/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/4/d*a^3*B*ln
((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c)))*2^(1/2)-1/2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d
*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-2/3/d*A*tan(d*x+c)^(3/2)
*b^3+2/d*B*b^3*tan(d*x+c)^(1/2)+2/7/d*A*tan(d*x+c)^(7/2)*b^3+2/9/d*B*b^3*ta
n(d*x+c)^(9/2)-2/5/d*B*b^3*tan(d*x+c)^(5/2)-3/4/d*A*2^(1/2)*ln((1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+
3/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))*a*b^2+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^
(1/2))*a^2*b+3/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+3/2/d*B*2^(1/2)*arctan(-1+2^(1/
2)*tan(d*x+c)^(1/2))*a*b^2+2*a^3*A*tan(d*x+c)^(1/2)/d-3/2/d*A*2^(1/2)*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*a*b^2+3/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-6/d*A*a*b^2*tan(d*x+c)^(1
/2)+6/7/d*B*tan(d*x+c)^(7/2)*a*b^2-1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)
^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-2/d*B*tan(d
*x+c)^(3/2)*a*b^2+1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
```

```
)/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+1/2/d*A*2^(1/2)*arctan(-1+2^
(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/
2))*b^3-6/d*B*a^2*b*tan(d*x+c)^(1/2)+6/5/d*A*tan(d*x+c)^(5/2)*a*b^2+6/5/d*B
*tan(d*x+c)^(5/2)*a^2*b+2/d*A*tan(d*x+c)^(3/2)*a^2*b
```

Maxima [A] time = 1.71492, size = 537, normalized size = 1.16

$$\frac{280\,Bb^3\tan(dx+c)^{\frac{9}{2}} + 360\left(3\,Bab^2 + Ab^3\right)\tan(dx+c)^{\frac{7}{2}} + 504\left(3\,Ba^2b + 3\,Aab^2 - Bb^3\right)\tan(dx+c)^{\frac{5}{2}} - 630\,\sqrt{2}\left((A+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/1260*(280*B*b^3*tan(d*x + c)^(9/2) + 360*(3*B*a*b^2 + A*b^3)*tan(d*x + c)
^(7/2) + 504*(3*B*a^2*b + 3*A*a*b^2 - B*b^3)*tan(d*x + c)^(5/2) - 630*sqrt(
2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(1
/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) - 630*sqrt(2)*((A + B)*a^3 + 3
*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2
) - 2*sqrt(tan(d*x + c)))) - 315*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3
*(A - B)*a*b^2 + (A + B)*b^3)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c)
 + 1) + 315*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A +
 B)*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 840*(B*a^3 +
 3*A*a^2*b - 3*B*a*b^2 - A*b^3)*tan(d*x + c)^(3/2) + 2520*(A*a^3 - 3*B*a^2*
b - 3*A*a*b^2 + B*b^3)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.393 $\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=421

$$\frac{2b\left(18a^2B+21aAb-7b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{21d}-\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\mathrm{ta}}\right.}{\sqrt{2}d}$$

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + ((a^3*(A - B) - 3*a*b^2*(A -
 B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(Sqrt[2]*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A
+ B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (
(3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(3*a^2*A*b - A*
b^3 + a^3*B - 3*a*b^2*B)*Sqrt[Tan[c + d*x]])/d + (2*b*(21*a*A*b + 18*a^2*B
- 7*b^2*B)*Tan[c + d*x]^(3/2))/(21*d) + (2*b^2*(7*A*b + 11*a*B)*Tan[c + d*x
]^(5/2))/(35*d) + (2*b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2)/(7*d)
```

Rubi [A] time = 0.745043, antiderivative size = 421, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3607, 3637, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2b\left(18a^2B+21aAb-7b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{21d}-\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\mathrm{ta}}\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + ((a^3*(A - B) - 3*a*b^2*(A -
 B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(Sqrt[2]*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A
+ B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (
(3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*(3*a^2*A*b - A*
b^3 + a^3*B - 3*a*b^2*B)*Sqrt[Tan[c + d*x]])/d + (2*b*(21*a*A*b + 18*a^2*B
- 7*b^2*B)*Tan[c + d*x]^(3/2))/(21*d) + (2*b^2*(7*A*b + 11*a*B)*Tan[c + d*x
```

```
]^(5/2))/(35*d) + (2*b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2)/(7*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
```

```
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{2bB\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}{7d} + \frac{2}{7}\int \sqrt{\tan(c+dx}$$

$$= \frac{2b^2(7Ab+11aB)\tan^{\frac{5}{2}}(c+dx)}{35d} + \frac{2bB\tan^{\frac{3}{2}}(c+dx)(a+b\,t}{7d}$$

$$= \frac{2b\left(21aAb+18a^2B-7b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{21d} + \frac{2b^2(7Ab+11}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b\left(21aA\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b\left(21aA\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b\left(21aA\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b\left(21aA\right.}{}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\log}{2\sqrt{2}d}$$

$$= -\frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\mathrm{ta}}{\sqrt{2}d}$$

Mathematica [C] time = 2.02784, size = 197, normalized size = 0.47

$$\frac{2\left(5b\left(18a^2B+21aAb-7b^2B\right)\tan^{\frac{3}{2}}(c+dx)+3b^2(11aB+7Ab)\tan^{\frac{5}{2}}(c+dx)+\frac{105}{2}(a-ib)^3(B+iA)\left(\sqrt[4]{-1}\tan^{-1}\left((-1)^{3/4}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*((105*(a - I*b)^3*(I*A + B)*((-1)^(1/4)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d
*x]]] + Sqrt[Tan[c + d*x]]))/2 + (105*(a + I*b)^3*((-I)*A + B)*((-1)^(1/4)*
ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + Sqrt[Tan[c + d*x]]))/2 + 5*b*(21*a
*A*b + 18*a^2*B - 7*b^2*B)*Tan[c + d*x]^(3/2) + 3*b^2*(7*A*b + 11*a*B)*Tan[
```

```
c + d*x]^(5/2) + 15*b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2))/(105*d)
```

Maple [B] time = 0.023, size = 1077, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d*B*2^(1/2)*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+1/4/d*B*2^
(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*b^3-3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b
+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d*A*2^(1/2)*a
rctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-6/d*B*a*b^2*tan(d*x+c)^(1/2)-1/4/d
*a^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))+1/4/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-2/d*A*b^3*tan(d*x+c)^(
1/2)+2/5/d*A*tan(d*x+c)^(5/2)*b^3+2/7/d*B*b^3*tan(d*x+c)^(7/2)-2/3/d*B*tan(
d*x+c)^(3/2)*b^3-3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+
1/2/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^3*A*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))*2^(1/2)-1/2/d*a^3*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-3/2
/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/d*B*2^(1/2)*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+2*a^3*B*tan(d*x+c)^(1/2)/d-3/2/d*A*2^(
1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2/d*A*2^(1/2)*arctan(1+2^(
1/2)*tan(d*x+c)^(1/2))*a*b^2+1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(
1/2))*b^3+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-3/4/d*B*2^
(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*a^2*b-3/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+3/4/d*B*2^(1/2)*ln((1+2
^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))
)*a*b^2+6/5/d*B*tan(d*x+c)^(5/2)*a*b^2+2/d*A*tan(d*x+c)^(3/2)*a*b^2+2/d*B*t
an(d*x+c)^(3/2)*a^2*b-3/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+6/d*A*tan(d*x+c)^(1/2)
*a^2*b
```

Maxima [A] time = 1.7598, size = 490, normalized size = 1.16

$$120\,Bb^{3}\tan\left(dx+c\right)^{\frac{7}{2}}+168\left(3\,Bab^{2}+Ab^{3}\right)\tan\left(dx+c\right)^{\frac{5}{2}}+210\,\sqrt{2}\Big((A-B)a^{3}-3\,(A+B)a^{2}b-3\,(A-B)ab^{2}+(A+B)b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/420*(120*B*b^3*tan(d*x + c)^(7/2) + 168*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^
(5/2) + 210*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A +
 B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 210*sqrt(2)
*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(-1/
2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - 105*sqrt(2)*((A + B)*a^3 + 3*
(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*log(sqrt(2)*sqrt(tan(d*x + c
)) + tan(d*x + c) + 1) + 105*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A
+ B)*a*b^2 - (A - B)*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) +
1) + 280*(3*B*a^2*b + 3*A*a*b^2 - B*b^3)*tan(d*x + c)^(3/2) + 840*(B*a^3 +
3*A*a^2*b - 3*B*a*b^2 - A*b^3)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

3.394 $\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=380

$$-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab\right.}{}$$

```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + ((3*a^2*b*(A - B) - b^3*(A -
 B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A
+ B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (
(a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*(15*a*A*b + 1
4*a^2*B - 5*b^2*B)*Sqrt[Tan[c + d*x]])/(5*d) + (2*b^2*(5*A*b + 9*a*B)*Tan[c
 + d*x]^(3/2))/(15*d) + (2*b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2)/(
5*d)
```

Rubi [A] time = 0.666732, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3607, 3637, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + ((3*a^2*b*(A - B) - b^3*(A -
 B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A
+ B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (
(a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*(15*a*A*b + 1
4*a^2*B - 5*b^2*B)*Sqrt[Tan[c + d*x]])/(5*d) + (2*b^2*(5*A*b + 9*a*B)*Tan[c
 + d*x]^(3/2))/(15*d) + (2*b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2)/(
5*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
```

```
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}{5d}+\frac{2}{5}\int \frac{(a+b\tan(c+dx))\left(\frac{1}{2}a(\right.}{}$$

$$= \frac{2b^2(5Ab+9aB)\tan^{\frac{3}{2}}(c+dx)}{15d}+\frac{2bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}{5d}$$

$$= \frac{2b\left(15aAb+14a^2B-5b^2B\right)\sqrt{\tan(c+dx)}}{5d}+\frac{2b^2(5Ab+9aB)\tan^{\frac{3}{2}}(c-}{15d}$$

$$= \frac{2b\left(15aAb+14a^2B-5b^2B\right)\sqrt{\tan(c+dx)}}{5d}+\frac{2b^2(5Ab+9aB)\tan^{\frac{3}{2}}(c-}{15d}$$

$$= \frac{2b\left(15aAb+14a^2B-5b^2B\right)\sqrt{\tan(c+dx)}}{5d}+\frac{2b^2(5Ab+9aB)\tan^{\frac{3}{2}}(c-}{15d}$$

$$= \frac{2b\left(15aAb+14a^2B-5b^2B\right)\sqrt{\tan(c+dx)}}{5d}+\frac{2b^2(5Ab+9aB)\tan^{\frac{3}{2}}(c-}{15d}$$

$$= -\frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\log\left(1-\sqrt{2}\sqrt{}\right.}{2\sqrt{2}d}$$

$$= -\frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{}\right.}{\sqrt{2}d}$$

Mathematica [C] time = 1.45073, size = 153, normalized size = 0.4

$$\frac{2b\sqrt{\tan(c+dx)}\left(15\left(3a^2B+3aAb-b^2B\right)+5b(3aB+Ab)\tan(c+dx)+3b^2B\tan^2(c+dx)\right)-15\sqrt[4]{-1}(a-ib)^3(A-iB)}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
x]
```

```
[Out] (-15*(-1)^(1/4)*(a - I*b)^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]
 - 15*(-1)^(1/4)*(a + I*b)^3*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]
]] + 2*b*Sqrt[Tan[c + d*x]]*(15*(3*a*A*b + 3*a^2*B - b^2*B) + 5*b*(A*b + 3*
a*B)*Tan[c + d*x] + 3*b^2*B*Tan[c + d*x]^2))/(15*d)
```

Maple [B] time = 0.022, size = 1007, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] 1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d*B*2^(1/2)*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*
x+c)^(1/2))*a^2*b-3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-
3/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d*B*2^(1/2)*a
rctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+1/2/d*a^3*A*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*2^(1/2)+1/2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2
)+1/4/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))+1/4/d*a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+t
an(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+1/2/d*a^3*B*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^3*B*arctan(-1+2^(1/2)*tan(d
*x+c)^(1/2))*2^(1/2)+2/3/d*A*tan(d*x+c)^(3/2)*b^3-2/d*B*b^3*tan(d*x+c)^(1/2
)+2/5/d*B*b^3*tan(d*x+c)^(5/2)+3/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-3/4/d*A*2^(1/
2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+t
an(d*x+c)))*a*b^2-3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-
3/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))*a*b^2-3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)
^(1/2))*a*b^2+3/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2
/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/4/d*B*2^(1/2)*ln((1
+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
)))*a^2*b+6/d*A*a*b^2*tan(d*x+c)^(1/2)+1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+2/d*B*t
an(d*x+c)^(3/2)*a*b^2-1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-1/2/d*A*2^(1/2)*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))*b^3+6/d*B*a^2*b*tan(d*x+c)^(1/2)
```

Maxima [A] time = 1.63724, size = 441, normalized size = 1.16

$$\frac{24\,Bb^3\tan\left(dx+c\right)^{\frac{5}{2}} + 30\,\sqrt{2}\left((A+B)a^3 + 3\,(A-B)a^2b - 3\,(A+B)ab^2 - (A-B)b^3\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2} + 2\,\sqrt{\tan\left(dx+c\right.}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/60*(24*B*b^3*tan(d*x + c)^(5/2) + 30*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2
*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(ta
n(d*x + c)))) + 30*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2
 - (A - B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + 15*
sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log
(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 15*sqrt(2)*((A - B)*a^3 -
 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(-sqrt(2)*sqrt(tan(d*x
 + c)) + tan(d*x + c) + 1) + 40*(3*B*a*b^2 + A*b^3)*tan(d*x + c)^(3/2) + 12
0*(3*B*a^2*b + 3*A*a*b^2 - B*b^3)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\,(a + b\tan{(c + dx)})^3}{\sqrt{\tan{(c + dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3/sqrt(tan(c + d*x)), x
)
```

Giac [A] time = 2.32477, size = 690, normalized size = 1.82

$$\frac{\left(\sqrt{2}Aa^3 + \sqrt{2}Ba^3 + 3\sqrt{2}Aa^2b - 3\sqrt{2}Ba^2b - 3\sqrt{2}Aab^2 - 3\sqrt{2}Bab^2 - \sqrt{2}Ab^3 + \sqrt{2}Bb^3\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(dx}\right.\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] 1/2*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b
- 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*ar
ctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d + 1/2*(sqrt(2)*A*a^3 +
 sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2
- 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*arctan(-1/2*sqrt(2)*(s
qrt(2) - 2*sqrt(tan(d*x + c))))/d + 1/4*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 - 3*
sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2
 + sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
+ c) + 1)/d - 1/4*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b - 3*sq
rt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 + sqr
t(2)*B*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 2/15*(3
*B*b^3*d^4*tan(d*x + c)^(5/2) + 15*B*a*b^2*d^4*tan(d*x + c)^(3/2) + 5*A*b^3
*d^4*tan(d*x + c)^(3/2) + 45*B*a^2*b*d^4*sqrt(tan(d*x + c)) + 45*A*a*b^2*d^
4*sqrt(tan(d*x + c)) - 15*B*b^3*d^4*sqrt(tan(d*x + c)))/d^5
```

3.395 $\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=374

$$\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(-3a^2b(A+B)+a^3(A-B)-\right.}{}$$

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(
Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B
))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + ((3*
a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*(2*a^2*A + A*b^2
 + 3*a*b*B)*Sqrt[Tan[c + d*x]])/d + (2*b^2*(3*a*A + b*B)*Tan[c + d*x]^(3/2)
)/(3*d) - (2*a*A*(a + b*Tan[c + d*x])^2)/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.675912, antiderivative size = 374, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3605, 3637, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(-3a^2b(A+B)+a^3(A-B)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```



```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(
Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B
))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + ((3*
a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*b*(2*a^2*A + A*b^2
 + 3*a*b*B)*Sqrt[Tan[c + d*x]])/d + (2*b^2*(3*a*A + b*B)*Tan[c + d*x]^(3/2)
)/(3*d) - (2*a*A*(a + b*Tan[c + d*x])^2)/(d*Sqrt[Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
```

```
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^2}{d\sqrt{\tan(c+dx)}} + 2\int \frac{(a+b\tan(c+dx))\left(\frac{1}{2}a(5Ab+aB)-\right.}{}$$

$$= \frac{2b^2(3aA+bB)\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{2aA(a+b\tan(c+dx))^2}{d\sqrt{\tan(c+dx)}} - \frac{4}{3}\int \frac{-\frac{3}{4}a^2(5}{}$$

$$= \frac{2b\left(2a^2A+Ab^2+3abB\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b^2(3aA+bB)\tan^{\frac{3}{2}}(c+dx)}{3d}$$

$$= \frac{2b\left(2a^2A+Ab^2+3abB\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b^2(3aA+bB)\tan^{\frac{3}{2}}(c+dx)}{3d}$$

$$= \frac{2b\left(2a^2A+Ab^2+3abB\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b^2(3aA+bB)\tan^{\frac{3}{2}}(c+dx)}{3d}$$

$$= \frac{2b\left(2a^2A+Ab^2+3abB\right)\sqrt{\tan(c+dx)}}{d} + \frac{2b^2(3aA+bB)\tan^{\frac{3}{2}}(c+dx)}{3d}$$

$$= -\frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\log\left(1-\sqrt{2}\sqrt{t\right.}}{2\sqrt{2}d}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\right.}}{\sqrt{2}d}$$

Mathematica [C] time = 2.71736, size = 264, normalized size = 0.71

$$\frac{-3\left(8\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\text{Hypergeometric2F1}\left(-\frac{1}{4},1,\frac{3}{4},-\tan^2(c+dx)\right)+\sqrt{2}\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
x]
```

```
[Out] (8*b*(-12*a*A*b - 17*a^2*B + 3*b^2*B) - 3*(8*(a^3*A - 3*a*A*b^2 - 3*a^2*b*B
 + b^3*B)*Hypergeometric2F1[-1/4, 1, 3/4, -Tan[c + d*x]^2] + Sqrt[2]*(3*a^2
*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*(2*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]]
 - 2*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] + Log[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])
*Sqrt[Tan[c + d*x]]) + 8*b*(3*A*b + 7*a*B)*(a + b*Tan[c + d*x]) + 8*b*B*(a
```

```
+ b*Tan[c + d*x])^2)/(12*d*Sqrt[Tan[c + d*x]])
```

Maple [B] time = 0.027, size = 971, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] -1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d*B*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-1/4/d*B*2
^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*b^3+3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*
b-3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/2/d*A*2^(1/2)*
arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+6/d*B*a*b^2*tan(d*x+c)^(1/2)+1/4/
d*a^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))-1/4/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)+2/d*A*b^3*tan(d*x+c)^
(1/2)+2/3/d*B*tan(d*x+c)^(3/2)*b^3+3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*a^2*b-2/d*a^3*A/tan(d*x+c)^(1/2)-1/2/d*a^3*A*arctan(1+2^(1/2)*t
an(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^
(1/2)+1/2/d*a^3*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+1/2/d*a^3*B*ar
ctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*
tan(d*x+c)^(1/2))*a^2*b-3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*a*b^2+3/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/d*A*2^
(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-1/2/d*A*2^(1/2)*arctan(-1+2^
(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/
2))*b^3+3/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/
2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+3/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-3/4/d
*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)
^(1/2)+tan(d*x+c)))*a*b^2+3/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2
```

Maxima [A] time = 1.83901, size = 419, normalized size = 1.12

$$8\,Bb^3\tan\left(dx+c\right)^{\frac{3}{2}} - \frac{24\,Aa^3}{\sqrt{\tan\left(dx+c\right)}} - 6\,\sqrt{2}\left(\left(A-B\right)a^3 - 3\left(A+B\right)a^2b - 3\left(A-B\right)ab^2 + \left(A+B\right)b^3\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/12*(8*B*b^3*tan(d*x + c)^(3/2) - 24*A*a^3/sqrt(tan(d*x + c)) - 6*sqrt(2)*
((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(1/2*
sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) - 6*sqrt(2)*((A - B)*a^3 - 3*(A +
 B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2
*sqrt(tan(d*x + c)))) + 3*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B
)*a*b^2 - (A - B)*b^3)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) -
 3*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*
log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 24*(3*B*a*b^2 + A*b^3
)*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))^3}{\tan^{\frac{3}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3/tan(c + d*x)**(3/2),
x)
```

Giac [A] time = 1.92708, size = 640, normalized size = 1.71

$$-\frac{2\,Aa^3}{d\sqrt{\tan\left(dx+c\right)}}-\frac{\left(\sqrt{2}Aa^3-\sqrt{2}Ba^3-3\,\sqrt{2}Aa^2b-3\,\sqrt{2}Ba^2b-3\,\sqrt{2}Aab^2+3\,\sqrt{2}Bab^2+\sqrt{2}Ab^3+\sqrt{2}Bb^3\right)\arctan\left(\frac{1}{2}\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2*A*a^3/(d*sqrt(tan(d*x + c))) - 1/2*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 - 3*sq
rt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 +
 sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*
x + c))))/d - 1/2*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b - 3*sq
rt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 + sqr
t(2)*B*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/d + 1/4*(
sqrt(2)*A*a^3 + sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*s
qrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*log(sqr
t(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d - 1/4*(sqrt(2)*A*a^3 + sqrt(2
)*B*a^3 + 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqr
t(2)*B*a*b^2 - sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c
)) + tan(d*x + c) + 1)/d + 2/3*(B*b^3*d^2*tan(d*x + c)^(3/2) + 9*B*a*b^2*d^
2*sqrt(tan(d*x + c)) + 3*A*b^3*d^2*sqrt(tan(d*x + c)))/d^3
```

3.396 $\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=372

$$\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2\right.}{}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(
Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B
))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - ((a^
3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*(7*A*b + 3*a*B
))/(3*d*Sqrt[Tan[c + d*x]]) + (2*b^2*(a*A + 3*b*B)*Sqrt[Tan[c + d*x]])/(3*d
) - (2*a*A*(a + b*Tan[c + d*x])^2)/(3*d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 0.611542, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3605, 3635, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(
Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B
))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - ((a^
3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*(7*A*b + 3*a*B
))/(3*d*Sqrt[Tan[c + d*x]]) + (2*b^2*(a*A + 3*b*B)*Sqrt[Tan[c + d*x]])/(3*d
) - (2*a*A*(a + b*Tan[c + d*x])^2)/(3*d*Tan[c + d*x]^(3/2))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
```

```
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^2}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{(a+b\tan(c+dx))\left(\frac{1}{2}a(7Ab+3aB)\right.}{}$$

$$= -\frac{2a^2(7Ab+3aB)}{3d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^2}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{-\frac{1}{2}a\left(3a^2A-10\right.}{}$$

$$= -\frac{2a^2(7Ab+3aB)}{3d\sqrt{\tan(c+dx)}} + \frac{2b^2(aA+3bB)\sqrt{\tan(c+dx)}}{3d} - \frac{2aA(a+b\tan(c}{3d\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2a^2(7Ab+3aB)}{3d\sqrt{\tan(c+dx)}} + \frac{2b^2(aA+3bB)\sqrt{\tan(c+dx)}}{3d} - \frac{2aA(a+b\tan(c}{3d\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2a^2(7Ab+3aB)}{3d\sqrt{\tan(c+dx)}} + \frac{2b^2(aA+3bB)\sqrt{\tan(c+dx)}}{3d} - \frac{2aA(a+b\tan(c}{3d\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2a^2(7Ab+3aB)}{3d\sqrt{\tan(c+dx)}} + \frac{2b^2(aA+3bB)\sqrt{\tan(c+dx)}}{3d} - \frac{2aA(a+b\tan(c}{3d\tan^{\frac{3}{2}}(c+}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\log\left(1-\sqrt{2}\sqrt{t\right.}{2\sqrt{2}d}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\right.}{\sqrt{2}d}$$

Mathematica [C] time = 1.22226, size = 165, normalized size = 0.44

$$-\frac{2\left(\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\text{Hypergeometric2F1}\left(-\frac{3}{4},1,\frac{1}{4},-\tan^2(c+dx)\right)+3\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),
x]
```

```
[Out] (-2*((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Hypergeometric2F1[-3/4, 1, 1/4
, -Tan[c + d*x]^2] + 3*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Hypergeometr
ic2F1[-1/4, 1, 3/4, -Tan[c + d*x]^2]*Tan[c + d*x] + b*(3*a*A*b + 3*a^2*B -
b^2*B + 3*b*(A*b + 3*a*B)*Tan[c + d*x] - 3*b^2*B*Tan[c + d*x]^2)))/(3*d*Tan
```

```
[c + d*x]^(3/2))
```

Maple [B] time = 0.028, size = 971, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] -1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d*B*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*a^2*b+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2
+3/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/2/d*B*2^(1/2)*
arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-1/2/d*a^3*A*arctan(1+2^(1/2)*tan(
d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/
2)-1/4/d*a^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))-1/4/d*a^3*B*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+
tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-1/2/d*a^3*B*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3*B*arctan(-1+2^(1/2)*tan(
d*x+c)^(1/2))*2^(1/2)-2/3/d*a^3*A/tan(d*x+c)^(3/2)-2/d*a^3/tan(d*x+c)^(1/2)
*B+2/d*B*b^3*tan(d*x+c)^(1/2)-3/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+3/4/d*A*2^(1/2
)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c)))*a*b^2+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3
/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))*a*b^2+3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^
(1/2))*a*b^2-3/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/
d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/4/d*B*2^(1/2)*ln((1+
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
))*a^2*b-1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+1/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x
+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+1/2/d*A*
2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d*A*2^(1/2)*arctan(1+2^
(1/2)*tan(d*x+c)^(1/2))*b^3-6/d*a^2/tan(d*x+c)^(1/2)*A*b
```

Maxima [A] time = 1.67636, size = 419, normalized size = 1.13

$$24\,Bb^3\sqrt{\tan\left(dx+c\right)} - 6\,\sqrt{2}\Big(\left(A+B\right)a^3 + 3\left(A-B\right)a^2b - 3\left(A+B\right)ab^2 - \left(A-B\right)b^3\Big)\arctan\Big(\frac{1}{2}\,\sqrt{2}\Big(\sqrt{2} + 2\,\sqrt{\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="maxima")
```

```
[Out] 1/12*(24*B*b^3*sqrt(tan(d*x + c)) - 6*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*
b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan
(d*x + c)))) - 6*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 -
 (A - B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - 3*sqr
t(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(sq
rt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 3*sqrt(2)*((A - B)*a^3 - 3*(
A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c
)) + tan(d*x + c) + 1) - 8*(A*a^3 + 3*(B*a^3 + 3*A*a^2*b)*tan(d*x + c))/tan
(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))^3}{\tan^{\frac{5}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3/tan(c + d*x)**(5/2),
x)
```

Giac [A] time = 1.67064, size = 622, normalized size = 1.67

$$\frac{2\,Bb^3\sqrt{\tan\left(dx+c\right)}}{d}-\frac{\left(\sqrt{2}Aa^3+\sqrt{2}Ba^3+3\,\sqrt{2}Aa^2b-3\,\sqrt{2}Ba^2b-3\,\sqrt{2}Aab^2-3\,\sqrt{2}Bab^2-\sqrt{2}Ab^3+\sqrt{2}Bb^3\right)\arctan\left(\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algorithm
="giac")
```

```
[Out] 2*B*b^3*sqrt(tan(d*x + c))/d - 1/2*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 + 3*sqrt(
2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 - sq
rt(2)*A*b^3 + sqrt(2)*B*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x +
 c))))/d - 1/2*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b - 3*sqrt(
2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 + sqrt(2
)*B*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/d - 1/4*(sqr
t(2)*A*a^3 - sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt
(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*log(sqrt(2
)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 1/4*(sqrt(2)*A*a^3 - sqrt(2)*B
*a^3 - 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2
)*B*a*b^2 + sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c))
+ tan(d*x + c) + 1)/d - 2/3*(3*B*a^3*tan(d*x + c) + 9*A*a^2*b*tan(d*x + c)
+ A*a^3)/(d*tan(d*x + c)^(3/2))
```

3.397 $\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=380

$$-\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(-3a^2b(A+B)+a^3(A-B)\right.}{}$$

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + ((a^3*(A - B) - 3*a*b^2*(A -
 B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(Sqrt[2]*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A
+ B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (
(3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*(9*A*b + 5*
a*B))/(15*d*Tan[c + d*x]^(3/2)) + (2*a*(5*a^2*A - 14*A*b^2 - 15*a*b*B))/(5*
d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + b*Tan[c + d*x])^2)/(5*d*Tan[c + d*x]^(5
/2))
```

Rubi [A] time = 0.659335, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3605, 3635, 3628, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{\left(-3a^2b(A+B)+a^3(A-B)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + ((a^3*(A - B) - 3*a*b^2*(A -
 B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
)/(Sqrt[2]*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A
+ B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (
(3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*a^2*(9*A*b + 5*
a*B))/(15*d*Tan[c + d*x]^(3/2)) + (2*a*(5*a^2*A - 14*A*b^2 - 15*a*b*B))/(5*
d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + b*Tan[c + d*x])^2)/(5*d*Tan[c + d*x]^(5
/2))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^2}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{(a+b\tan(c+dx))\left(\frac{1}{2}a(9Ab+5aB)-\right.}{}$$

$$= -\frac{2a^2(9Ab+5aB)}{15d\tan^{\frac{3}{2}}(c+dx)} - \frac{2aA(a+b\tan(c+dx))^2}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{-\frac{1}{2}a\left(5a^2A-14A\right.}{}$$

$$= -\frac{2a^2(9Ab+5aB)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a\left(5a^2A-14Ab^2-15abB\right)}{5d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+}{5d\tan^{\frac{5}{2}}(c+d}$$

$$= -\frac{2a^2(9Ab+5aB)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a\left(5a^2A-14Ab^2-15abB\right)}{5d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+}{5d\tan^{\frac{5}{2}}(c+d}$$

$$= -\frac{2a^2(9Ab+5aB)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a\left(5a^2A-14Ab^2-15abB\right)}{5d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+}{5d\tan^{\frac{5}{2}}(c+d}$$

$$= -\frac{2a^2(9Ab+5aB)}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2a\left(5a^2A-14Ab^2-15abB\right)}{5d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+}{5d\tan^{\frac{5}{2}}(c+d}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\log\left(1-\sqrt{2}\sqrt{\tan}\right.}{2\sqrt{2}d}$$

$$= -\frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\right.}{\sqrt{2}d}$$

Mathematica [C] time = 1.34563, size = 166, normalized size = 0.44

$$-\frac{2\left(3\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\text{Hypergeometric2F1}\left(-\frac{5}{4},1,-\frac{1}{4},-\tan^2(c+dx)\right)+5\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),
x]
```

```
[Out] (-2*(3*(a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Hypergeometric2F1[-5/4, 1, -
1/4, -Tan[c + d*x]^2] + 5*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Hypergeom
etric2F1[-3/4, 1, 1/4, -Tan[c + d*x]^2]*Tan[c + d*x] + b*(9*a*A*b + 9*a^2*B
 - 3*b^2*B + 5*b*(A*b + 3*a*B)*Tan[c + d*x] + 15*b^2*B*Tan[c + d*x]^2)))/(1
```

```
5*d*Tan[c + d*x]^(5/2))
```

Maple [B] time = 0.028, size = 1007, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] -6/d*a^2/tan(d*x+c)^(1/2)*B*b-6/d*a/tan(d*x+c)^(1/2)*A*b^2-2/d*a^2/tan(d*x+
c)^(3/2)*A*b+1/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d*
B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/4/d*A*2^(1/2)*ln((1+2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b
^3+1/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c)))*b^3-3/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))*a^2*b+3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/
d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-1/4/d*a^3*B*2^(1/2)*l
n((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))+1/4/d*a^3*A*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))*2^(1/2)-3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(
d*x+c)^(1/2))*a^2*b-2/5/d*a^3*A/tan(d*x+c)^(5/2)-2/3/d*a^3/tan(d*x+c)^(3/2)
*B+2/d*a^3*A/tan(d*x+c)^(1/2)+1/2/d*a^3*A*arctan(1+2^(1/2)*tan(d*x+c)^(1/2)
)*2^(1/2)+1/2/d*a^3*A*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3
*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*2^(1/2)-1/2/d*a^3*B*arctan(-1+2^(1/2)
*tan(d*x+c)^(1/2))*2^(1/2)-3/2/d*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2
))*a^2*b+3/2/d*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d*A*
2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2/d*A*2^(1/2)*arctan(1+
2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+1/2/d*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c
)^(1/2))*b^3+1/2/d*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-3/4/d*B
*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*a^2*b-3/4/d*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+3/4/d*B*2^(1/2)*ln((
1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c)))*a*b^2-3/4/d*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2
```

Maxima [A] time = 1.75453, size = 441, normalized size = 1.16

$$\frac{30\sqrt{2}\left((A-B)a^3-3\,(A+B)a^2b-3\,(A-B)ab^2+(A+B)b^3\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)+30\sqrt{2}\left((A-B)a^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="maxima")
```

```
[Out] 1/60*(30*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)
*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 30*sqrt(2)*((A
 - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(-1/2*sq
rt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - 15*sqrt(2)*((A + B)*a^3 + 3*(A -
B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*log(sqrt(2)*sqrt(tan(d*x + c)) +
tan(d*x + c) + 1) + 15*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a
*b^2 - (A - B)*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 8
*(3*A*a^3 - 15*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2)*tan(d*x + c)^2 + 5*(B*a^3 +
3*A*a^2*b)*tan(d*x + c))/tan(d*x + c)^(5/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(A+B\tan{(c+dx)})\,(a+b\tan{(c+dx)})^3}{\tan^{\frac{7}{2}}{(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**3*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3/tan(c + d*x)**(7/2),
x)
```

Giac [A] time = 1.69691, size = 660, normalized size = 1.74

$$\frac{\left(\sqrt{2}Aa^3 - \sqrt{2}Ba^3 - 3\sqrt{2}Aa^2b - 3\sqrt{2}Ba^2b - 3\sqrt{2}Aab^2 + 3\sqrt{2}Bab^2 + \sqrt{2}Ab^3 + \sqrt{2}Bb^3\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(d\right.\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algorithm
="giac")
```

```
[Out] 1/2*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b
- 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*ar
ctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d + 1/2*(sqrt(2)*A*a^3 -
 sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2
+ 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*arctan(-1/2*sqrt(2)*(s
qrt(2) - 2*sqrt(tan(d*x + c))))/d - 1/4*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 + 3*
sqrt(2)*A*a^2*b - 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2
 - sqrt(2)*A*b^3 + sqrt(2)*B*b^3)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
+ c) + 1)/d + 1/4*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b - 3*sq
rt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 + sqr
t(2)*B*b^3)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 2/15*(1
5*A*a^3*tan(d*x + c)^2 - 45*B*a^2*b*tan(d*x + c)^2 - 45*A*a*b^2*tan(d*x + c
)^2 - 5*B*a^3*tan(d*x + c) - 15*A*a^2*b*tan(d*x + c) - 3*A*a^3)/(d*tan(d*x
+ c)^(5/2))
```

3.398 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=325

$$-\frac{2a^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\tan}{\sqrt{2}d\left(a\right.}$$

```
[Out] ((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*a^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)*d) + ((b*(A - B) - a*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) - ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + (2*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(b^
2*d) + (2*B*Tan[c + d*x]^(3/2))/(3*b*d)
```

Rubi [A] time = 0.979272, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3607, 3647, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{2a^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\tan}{\sqrt{2}d\left(a\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] ((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*a^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)*d) + ((b*(A - B) - a*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) - ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + (2*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(b^
2*d) + (2*B*Tan[c + d*x]^(3/2))/(3*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3bd} + \frac{2\int \frac{\sqrt{\tan(c+dx)}\left(-\frac{3aB}{2}-\frac{3}{2}bB\tan(c+dx)+\frac{3}{2}(Ab-aB)\tan^2(c+dx)\right)}{a+b\tan(c+dx)}\,dx}{3b}$$

$$= \frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{b^2d} + \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3bd} + \frac{4\int \frac{-\frac{3}{4}a(Ab-aB)-\frac{3}{4}Ab^2\tan(c+dx)-}{\sqrt{\tan(c+dx)}(a+}}{3b^2}$$

$$= \frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{b^2d} + \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3bd} + \frac{4\int \frac{-\frac{3}{4}b^2(Ab-aB)-\frac{3}{4}b^2(aA+bB)\tan}{\sqrt{\tan(c+dx)}}}{3b^2\left(a^2+b^2\right)}$$

$$= \frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{b^2d} + \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3bd} + \frac{8\,\mathrm{Subst}\left(\int \frac{-\frac{3}{4}b^2(Ab-aB)-\frac{3}{4}b^2(a}{1+x^4}\right.}{3b^2\left(a^2+\right.}$$

$$= \frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{b^2d} + \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3bd} - \frac{\left(2a^3(Ab-aB)\right)\mathrm{Subst}\left(\int \frac{1}{a+b}\right.}{b^2\left(a^2+b\right.}$$

$$= -\frac{2a^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}\left(a^2+b^2\right)d} + \frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{b^2d} + \frac{2B\tan^{\frac{3}{2}}}{3}$$

$$= -\frac{2a^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))\log\left(1-\sqrt{2}\sqrt{\right.}}{2\sqrt{2}\left(a^2+b\right.}$$

$$= \frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(a(A-B)+b(A+B)}{\sqrt{2}}$$

Mathematica [C] time = 1.11041, size = 187, normalized size = 0.58

$$\frac{2\sqrt{b}\left(a^2+b^2\right)\sqrt{\tan(c+dx)}(-3aB+3Ab+bB\tan(c+dx))+6a^{5/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)-3\sqrt[4]{-1}b^{5/2}(a+ib)(B}{3b^{5/2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (-3*(-1)^(1/4)*(a + I*b)*b^(5/2)*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d
*x]]] + 6*a^(5/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a
]] + 3*(-1)^(1/4)*b^(5/2)*(I*a + b)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c
 + d*x]]] + 2*Sqrt[b]*(a^2 + b^2)*Sqrt[Tan[c + d*x]]*(3*A*b - 3*a*B + b*B*T
an[c + d*x]))/(3*b^(5/2)*(a^2 + b^2)*d)
```

Maple [B] time = 0.047, size = 666, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 2/3*B*tan(d*x+c)^(3/2)/b/d+2/d/b*A*tan(d*x+c)^(1/2)-2/d/b^2*a*B*tan(d*x+c)^
(1/2)-2/d/b*a^3/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2)
)*A+2/d/b^2*a^4/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2)
)*B-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d/(a
^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d/(a^2+b^2)*A*2
^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*b+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/
2))*a+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/4/d
/(a^2+b^2)*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))*a-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*
tan(d*x+c)^(1/2))*a-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^
(1/2))*a-1/4/d/(a^2+b^2)*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a-1/2/d/(a^2+b^2)*B*2^(1/2)*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/
2)*tan(d*x+c)^(1/2))*b-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.399 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=297

$$\frac{2a^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{(b(A-B)-a(A+B))\tan}{\sqrt{2}d\left(a\right.}$$

```
[Out] -(((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*a^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(b^(3/2)*(a^2 + b^2)*d) + ((a*(A - B) + b*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + (2*B*Sqrt[Tan[c + d*x]])/(b*d)
```

Rubi [A] time = 0.653632, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3607, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{2a^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{(b(A-B)-a(A+B))\tan}{\sqrt{2}d\left(a\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] -(((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*a^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(b^(3/2)*(a^2 + b^2)*d) + ((a*(A - B) + b*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + (2*B*Sqrt[Tan[c + d*x]])/(b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

<u>Rule 3653</u>

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

<u>Rule 3534</u>

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

<u>Rule 1168</u>

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

<u>Rule 1162</u>

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

<u>Rule 617</u>

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
```

```
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{2\int \frac{-\frac{aB}{2}-\frac{1}{2}bB\tan(c+dx)+\frac{1}{2}(Ab-aB)\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{b}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{2\int \frac{-\frac{1}{2}b(aA+bB)+\frac{1}{2}b(Ab-aB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{b\left(a^2+b^2\right)} + \frac{\left(a^2(Ab-aB)\right)\int \frac{}{\sqrt{\text{ta}}}}{b\left(a^2\right.}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{4\,\text{Subst}\left(\int \frac{-\frac{1}{2}b(aA+bB)+\frac{1}{2}b(Ab-aB)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{b\left(a^2+b^2\right)d} + \cdots$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{\left(2a^2(Ab-aB)\right)\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{b\left(a^2+b^2\right)d} + \frac{(b(\ldots}{}$$

$$= \frac{2a^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\left(a^2+b^2\right)d} + \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{(b(A-B)-a(A+}{}$$

$$= \frac{2a^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\left(a^2+b^2\right)d} + \frac{(a(A-B)+b(A+B))\log\left(1-\sqrt{2}\sqrt{\text{tan}}\right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= -\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))}{\sqrt{2}}$$

Mathematica [C] time = 0.3355, size = 165, normalized size = 0.56

$$\frac{-2a^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+2\sqrt{b}B\left(a^2+b^2\right)\sqrt{\tan(c+dx)}+\sqrt[4]{-1}b^{3/2}(a+ib)(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+}\right.}{b^{3/2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((-1)^(1/4)*(a + I*b)*b^(3/2)*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]
]] - 2*a^(3/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]
+ (-1)^(1/4)*(a - I*b)*b^(3/2)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*
x]]] + 2*Sqrt[b]*(a^2 + b^2)*B*Sqrt[Tan[c + d*x]])/(b^(3/2)*(a^2 + b^2)*d)
```

Maple [B] time = 0.048, size = 628, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 2*B*tan(d*x+c)^(1/2)/b/d+2/d*a^2/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1
/2)*b/(a*b)^(1/2))*A-2/d/b*a^3/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2
)*b/(a*b)^(1/2))*B-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1
/2))*a-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/4/
d/(a^2+b^2)*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))*a-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)
*tan(d*x+c)^(1/2))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)
^(1/2))*b-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/4/d/(a^2+b^2)*A*2^(1/2)*ln
((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c)))*b+1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2
/d/(a^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d/(a^2+b^2
)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c
)^(1/2)+tan(d*x+c)))*a-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c
)^(1/2))*a-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.400 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=278

$$-\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{2\sqrt{a}(Ab$$

```
[Out] -(((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*Sqrt[a]*(A*b - a*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[b]*(a^2 + b^2)*d) - ((b*(A - B) - a*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) + ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.368744, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3612, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{2\sqrt{a}(Ab$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] -(((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*Sqrt[a]*(A*b - a*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[b]*(a^2 + b^2)*d) - ((b*(A - B) - a*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) + ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3612

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*Sqrt[(c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]])/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[1
/(a^2 + b^2), Int[Simp[A*(a*c + b*d) + B*(b*c - a*d) - (A*(b*c - a*d) - B*(
```

```
a*c + b*d))*Tan[e + f*x], x]/Sqrt[c + d*Tan[e + f*x]], x], x] - Dist[((b*c
- a*d)*(B*a - A*b))/(a^2 + b^2), Int[(1 + Tan[e + f*x]^2)/((a + b*Tan[e + f
*x])*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x
] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \frac{\int \frac{Ab-aB+(aA+bB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a^2+b^2} - \frac{(a(Ab-aB))\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{2\,\text{Subst}\left(\int \frac{Ab-aB+(aA+bB)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{(a^2+b^2)\,d} - \frac{(a(Ab-aB))\,\text{Subst}\left(\int \frac{}{\sqrt{x}(} \right.}{(a^2+b}$$

$$= -\frac{(2a(Ab-aB))\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{(a^2+b^2)\,d} + \frac{(b(A-B)-a(A+B))}{}$$

$$= -\frac{2\sqrt{a}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\,(a^2+b^2)\,d} - \frac{(b(A-B)-a(A+B))\,\text{Subst}\left(\int \frac{\sqrt{2}+}{-1-\sqrt{2}} \right.}{2\sqrt{2}\,(a^2+b^2)}$$

$$= -\frac{2\sqrt{a}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\,(a^2+b^2)\,d} - \frac{(b(A-B)-a(A+B))\log\left(1-\sqrt{2}\sqrt{\text{ta}}\right.}{2\sqrt{2}\,(a^2+b^2)}$$

$$= -\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\,(a^2+b^2)\,d} + \frac{(a(A-B)+b(A+B)}{\sqrt{2}}$$

Mathematica [A] time = 0.356774, size = 195, normalized size = 0.7

$$-\frac{2\sqrt{2}(a(A-B)+b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)+\frac{8\sqrt{a}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}}}{4d\,(a^2+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(2*Sqrt[2]*(a*(A - B) + b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]]
 - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + (8*Sqrt[a]*(A*b - a*B)*ArcTan[
(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[b] - Sqrt[2]*(b*(-A + B) + a*(A
 + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(4*(a^2 + b^2)*d)
```

Maple [B] time = 0.06, size = 607, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -2/d*a/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A*b+2/d
*a^2/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+1/2/d/(
a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d/(a^2+b^2)*A*2
^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/4/d/(a^2+b^2)*A*2^(1/2)*ln((
1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c)))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/2/d
/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/4/d/(a^2+b^2)*
B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^
(1/2)+tan(d*x+c)))*a+1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^
(1/2))*a+1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/
4/d/(a^2+b^2)*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/
2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/
2)*tan(d*x+c)^(1/2))*b+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+
c)^(1/2))*b+1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{\tan(c + dx)}}{a + b\tan(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/(a + b*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

3.401 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=278

$$\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{2\sqrt{b}(Ab-}{}$$

```
[Out] ((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*Sqrt[b]*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*(a^2 + b^2)*d) - ((a*(A - B) + b*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) + ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.360673, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3613, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{2\sqrt{b}(Ab-}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])),x]
```


```
[Out] ((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*Sqrt[b]*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*(a^2 + b^2)*d) - ((a*(A - B) + b*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) + ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3613

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)])^(n_))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[
1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n*Simp[a*A + b*B - (A*b - a*B)*Tan[
```

```
e + f*x], x], x], x] + Dist[(b*(A*b - a*B))/(a^2 + b^2), Int[((c + d*Tan[e
+ f*x])^n*(1 + Tan[e + f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ
[c^2 + d^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx = \frac{\int \frac{aA+bB-(Ab-aB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a^2+b^2} + \frac{(b(Ab-aB))\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{2\,\text{Subst}\left(\int \frac{aA+bB+(-Ab+aB)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{(a^2+b^2)\,d} + \frac{(b(Ab-aB))\,\text{Subst}\left(\int \frac{}{\sqrt{x}}\right.}{(a^2+}$$

$$= \frac{(2b(Ab-aB))\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{(a^2+b^2)\,d} - \frac{(b(A-B)-a(A+B))\,\text{Su}}{(}$$

$$= \frac{2\sqrt{b}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\,(a^2+b^2)\,d} - \frac{(b(A-B)-a(A+B))\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x}\right.}{2\,(a^2+b^2)\,d}$$

$$= \frac{2\sqrt{b}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\,(a^2+b^2)\,d} - \frac{(a(A-B)+b(A+B))\log\left(1-\sqrt{2}\sqrt{\tan\right.}{2\sqrt{2}\,(a^2+b^2)\,d}$$

$$= \frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\,(a^2+b^2)\,d} - \frac{(b(A-B)-a(A+B))\,\text{ta}}{\sqrt{2}\,(a}$$

Mathematica [A] time = 0.346621, size = 194, normalized size = 0.7

$$-\frac{2\sqrt{2}(a(A+B)+b(B-A))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)+\frac{8\sqrt{b}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}}}{4d\,(a^2+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])),x]
```

```
[Out] -(2*Sqrt[2]*(b*(-A + B) + a*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]
] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + (8*Sqrt[b]*(-(A*b) + a*B)*Arc
Tan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[a] + Sqrt[2]*(a*(A - B) + b
*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(4*(a^2 + b^2)*d)
```

Maple [B] time = 0.064, size = 607, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] 2/d*b^2/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-2/d*
b/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*a*B+1/2/d/(a
^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/2/d/(a^2+b^2)*A*2^
(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/4/d/(a^2+b^2)*A*2^(1/2)*ln((1
+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
)))*a+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d/
(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/4/d/(a^2+b^2)*B
*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c)))*b-1/4/d/(a^2+b^2)*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d/(a^2+b^2)*A*
2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d/(a^2+b^2)*A*2^(1/2)*arct
an(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a+1/2/
d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/2/d/(a^2+b^2)*
B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan(c + dx)}{(a + b\tan(c + dx))\sqrt{\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/((a + b*tan(c + d*x))*sqrt(tan(c + d*x))), x)
```

Giac [A] time = 2.22229, size = 398, normalized size = 1.43

$$\frac{\left(\sqrt{2}Aa + \sqrt{2}Ba - \sqrt{2}Ab + \sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(dx + c)}\right)\right)}{2\left(a^2d + b^2d\right)} + \frac{\left(\sqrt{2}Aa + \sqrt{2}Ba - \sqrt{2}Ab + \sqrt{2}Bb\right)\arctan\left(-\right.}{2\left(a^2d + b^2d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] 1/2*(sqrt(2)*A*a + sqrt(2)*B*a - sqrt(2)*A*b + sqrt(2)*B*b)*arctan(1/2*sqrt
(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/(a^2*d + b^2*d) + 1/2*(sqrt(2)*A*a +
sqrt(2)*B*a - sqrt(2)*A*b + sqrt(2)*B*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*s
qrt(tan(d*x + c))))/(a^2*d + b^2*d) + 1/4*(sqrt(2)*A*a - sqrt(2)*B*a + sqrt
(2)*A*b + sqrt(2)*B*b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(
a^2*d + b^2*d) - 1/4*(sqrt(2)*A*a - sqrt(2)*B*a + sqrt(2)*A*b + sqrt(2)*B*b
)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^2*d + b^2*d) - 2*(
B*a*b - A*b^2)*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^2*d + b^2*d)*sqrt
(a*b))
```

3.402 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=297

$$-\frac{2b^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\,\mathrm{t}}{\sqrt{2}d}$$

```
[Out] ((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*b^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^2 + b^2)*d) + ((b*(A - B) - a*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) - ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - (2*A)/(a*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.636983, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3609, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{2b^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\,\mathrm{t}}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])),x]
```


```
[Out] ((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*b^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^2 + b^2)*d) + ((b*(A - B) - a*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) - ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - (2*A)/(a*d*Sqrt[Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = -\frac{2A}{ad\sqrt{\tan(c+dx)}} - \frac{2\int \frac{\frac{1}{2}(Ab-aB)+\frac{1}{2}aA\tan(c+dx)+\frac{1}{2}Ab\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}} - \frac{2\int \frac{\frac{1}{2}a(Ab-aB)+\frac{1}{2}a(aA+bB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a\left(a^2+b^2\right)} - \frac{\left(b^2(Ab-aB)\right)\int \frac{}{\sqrt{\tan}}}{a\left(a^2 \right.}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}} - \frac{4\,\text{Subst}\left(\int \frac{\frac{1}{2}a(Ab-aB)+\frac{1}{2}a(aA+bB)x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{a\left(a^2+b^2\right)d} - \frac{(b}{}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}} - \frac{\left(2b^2(Ab-aB)\right)\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{a\left(a^2+b^2\right)d} - \frac{(b(}{}$$

$$= -\frac{2b^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)d} - \frac{2A}{ad\sqrt{\tan(c+dx)}} + \frac{(b(A-B)-a(A+}{}$$

$$= -\frac{2b^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))\log\left(1-\sqrt{2}\sqrt{\tan}\right.}{2\sqrt{2}\left(a^2+b^2\right)}$$

$$= \frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(a(A-B)+b(A+B))\,\text{ta}}{\sqrt{2}\left(a\right.}$$

Mathematica [C] time = 0.566075, size = 153, normalized size = 0.52

$$\frac{\frac{2b^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\left(a^2+b^2\right)} + \frac{\sqrt[4]{-1}a\left((b-ia)(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+(b+ia)(A+iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)\right)}{a^2+b^2} - \frac{2A}{\sqrt{\tan(c+dx)}}}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] ((2*b^(3/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(S
qrt[a]*(a^2 + b^2)) + ((-1)^(1/4)*a*(((-I)*a + b)*(A - I*B)*ArcTan[(-1)^(3/
4)*Sqrt[Tan[c + d*x]]] + (I*a + b)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c
+ d*x]]]))/(a^2 + b^2) - (2*A)/Sqrt[Tan[c + d*x]])/(a*d)
```

Maple [B] time = 0.05, size = 628, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] -2*A/a/d/tan(d*x+c)^(1/2)-2/d/a*b^3/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)
^(1/2)*b/(a*b)^(1/2))*A+2/d*b^2/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/
2)*b/(a*b)^(1/2))*B-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^
(1/2))*b-1/4/d/(a^2+b^2)*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d/(a^2+b^2)*A*2^(1/2)*arc
tan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/
2)*tan(d*x+c)^(1/2))*a+1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a+1/2/d/(a^2+b^2)
*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/4/d/(a^2+b^2)*A*2^(1/2)*l
n((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*a-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a-1
/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/4/d/(a^2+b^
2)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c)))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x
+c)^(1/2))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan(c + dx)}{(a + b\tan(c + dx))\tan^{\frac{3}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/((a + b*tan(c + d*x))*tan(c + d*x)**(3/2)), x
)
```

Giac [A] time = 2.3635, size = 425, normalized size = 1.43

$$-\frac{\left(\sqrt{2}Aa - \sqrt{2}Ba + \sqrt{2}Ab + \sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + 2\sqrt{\tan(dx + c)}\right)\right)}{2\left(a^2d + b^2d\right)} - \frac{\left(\sqrt{2}Aa - \sqrt{2}Ba + \sqrt{2}Ab + \sqrt{2}Bb\right)\arctan\left(\right.}{2\left(a^2d + b^2d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(sqrt(2)*A*a - sqrt(2)*B*a + sqrt(2)*A*b + sqrt(2)*B*b)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/(a^2*d + b^2*d) - 1/2*(sqrt(2)*A*a -
 sqrt(2)*B*a + sqrt(2)*A*b + sqrt(2)*B*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*
sqrt(tan(d*x + c))))/(a^2*d + b^2*d) + 1/4*(sqrt(2)*A*a + sqrt(2)*B*a - sqr
t(2)*A*b + sqrt(2)*B*b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/
(a^2*d + b^2*d) - 1/4*(sqrt(2)*A*a + sqrt(2)*B*a - sqrt(2)*A*b + sqrt(2)*B*
b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^2*d + b^2*d) + 2*
(B*a*b^2 - A*b^3)*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^3*d + a*b^2*d)
*sqrt(a*b)) - 2*A/(a*d*sqrt(tan(d*x + c)))
```

3.403 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=325

$$\frac{2b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{(b(A-B)-a(A+B))\tan}{\sqrt{2}d\,(a}$$

```
[Out] -(((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*b^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(a^(5/2)*(a^2 + b^2)*d) + ((a*(A - B) + b*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - (2*A)/(3*a*d*Tan[c + d*x]^(3/2)) +
(2*(A*b - a*B))/(a^2*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.974389, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{2b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{(b(A-B)-a(A+B))\tan}{\sqrt{2}d\,(a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])),x]
```



```
[Out] -(((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*b^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(a^(5/2)*(a^2 + b^2)*d) + ((a*(A - B) + b*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - (2*A)/(3*a*d*Tan[c + d*x]^(3/2)) +
(2*(A*b - a*B))/(a^2*d*Sqrt[Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
```

```
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)} - \frac{2\int \frac{\frac{3}{2}(Ab-aB)+\frac{3}{2}aA\tan(c+dx)+\frac{3}{2}Ab\tan^2(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx}{3a}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{a^2d\sqrt{\tan(c+dx)}} + \frac{4\int \frac{-\frac{3}{4}\left(a^2A-Ab^2+abB\right)-\frac{3}{4}a^2B\tan(c+dx)+\frac{3}{4}}{\sqrt{\tan(c+dx)}(a+b\tan(c+}}{3a^2}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{a^2d\sqrt{\tan(c+dx)}} + \frac{4\int \frac{-\frac{3}{4}a^2(aA+bB)+\frac{3}{4}a^2(Ab-aB)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,d}{3a^2\left(a^2+b^2\right)}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{a^2d\sqrt{\tan(c+dx)}} + \frac{8\,\mathrm{Subst}\left(\int \frac{-\frac{3}{4}a^2(aA+bB)+\frac{3}{4}a^2(Ab-aB)x^2}{1+x^4}\right.}{3a^2\left(a^2+b^2\right)d}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{a^2d\sqrt{\tan(c+dx)}} + \frac{\left(2b^3(Ab-aB)\right)\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx,\right.}{a^2\left(a^2+b^2\right)d}$$

$$= \frac{2b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}\left(a^2+b^2\right)d} - \frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{a^2d\sqrt{\tan(c+dx)}}$$

$$= \frac{2b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}\left(a^2+b^2\right)d} + \frac{(a(A-B)+b(A+B))\log\left(1-\sqrt{2}\sqrt{\mathrm{ta}}\right.}{2\sqrt{2}\left(a^2+b^2\right)}$$

$$= -\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B)}{\sqrt{2}}$$

Mathematica [C] time = 3.21279, size = 174, normalized size = 0.54

$$\frac{\frac{6b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}\left(a^2+b^2\right)} - \frac{2((3aB-3Ab)\tan(c+dx)+aA)}{a^2\tan^{\frac{3}{2}}(c+dx)} + \frac{3\sqrt[4]{-1}(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)}{a-ib} + \frac{3\sqrt[4]{-1}(A+iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan(c+}\right.}{a+ib}}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] ((3*(-1)^(1/4)*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/(a - I*b) +
 (6*b^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(a^(5
```

```
/2)*(a^2 + b^2)) + (3*(-1)^(1/4)*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c +
d*x]]])/(a + I*b) - (2*(a*A + (-3*A*b + 3*a*B)*Tan[c + d*x]))/(a^2*Tan[c +
d*x]^(3/2)))/(3*d)
```

Maple [B] time = 0.052, size = 666, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] 2/d/a^2*b^4/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-
2/d/a*b^3/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-2/
3*A/a/d/tan(d*x+c)^(3/2)+2/d/a^2/tan(d*x+c)^(1/2)*A*b-2*B/a/d/tan(d*x+c)^(1
/2)-1/2/d/(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/2/d/(a
^2+b^2)*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/4/d/(a^2+b^2)*A*2
^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*a-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/
2))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d
/(a^2+b^2)*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/4/d/(a^2+b^2)*A*2^(1/2)*ln((1-2^(1/2)*tan
(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/2/d/
(a^2+b^2)*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d/(a^2+b^2)*A*
2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d/(a^2+b^2)*B*2^(1/2)*ln(
(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c)))*a-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/2/
d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.83159, size = 459, normalized size = 1.41

$$-\frac{\left(\sqrt{2}Aa+\sqrt{2}Ba-\sqrt{2}Ab+\sqrt{2}Bb\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)}{2\left(a^2d+b^2d\right)}-\frac{\left(\sqrt{2}Aa+\sqrt{2}Ba-\sqrt{2}Ab+\sqrt{2}Bb\right)\mathrm{arctan}}{2\left(a^2d+b^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] -1/2*(sqrt(2)*A*a + sqrt(2)*B*a - sqrt(2)*A*b + sqrt(2)*B*b)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/(a^2*d + b^2*d) - 1/2*(sqrt(2)*A*a +
 sqrt(2)*B*a - sqrt(2)*A*b + sqrt(2)*B*b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*
sqrt(tan(d*x + c))))/(a^2*d + b^2*d) - 1/4*(sqrt(2)*A*a - sqrt(2)*B*a + sqr
t(2)*A*b + sqrt(2)*B*b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/
```

```
(a^2*d + b^2*d) + 1/4*(sqrt(2)*A*a - sqrt(2)*B*a + sqrt(2)*A*b + sqrt(2)*B*
b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^2*d + b^2*d) - 2*
(B*a*b^3 - A*b^4)*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^4*d + a^2*b^2*
d)*sqrt(a*b)) - 2/3*(3*B*a*tan(d*x + c) - 3*A*b*tan(d*x + c) + A*a)/(a^2*d*
tan(d*x + c)^(3/2))
```

3.404 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=436

$$\frac{a^{3/2}\left(a^2Ab-3a^3B-7ab^2B+5Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}d\left(a^2+b^2\right)^2}+\frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{bd\left(a^2+b^2\right)(a+b\tan(c+dx))}+\frac{\left(a^2(A-B)+2ab(A+B\right.}{}$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) +
 (a^(3/2)*(a^2*A*b + 5*A*b^3 - 3*a^3*B - 7*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A
 + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Lo
g[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*
d) - ((a*A*b - 3*a^2*B - 2*b^2*B)*Sqrt[Tan[c + d*x]])/(b^2*(a^2 + b^2)*d) +
 (a*(A*b - a*B)*Tan[c + d*x]^(3/2))/(b*(a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.16191, antiderivative size = 436, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3605, 3647, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a^{3/2}\left(a^2Ab-3a^3B-7ab^2B+5Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}d\left(a^2+b^2\right)^2}+\frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{bd\left(a^2+b^2\right)(a+b\tan(c+dx))}+\frac{\left(a^2(A-B)+2ab(A+B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) +
 (a^(3/2)*(a^2*A*b + 5*A*b^3 - 3*a^3*B - 7*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A
 + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Lo
g[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*
d) - ((a*A*b - 3*a^2*B - 2*b^2*B)*Sqrt[Tan[c + d*x]])/(b^2*(a^2 + b^2)*d) +
```

```
(a*(A*b - a*B)*Tan[c + d*x]^(3/2))/(b*(a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
```

```
NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{b(a^2+b^2)\,d(a+b\tan(c+dx))} + \frac{\int \frac{\sqrt{\tan(c+dx)}\left(-\frac{3}{2}a(Ab-aB)+b(Ab-aB)\tan(c+dx)-\frac{1}{2}(\right.}{a+b\tan(c+dx)}}{b(a^2+b^2)}$$

$$= -\frac{(aAb-3a^2B-2b^2B)\sqrt{\tan(c+dx)}}{b^2(a^2+b^2)\,d} + \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{b(a^2+b^2)\,d(a+b\tan(c+dx))} + \frac{2}{}$$

$$= -\frac{(aAb-3a^2B-2b^2B)\sqrt{\tan(c+dx)}}{b^2(a^2+b^2)\,d} + \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{b(a^2+b^2)\,d(a+b\tan(c+dx))} + \frac{2}{}$$

$$= -\frac{(aAb-3a^2B-2b^2B)\sqrt{\tan(c+dx)}}{b^2(a^2+b^2)\,d} + \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{b(a^2+b^2)\,d(a+b\tan(c+dx))} + \frac{4}{}$$

$$= -\frac{(aAb-3a^2B-2b^2B)\sqrt{\tan(c+dx)}}{b^2(a^2+b^2)\,d} + \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{b(a^2+b^2)\,d(a+b\tan(c+dx))} + \frac{(a}{}$$

$$= \frac{a^{3/2}(a^2Ab+5Ab^3-3a^3B-7ab^2B)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}(a^2+b^2)^2\,d} - \frac{(aAb-3a^2B-2}{b^2(a^2}$$

$$= \frac{a^{3/2}(a^2Ab+5Ab^3-3a^3B-7ab^2B)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}(a^2+b^2)^2\,d} + \frac{(2ab(A-B)-a^2}{}$$

$$= \frac{(a^2(A-B)-b^2(A-B)+2ab(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}(a^2+b^2)^2\,d} - \frac{(a^2(A}{}$$

Mathematica [C] time = 2.2061, size = 275, normalized size = 0.63

$$\frac{2\left(\frac{(a^2Ab-3a^3B-4ab^2B+2Ab^3)\sqrt{\tan(c+dx)}}{2(a^2+b^2)} - \frac{(a+b\tan(c+dx))\left(a^{3/2}(-a^2Ab+3a^3B+7ab^2B-5Ab^3)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt[4]{-1}b^{5/2}(a+ib)^2(B+iA)\tan^{-1}\left((-1)\right.\right.}{2\sqrt{b}(a^2+b^2)^2}\right.}{b^2d(a+b\tan(c+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] (2*((-(A*b) + 3*a*B)*Sqrt[Tan[c + d*x]] + ((a^2*A*b + 2*A*b^3 - 3*a^3*B - 4
*a*b^2*B)*Sqrt[Tan[c + d*x]])/(2*(a^2 + b^2)) + b*B*Tan[c + d*x]^(3/2) - ((
(-1)^(1/4)*(a + I*b)^2*b^(5/2)*(I*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x
]]] + a^(3/2)*(-(a^2*A*b) - 5*A*b^3 + 3*a^3*B + 7*a*b^2*B)*ArcTan[(Sqrt[b]*
Sqrt[Tan[c + d*x]])/Sqrt[a]] + (-1)^(3/4)*b^(5/2)*(I*a + b)^2*(A + I*B)*Arc
Tanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])*(a + b*Tan[c + d*x]))/(2*Sqrt[b]*(a^2
+ b^2)^2)))/(b^2*d*(a + b*Tan[c + d*x]))
```

Maple [B] time = 0.063, size = 1160, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/4/d/(
a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*a^2-1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(
d*x+c)^(1/2))*b^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^
(1/2))*a^2+1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b
^2-1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-3/d*
a^5/b^2/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-1/
d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+2/d*B/b^2*t
an(d*x+c)^(1/2)-1/d*a^2*b/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A-1
/d*a^4/b/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A+1/d*a^5/b^2/(a^2+b
^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B+1/d*a^4/b/(a^2+b^2)^2/(a*b)^(1/2)
*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+5/d*a^2*b/(a^2+b^2)^2/(a*b)^(1/2)
*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(
1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d/(a^2+b^2)^2*A*2^(1/2)*ln((1+2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b-1/
d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d/(a^2+b^2
)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d/(a^2+b^2)^2*B*2
^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*a*b-1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c
)^(1/2))*b^2+1/4/d/(a^2+b^2)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan
(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2+1/4/d/(a^2+b^2)^2*A*2
^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*b^2-1/4/d/(a^2+b^2)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2-1/2/d/(a^2+b^2
)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/d*a^3/(a^2+b^2)^2*ta
```

```
n(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B-7/d*a^3/(a^2+b^2)^2/(a*b)^(1/2)*arctan(ta
n(d*x+c)^(1/2)*b/(a*b)^(1/2))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] Timed out
```

3.405 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=391

$$-\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^2}+\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\mathrm{t}}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

```
[Out] -(((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((2*a*b*(A - B) - a^2*(A + B) + b^
2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) + (Sqrt[a]*(a^2*A*b - 3*A*b^3 + a^3*B + 5*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a]])/(b^(3/2)*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2*(A
- B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(
2*Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*L
og[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2
*d) + (a*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(b*(a^2 + b^2)*d*(a + b*Tan[c + d*
x]))
```

Rubi [A] time = 0.788364, antiderivative size = 391, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3605, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^2}+\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\mathrm{t}}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] -(((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((2*a*b*(A - B) - a^2*(A + B) + b^
2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) + (Sqrt[a]*(a^2*A*b - 3*A*b^3 + a^3*B + 5*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a]])/(b^(3/2)*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2*(A
- B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(
2*Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*L
og[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2
*d) + (a*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(b*(a^2 + b^2)*d*(a + b*Tan[c + d*
```

```
x]))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]

Rule 617

Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*Simplify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b], x] /; RationalQ[q] && (EqQ[q^2, 1] || !RationalQ[b^2 - 4*a*c])] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]

Rule 204

Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[a, 0] || LtQ[b, 0])

Rule 1165

Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x], x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]

Rule 628

Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> Simp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[2*c*d - b*e, 0]

Rule 3634

Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]

Rule 63

Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b + (d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Denominator[m]] && IntLinearQ[a, b, c, d, m, n, x]

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{-\frac{1}{2}a(Ab-aB)+b(Ab-aB)\tan(c+dx)+\frac{1}{2}\left(aAb+a^2B+2b^2\right.}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}}{b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{-b\left(a^2A-Ab^2+2abB\right)+b\left(2aAb-a^2B+b^2B\right)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,d}{b\left(a^2+b^2\right)^2}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{2\,\mathrm{Subst}\left(\int \frac{-b\left(a^2A-Ab^2+2abB\right)+b\left(2aAb-a^2B+b^2B\right)x}{1+x^4}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\left(a\left(a^2Ab-3Ab^3+a^3B+5ab^2B\right)\right)\mathrm{Subst}\left(\int\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{\sqrt{a}\left(a^2Ab-3Ab^3+a^3B+5ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\left(a^2+b^2\right)^2 d} + \frac{a(Ab-aB)\sqrt{\tan}}{b\left(a^2+b^2\right)d(a+b\,\mathrm{t}}$$

$$= \frac{\sqrt{a}\left(a^2Ab-3Ab^3+a^3B+5ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\left(a^2+b^2\right)^2 d} + \frac{\left(a^2(A-B)-b^2(A-\right.}{}$$

$$= -\frac{\left(2ab(A-B)-a^2(A+B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} + \frac{\left(2ab(\right.}{}$$

Mathematica [C] time = 1.77828, size = 230, normalized size = 0.59

$$\frac{\frac{\left(a^2B+aAb+2b^2B\right)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)(a+b\tan(c+dx))} + \frac{\sqrt{a}\left(a^2Ab+a^3B+5ab^2B-3Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt[4]{-1}b^{3/2}\left((a+ib)^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+(a-ib)^2(A+iB)\tan\right.}{\sqrt{b}\left(a^2+b^2\right)^2}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
```

```
x]
```

```
[Out] ((Sqrt[a]*(a^2*A*b - 3*A*b^3 + a^3*B + 5*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[
c + d*x]])/Sqrt[a]] + (-1)^(1/4)*b^(3/2)*((a + I*b)^2*(A - I*B)*ArcTan[(-1)
^(3/4)*Sqrt[Tan[c + d*x]]] + (a - I*b)^2*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[
Tan[c + d*x]]]))/(Sqrt[b]*(a^2 + b^2)^2) - (2*B*Sqrt[Tan[c + d*x]])/(a + b*
Tan[c + d*x]) + ((a*A*b + a^2*B + 2*b^2*B)*Sqrt[Tan[c + d*x]])/((a^2 + b^2)
*(a + b*Tan[c + d*x])))/(b*d)
```

Maple [B] time = 0.056, size = 1136, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d/(
a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/2/d/(a^2+b^2)
^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d/(a^2+b^2)^2*B*2^(
1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-1/d*a^4/(a^2+b^2)^2/b*tan(d*x+
c)^(1/2)/(a+b*tan(d*x+c))*B+1/d*a/(a^2+b^2)^2*b^2*tan(d*x+c)^(1/2)/(a+b*tan
(d*x+c))*A-1/2/d/(a^2+b^2)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d*a^4/(a^2+b^2)^2/b/(
a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+5/d*a^2/(a^2+b^2)^2*b/(
a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-1/d*a^2/(a^2+b^2)^2*b*t
an(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B-3/d*a/(a^2+b^2)^2*b^2/(a*b)^(1/2)*arctan
(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(
1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*ta
n(d*x+c)^(1/2))*a^2+1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^
(1/2))*a*b+1/4/d/(a^2+b^2)^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/d*a^3/(a^2+b^2)^2*tan
(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A+1/d*a^3/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan
(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+1/2/d/(a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d
/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d/(a^2+b^2)
^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d/(a^2+b^2)^2*B*2^(1/
2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/4/d/(a^2+b^2)^2*A*2^(1/2)*ln((
1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c)))*a^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^
2-1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-1/4/d/
(a^2+b^2)^2*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)
```

```
*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2+1/4/d/(a^2+b^2)^2*B*2^(1/2)*ln((1-2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.406 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=391

$$-\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^2}+\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\tan^{-1}\big(\sqrt{}}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

```
[Out] -(((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((a^2*(A - B) - b^2*(A - B) + 2*a*
b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) - ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d
*x]])/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(
A + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(
2*Sqrt[2]*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*L
og[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2
*d) - ((A*b - a*B)*Sqrt[Tan[c + d*x]])/((a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 0.81904, antiderivative size = 391, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3608, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^2}+\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\tan^{-1}\big(\sqrt{}}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -(((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((a^2*(A - B) - b^2*(A - B) + 2*a*
b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) - ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d
*x]])/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(
A + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(
2*Sqrt[2]*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*L
og[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2
*d) - ((A*b - a*B)*Sqrt[Tan[c + d*x]])/((a^2 + b^2)*d*(a + b*Tan[c + d*x]))
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{\int \frac{-\frac{1}{2}b(Ab-aB)-b(aA+bB)\tan(c+dx)+\frac{1}{2}b(Ab-aB)\tan}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}}{b\left(a^2+b^2\right)}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{\int \frac{-b\left(2aAb-a^2B+b^2B\right)-b\left(a^2A-Ab^2+2abB\right)\tan(c+dx)}{\sqrt{\tan(c+dx)}}}{b\left(a^2+b^2\right)^2}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{2\,\mathrm{Subst}\left(\int \frac{-b\left(2aAb-a^2B+b^2B\right)-b\left(a^2A-Ab^2+2abB\right.}{1+x^4}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)d(a+b\tan(c+dx))} - \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\mathrm{Subst}\left(\int\right.}{\left(a^2+b^2\right)^2 d}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\left(a^2+b^2\right)^2 d} - \frac{(Ab-aB)\sqrt{\tan(}}{\left(a^2+b^2\right)d(a+b\tan}$$

$$= -\frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\left(a^2+b^2\right)^2 d} - \frac{\left(2ab(A-B)-a^2(A\right.}{}$$

$$= -\frac{\left(a^2(A-B)-b^2(A-B)+2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} + \frac{\left(a^2\right.}{}$$

Mathematica [C] time = 1.34335, size = 220, normalized size = 0.56

$$\frac{\frac{\sqrt{a}\left(-3a^2Ab+a^3B-3ab^2B+Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\left(a^2+b^2\right)} + \frac{\sqrt[4]{-1}a\left((a+ib)^2(B+iA)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+(a-ib)^2(B-iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)\right)}{a^2+b^2} + }{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] ((Sqrt[a]*(-3*a^2*A*b + A*b^3 + a^3*B - 3*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a]])/(Sqrt[b]*(a^2 + b^2)) + ((-1)^(1/4)*a*((a + I*b)^2*(I
*A + B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + (a - I*b)^2*((-I)*A + B)*Ar
cTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]))/(a^2 + b^2) + (-(A*b) + a*B)*Sqrt[Ta
n[c + d*x]] + (b*(A*b - a*B)*Tan[c + d*x]^(3/2))/(a + b*Tan[c + d*x]))/(a*(
a^2 + b^2)*d)
```

Maple [B] time = 0.073, size = 1128, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/4/d/
(a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2-1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(
1/2)*tan(d*x+c)^(1/2))*a^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))*b^2-1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)
^(1/2))*a^2-3/d/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/
2))*B*a*b^2+1/d/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B*a*b^2-1/2/d
/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/2/d/(a^2+b^
2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/d/(a^2+b^2)^2*A*2^
(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d*a^2*b/(a^2+b^2)^2*tan(d*x
+c)^(1/2)/(a+b*tan(d*x+c))*A-3/d*a^2*b/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d
*x+c)^(1/2)*b/(a*b)^(1/2))*A+1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))*a*b+1/2/d/(a^2+b^2)^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b+1/d/(a^2+b^2)^2
*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/d/(a^2+b^2)^2*B*2^(1/2)
*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/2/d/(a^2+b^2)^2*B*2^(1/2)*ln((1-
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
))*a*b+1/d/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A
*b^3-1/d/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A*b^3+1/2/d/(a^2+b^2
)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/4/d/(a^2+b^2)^2*B*2
^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*a^2-1/4/d/(a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/4/d/(a^2+b^2
)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x
+c)^(1/2)+tan(d*x+c)))*b^2+1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))*a^2+1/d*a^3/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B+
1/d*a^3/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\sqrt{\tan{(c + dx)}}}{(a + b\tan{(c + dx)})^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/(a + b*tan(c + d*x))**2, x
)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] Timed out
```

3.407 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=391

$$\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^2}-\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\text{ta}}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

```
[Out] ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) +
 (Sqrt[b]*(5*a^2*A*b + A*b^3 - 3*a^3*B + a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[
c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B
) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*S
qrt[2]*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*Log[
1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d)
 + (b*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
)
```

Rubi [A] time = 0.865479, antiderivative size = 391, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3609, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^2}-\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\text{ta}}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) +
 (Sqrt[b]*(5*a^2*A*b + A*b^3 - 3*a^3*B + a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[
c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B
) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*S
qrt[2]*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*Log[
1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d)
 + (b*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
```

)

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}\,dx = \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{\frac{1}{2}\left(2a^2A+Ab^2+abB\right)-a(Ab-aB)\tan(c+dx)+\frac{1}{2}b(Ab-aB}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}}{a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{a\left(a^2A-Ab^2+2abB\right)-a\left(2aAb-a^2B+b^2B\right)\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a\left(a^2+b^2\right)^2}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{2\,\text{Subst}\left(\int \frac{a\left(a^2A-Ab^2+2abB\right)-a\left(2aAb-a^2B+b^2B\right)x^2}{1+x^4}\right.}{a\left(a^2+b^2\right)^2 d}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\left(b\left(5a^2Ab+Ab^3-3a^3B+ab^2B\right)\right)\text{Subst}\left(\right.}{a\left(a^2+b^2\right)^2 d}$$

$$= \frac{\sqrt{b}\left(5a^2Ab+Ab^3-3a^3B+ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)^2 d} + \frac{b(Ab-aB)\sqrt{\tan}}{a\left(a^2+b^2\right)d(a+b\,\text{t}}$$

$$= \frac{\sqrt{b}\left(5a^2Ab+Ab^3-3a^3B+ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)^2 d} - \frac{\left(a^2(A-B)-b^2(A\right.}{}$$

$$= \frac{\left(2ab(A-B)-a^2(A+B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} - \frac{\left(2ab(\right.}{}$$

Mathematica [C] time = 1.05973, size = 204, normalized size = 0.52

$$\frac{\frac{\sqrt{b}\left(5a^2Ab-3a^3B+ab^2B+Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\left(a^2+b^2\right)} + \frac{\sqrt[4]{-1}\left(-a(a+ib)^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)-a(a-ib)^2(A+iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)\right)}{a^2+b^2} + \frac{b}{}}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2),
```

```
x]
```

```
[Out] ((Sqrt[b]*(5*a^2*A*b + A*b^3 - 3*a^3*B + a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[
c + d*x]])/Sqrt[a]])/(Sqrt[a]*(a^2 + b^2)) + ((-1)^(1/4)*(-(a*(a + I*b)^2*(
A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]) - a*(a - I*b)^2*(A + I*B)*A
rcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]))/(a^2 + b^2) + (b*(A*b - a*B)*Sqrt[T
an[c + d*x]])/(a + b*Tan[c + d*x]))/(a*(a^2 + b^2)*d)
```

Maple [B] time = 0.074, size = 1136, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/2/d/
(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-1/2/d/(a^2+b^2
)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/2/d/(a^2+b^2)^2*B*2^
(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/d*a/(a^2+b^2)^2*b^2*tan(d*x
+c)^(1/2)/(a+b*tan(d*x+c))*A+1/2/d/(a^2+b^2)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(
d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b-3/d*a
^2/(a^2+b^2)^2*b/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-1/d*a
^2/(a^2+b^2)^2*b*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B+5/d*a/(a^2+b^2)^2*b^2/
(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-1/2/d/(a^2+b^2)^2*A*2^
(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/2/d/(a^2+b^2)^2*A*2^(1/2)*ar
ctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2
^(1/2)*tan(d*x+c)^(1/2))*a*b-1/4/d/(a^2+b^2)^2*A*2^(1/2)*ln((1+2^(1/2)*tan(
d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2+1/d*b
^4/(a^2+b^2)^2/a*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A+1/d*b^4/(a^2+b^2)^2/a/
(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-1/2/d/(a^2+b^2)^2*A*2^
(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*a*b-1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1
/2))*a*b+1/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1
/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/4/d/(a^2
+b^2)^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan
(d*x+c)^(1/2)+tan(d*x+c)))*a^2-1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2
)*tan(d*x+c)^(1/2))*b^2-1/d*b^3/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c
))*B+1/d*b^3/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))
*B+1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/4/d
/(a^2+b^2)^2*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2-1/4/d/(a^2+b^2)^2*B*2^(1/2)*ln((1-2^(1/
```

```
2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^
2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")

[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")

[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**2,x)

[Out] Timed out
```

Giac [A] time = 1.55023, size = 695, normalized size = 1.78

$$\frac{\left(\sqrt{2}Aa^2+\sqrt{2}Ba^2-2\sqrt{2}Aab+2\sqrt{2}Bab-\sqrt{2}Ab^2-\sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)}{2\left(a^4d+2a^2b^2d+b^4d\right)}+\frac{\left(\sqrt{2}Aa^2+\sqrt{2}B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] 1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sq
rt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x +
 c))))/(a^4*d + 2*a^2*b^2*d + b^4*d) + 1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 -
 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(
-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/(a^4*d + 2*a^2*b^2*d + b^4*d
) + 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b
- sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x +
 c) + 1)/(a^4*d + 2*a^2*b^2*d + b^4*d) - 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2
 + 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(-
sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^4*d + 2*a^2*b^2*d + b^4*d
) - (3*B*a^3*b - 5*A*a^2*b^2 - B*a*b^3 - A*b^4)*arctan(b*sqrt(tan(d*x + c))
/sqrt(a*b))/((a^5*d + 2*a^3*b^2*d + a*b^4*d)*sqrt(a*b)) - (B*a*b*sqrt(tan(d
*x + c)) - A*b^2*sqrt(tan(d*x + c)))/((a^3*d + a*b^2*d)*(b*tan(d*x + c) + a
))
```

3.408 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=439

$$-\frac{b^{3/2}\left(7a^2Ab-5a^3B-ab^2B+3Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d\left(a^2+b^2\right)^2}+\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(\right.}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) -
 (b^(3/2)*(7*a^2*A*b + 3*A*b^3 - 5*a^3*B - a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a]])/(a^(5/2)*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A
 + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Lo
g[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*
d) - (2*a^2*A + 3*A*b^2 - a*b*B)/(a^2*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]) + (
b*(A*b - a*B))/(a*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.17331, antiderivative size = 439, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{b^{3/2}\left(7a^2Ab-5a^3B-ab^2B+3Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}d\left(a^2+b^2\right)^2}+\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(\right.}{\sqrt{2}d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2),x]
```



```
[Out] ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) -
 (b^(3/2)*(7*a^2*A*b + 3*A*b^3 - 5*a^3*B - a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a]])/(a^(5/2)*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A
 + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2
*Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Lo
g[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*
d) - (2*a^2*A + 3*A*b^2 - a*b*B)/(a^2*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]) + (
```

```
b*(A*b - a*B))/(a*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
```

```
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx = \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))} + \frac{\int \frac{\frac{1}{2}\left(2a^2A+3Ab^2-abB\right)-a(Ab-aB)\tan}{\tan^{\frac{3}{2}}(c+dx)(a+b}}{a\left(a^2+\right.}$$

$$= -\frac{2a^2A+3Ab^2-abB}{a^2\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}$$

$$= -\frac{2a^2A+3Ab^2-abB}{a^2\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}$$

$$= -\frac{2a^2A+3Ab^2-abB}{a^2\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}$$

$$= -\frac{2a^2A+3Ab^2-abB}{a^2\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}$$

$$= -\frac{b^{3/2}\left(7a^2Ab+3Ab^3-5a^3B-ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}\left(a^2+b^2\right)^2 d} - \frac{2a^2A+3Ab^2}{a^2\left(a^2+b^2\right)d\sqrt{\text{ta}}}$$

$$= -\frac{b^{3/2}\left(7a^2Ab+3Ab^3-5a^3B-ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}\left(a^2+b^2\right)^2 d} + \frac{\left(2ab(A-B)-a^2\right.}{}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)+2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} - \frac{\left(a^2(A-\right.}{}$$

Mathematica [C] time = 2.29871, size = 239, normalized size = 0.54

$$\frac{\frac{b^{3/2}\left(-7a^2Ab+5a^3B+ab^2B-3Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)} + \frac{-2a^2A+abB-3Ab^2}{a\sqrt{\tan(c+dx)}} + \frac{\sqrt[4]{-1}a\left(i(a-ib)^2(A+iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)-i(a+ib)^2(A-iB)\tan^{-1}\left((-\right.\right.}{a^2+b^2}}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2),
x]
```

```
[Out] ((b^(3/2)*(-7*a^2*A*b - 3*A*b^3 + 5*a^3*B + a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^2 + b^2)) + ((-1)^(1/4)*a*((-I)*(a + I*
b)^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + I*(a - I*b)^2*(A + I
*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]))/(a^2 + b^2) + (-2*a^2*A - 3*A*
b^2 + a*b*B)/(a*Sqrt[Tan[c + d*x]]) + (b*(A*b - a*B))/(Sqrt[Tan[c + d*x]]*(
a + b*Tan[c + d*x])))/(a*(a^2 + b^2)*d)
```

Maple [B] time = 0.063, size = 1160, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/4/d/(
a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*a^2-1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(
d*x+c)^(1/2))*b^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^
(1/2))*a^2+5/d/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2
))*B*a*b^2+1/d/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B*a*b^2+1/2/d/
(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d/(a^2+b^2
)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-1/d/(a^2+b^2)^2*A*2^(
1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/d*b^4/a/(a^2+b^2)^2/(a*b)^(1
/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-2/d*A/a^2/tan(d*x+c)^(1/2)-1/d
*b^5/a^2/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A-3/d*b^5/a^2/(a^2+b
^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+1/d*b^4/a/(a^2+b
^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*B-1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(
1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d/(a^2+b^2)^2*A*2^(1/2)*ln((1+2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b-1/
d/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d/(a^2+b^2
)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/2/d/(a^2+b^2)^2*B*2
^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*a*b-7/d/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(
a*b)^(1/2))*A*b^3-1/d/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))*A*b^3-1
/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2+1/4/d/(a
^2+b^2)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c)))*a^2+1/4/d/(a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*
tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2-1
/4/d/(a^2+b^2)^2*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^2-1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(
```

```
1+2^(1/2)*tan(d*x+c)^(1/2))*a^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.51264, size = 749, normalized size = 1.71

$$-\frac{\left(\sqrt{2}Aa^2-\sqrt{2}Ba^2+2\sqrt{2}Aab+2\sqrt{2}Bab-\sqrt{2}Ab^2+\sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)}{2\left(a^4d+2a^2b^2d+b^4d\right)}-\frac{\left(\sqrt{2}Aa^2-\sqrt{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - s
qrt(2)*A*b^2 + sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x
+ c))))/(a^4*d + 2*a^2*b^2*d + b^4*d) - 1/2*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2
+ 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*arctan
(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/(a^4*d + 2*a^2*b^2*d + b^4*
d) + 1/4*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b
 - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
+ c) + 1)/(a^4*d + 2*a^2*b^2*d + b^4*d) - 1/4*(sqrt(2)*A*a^2 + sqrt(2)*B*a^
2 - 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*log(
-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^4*d + 2*a^2*b^2*d + b^4*
d) + (5*B*a^3*b^2 - 7*A*a^2*b^3 + B*a*b^4 - 3*A*b^5)*arctan(b*sqrt(tan(d*x
+ c))/sqrt(a*b))/((a^6*d + 2*a^4*b^2*d + a^2*b^4*d)*sqrt(a*b)) - (2*A*a^2*b
*tan(d*x + c) - B*a*b^2*tan(d*x + c) + 3*A*b^3*tan(d*x + c) + 2*A*a^3 + 2*A
*a*b^2)/((a^4*d + a^2*b^2*d)*(b*tan(d*x + c)^(3/2) + a*sqrt(tan(d*x + c))))
```

3.409 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=493

$$\frac{b^{5/2}\left(9a^2Ab-7a^3B-3ab^2B+5Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{7/2}d\left(a^2+b^2\right)^2}+\frac{b(Ab-aB)}{ad\left(a^2+b^2\right)\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}-\frac{\left(a^2(-(A+\right.}{}$$

```
[Out] -((((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((2*a*b*(A - B) - a^2*(A + B) + b^
2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) + (b^(5/2)*(9*a^2*A*b + 5*A*b^3 - 7*a^3*B - 3*a*b^2*B)*ArcTan[(Sqrt[b]*Sq
rt[Tan[c + d*x]])/Sqrt[a]])/(a^(7/2)*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2
*(A - B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]
])/(2*Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B
))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^
2)^2*d) - (2*a^2*A + 5*A*b^2 - 3*a*b*B)/(3*a^2*(a^2 + b^2)*d*Tan[c + d*x]^(
3/2)) + (4*a^2*A*b + 5*A*b^3 - 2*a^3*B - 3*a*b^2*B)/(a^3*(a^2 + b^2)*d*Sqrt
[Tan[c + d*x]]) + (b*(A*b - a*B))/(a*(a^2 + b^2)*d*Tan[c + d*x]^(3/2)*(a +
b*Tan[c + d*x]))
```

Rubi [A] time = 1.53286, antiderivative size = 493, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{b^{5/2}\left(9a^2Ab-7a^3B-3ab^2B+5Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{7/2}d\left(a^2+b^2\right)^2}+\frac{b(Ab-aB)}{ad\left(a^2+b^2\right)\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}-\frac{\left(a^2(-(A+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] -((((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((2*a*b*(A - B) - a^2*(A + B) + b^
2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) + (b^(5/2)*(9*a^2*A*b + 5*A*b^3 - 7*a^3*B - 3*a*b^2*B)*ArcTan[(Sqrt[b]*Sq
rt[Tan[c + d*x]])/Sqrt[a]])/(a^(7/2)*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2
*(A - B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]
])/(2*Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B
```

```
))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^
2)^2*d) - (2*a^2*A + 5*A*b^2 - 3*a*b*B)/(3*a^2*(a^2 + b^2)*d*Tan[c + d*x]^(
3/2)) + (4*a^2*A*b + 5*A*b^3 - 2*a^3*B - 3*a*b^2*B)/(a^3*(a^2 + b^2)*d*Sqrt
[Tan[c + d*x]]) + (b*(A*b - a*B))/(a*(a^2 + b^2)*d*Tan[c + d*x]^(3/2)*(a +
b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx = \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))} + \frac{\int \frac{\frac{1}{2}\left(2a^2A+5Ab^2-3abB\right)-a(Ab-aB)\tan\cdots}{\tan^{\frac{5}{2}}(c+dx)(a+b\cdots}}{a\left(a^2+\cdots\right.}$$

$$= -\frac{2a^2A+5Ab^2-3abB}{3a^2\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)} + \frac{b(Ab-aB)}{a\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}$$

$$= -\frac{2a^2A+5Ab^2-3abB}{3a^2\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)} + \frac{4a^2Ab+5Ab^3-2a^3B-3ab^2B}{a^3\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{\cdots}{a\left(a^2+b^2\right)\cdots}$$

$$= -\frac{2a^2A+5Ab^2-3abB}{3a^2\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)} + \frac{4a^2Ab+5Ab^3-2a^3B-3ab^2B}{a^3\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{\cdots}{a\left(a^2+b^2\right)\cdots}$$

$$= -\frac{2a^2A+5Ab^2-3abB}{3a^2\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)} + \frac{4a^2Ab+5Ab^3-2a^3B-3ab^2B}{a^3\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{\cdots}{a\left(a^2+b^2\right)\cdots}$$

$$= -\frac{2a^2A+5Ab^2-3abB}{3a^2\left(a^2+b^2\right)d\tan^{\frac{3}{2}}(c+dx)} + \frac{4a^2Ab+5Ab^3-2a^3B-3ab^2B}{a^3\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}} + \frac{\cdots}{a\left(a^2+b^2\right)\cdots}$$

$$= \frac{b^{5/2}\left(9a^2Ab+5Ab^3-7a^3B-3ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{7/2}\left(a^2+b^2\right)^2d} - \frac{2a^2A+5Ab^2\cdots}{3a^2\left(a^2+b^2\right)d\,\mathrm{ta}\cdots}$$

$$= \frac{b^{5/2}\left(9a^2Ab+5Ab^3-7a^3B-3ab^2B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{7/2}\left(a^2+b^2\right)^2d} + \frac{\left(a^2(A-B)-b^2(\cdots\right.}{\cdots}$$

$$= -\frac{\left(2ab(A-B)-a^2(A+B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2d} + \frac{\left(2ab(\cdots\right.}{\cdots}$$

Mathematica [C] time = 3.81302, size = 287, normalized size = 0.58

$$\frac{\frac{-2a^2A+3abB-5Ab^2}{a\tan^{\frac{3}{2}}(c+dx)} + \frac{3\left(4a^2Ab-2a^3B-3ab^2B+5Ab^3\right)}{a^2\sqrt{\tan(c+dx)}} + \frac{3\left(b^{5/2}\left(9a^2Ab-7a^3B-3ab^2B+5Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt[4]{-1}a^{7/2}(a+ib)^2(A-iB)\tan^{-1}\left((-1)^{3/4}\sqrt{\mathrm{ta}\cdots}\right.\right.}{a^{5/2}\left(a^2+b^2\right)\cdots}}{3ad\left(a^2+b^2\right)\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2),
x]
```

```
[Out] ((3*((-1)^(1/4)*a^(7/2)*(a + I*b)^2*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c
+ d*x]]] + b^(5/2)*(9*a^2*A*b + 5*A*b^3 - 7*a^3*B - 3*a*b^2*B)*ArcTan[(Sqrt
[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]] + (-1)^(1/4)*a^(7/2)*(a - I*b)^2*(A + I*B)
*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]))/(a^(5/2)*(a^2 + b^2)) + (-2*a^2*A
 - 5*A*b^2 + 3*a*b*B)/(a*Tan[c + d*x]^(3/2)) + (3*(4*a^2*A*b + 5*A*b^3 - 2*
a^3*B - 3*a*b^2*B))/(a^2*Sqrt[Tan[c + d*x]]) + (3*b*(A*b - a*B))/(Tan[c + d
*x]^(3/2)*(a + b*Tan[c + d*x])))/(3*a*(a^2 + b^2)*d)
```

Maple [B] time = 0.061, size = 1198, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d/(
a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/2/d/(a^2+b^2)
^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^2-1/2/d/(a^2+b^2)^2*B*2^(
1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2-1/2/d/(a^2+b^2)^2*B*2^(1/2)*ln
((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c)))*a*b+1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b
^2-1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2+1/d/
(a^2+b^2)^2*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b+1/4/d/(a^2+b^
2)^2*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))*b^2+1/d*b^4/(a^2+b^2)^2/a*tan(d*x+c)^(1/2)/(a+b*tan
(d*x+c))*A+9/d*b^4/(a^2+b^2)^2/a/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b
)^(1/2))*A+1/2/d/(a^2+b^2)^2*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b-2/3/d/a^2*A/tan(d*x+c)^
(3/2)-2/d/a^2/tan(d*x+c)^(1/2)*B-3/d*b^5/a^2/(a^2+b^2)^2/(a*b)^(1/2)*arctan
(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+1/d*b^6/a^3/(a^2+b^2)^2*tan(d*x+c)^(1/2)
/(a+b*tan(d*x+c))*A+5/d*b^6/a^3/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(
1/2)*b/(a*b)^(1/2))*A-1/d*b^5/a^2/(a^2+b^2)^2*tan(d*x+c)^(1/2)/(a+b*tan(d*x
+c))*B+1/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d
/(a^2+b^2)^2*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/d/(a^2+b^2)
^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b-1/4/d/(a^2+b^2)^2*A*2^
(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*a^2+1/2/d/(a^2+b^2)^2*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)
^(1/2))*b^2+4/d/a^3/tan(d*x+c)^(1/2)*A*b-1/d*b^3/(a^2+b^2)^2*tan(d*x+c)^(1/
```

```
2)/(a+b*tan(d*x+c))*B-7/d*b^3/(a^2+b^2)^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/
2)*b/(a*b)^(1/2))*B-1/2/d/(a^2+b^2)^2*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))*a^2-1/4/d/(a^2+b^2)^2*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2+1/4/d/(a^2+b^2)^2*B*2^
(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2
)+tan(d*x+c)))*b^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.48322, size = 760, normalized size = 1.54

$$-\frac{\left(\sqrt{2}Aa^2+\sqrt{2}Ba^2-2\sqrt{2}Aab+2\sqrt{2}Bab-\sqrt{2}Ab^2-\sqrt{2}Bb^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)}{2\left(a^4d+2a^2b^2d+b^4d\right)}-\frac{\left(\sqrt{2}Aa^2+\sqrt{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] -1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2 - 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - s
qrt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x
+ c))))/(a^4*d + 2*a^2*b^2*d + b^4*d) - 1/2*(sqrt(2)*A*a^2 + sqrt(2)*B*a^2
- 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 - sqrt(2)*B*b^2)*arctan
(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/(a^4*d + 2*a^2*b^2*d + b^4*
d) - 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^2 + 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b
 - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x
+ c) + 1)/(a^4*d + 2*a^2*b^2*d + b^4*d) + 1/4*(sqrt(2)*A*a^2 - sqrt(2)*B*a^
2 + 2*sqrt(2)*A*a*b + 2*sqrt(2)*B*a*b - sqrt(2)*A*b^2 + sqrt(2)*B*b^2)*log(
-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^4*d + 2*a^2*b^2*d + b^4*
d) - (7*B*a^3*b^3 - 9*A*a^2*b^4 + 3*B*a*b^5 - 5*A*b^6)*arctan(b*sqrt(tan(d*
x + c))/sqrt(a*b))/((a^7*d + 2*a^5*b^2*d + a^3*b^4*d)*sqrt(a*b)) - (B*a*b^3
*sqrt(tan(d*x + c)) - A*b^4*sqrt(tan(d*x + c)))/((a^5*d + a^3*b^2*d)*(b*tan
(d*x + c) + a)) - 2/3*(3*B*a*tan(d*x + c) - 6*A*b*tan(d*x + c) + A*a)/(a^3*
d*tan(d*x + c)^(3/2))
```

3.410 $\int \frac{\tan^{\frac{7}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=600

$$\frac{a(Ab-aB)\tan^{\frac{5}{2}}(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a\left(a^2Ab-5a^3B-13ab^2B+9Ab^3\right)\tan^{\frac{3}{2}}(c+dx)}{4b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3\right.}{}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B)
 - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (a^(3/2)*(3*a^4*A*b + 6*a^2*A*b^3
+ 35*A*b^5 - 15*a^5*B - 46*a^3*b^2*B - 63*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a]])/(4*b^(7/2)*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3*a*b^2
*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*(A
 - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^3*A*b + 11*a*A*b^3 - 15
*a^4*B - 31*a^2*b^2*B - 8*b^4*B)*Sqrt[Tan[c + d*x]])/(4*b^3*(a^2 + b^2)^2*d
) + (a*(A*b - a*B)*Tan[c + d*x]^(5/2))/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*
x])^2) + (a*(a^2*A*b + 9*A*b^3 - 5*a^3*B - 13*a*b^2*B)*Tan[c + d*x]^(3/2))/
(4*b^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.72452, antiderivative size = 600, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3605, 3645, 3647, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a(Ab-aB)\tan^{\frac{5}{2}}(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{a\left(a^2Ab-5a^3B-13ab^2B+9Ab^3\right)\tan^{\frac{3}{2}}(c+dx)}{4b^2d\left(a^2+b^2\right)^2(a+b\tan(c+dx))}+\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(7/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B)
 - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (a^(3/2)*(3*a^4*A*b + 6*a^2*A*b^3
```

```
+ 35*A*b^5 - 15*a^5*B - 46*a^3*b^2*B - 63*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a]])/(4*b^(7/2)*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3*a*b^2
*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*(A
 - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^3*A*b + 11*a*A*b^3 - 15
*a^4*B - 31*a^2*b^2*B - 8*b^4*B)*Sqrt[Tan[c + d*x]])/(4*b^3*(a^2 + b^2)^2*d
) + (a*(A*b - a*B)*Tan[c + d*x]^(5/2))/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*
x])^2) + (a*(a^2*A*b + 9*A*b^3 - 5*a^3*B - 13*a*b^2*B)*Tan[c + d*x]^(3/2))/
(4*b^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
```

```
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{7}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{a(Ab-aB)\tan^{\frac{5}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\tan^{\frac{3}{2}}(c+dx)\left(-\frac{5}{2}a(Ab-aB)+2b(Ab-aB)\tan(c+dx)-\right.}{(a+b\tan(c+dx))^2}}{2b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\tan^{\frac{5}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{a\left(a^2Ab+9Ab^3-5a^3B-13ab^2B\right)\tan^{\frac{3}{2}}(c}{4b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= -\frac{\left(3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B\right)\sqrt{\tan(c+dx)}}{4b^3\left(a^2+b^2\right)^2 d} + \frac{a(Ab-a}{2b\left(a^2+b^2\right)d}$$

$$= -\frac{\left(3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B\right)\sqrt{\tan(c+dx)}}{4b^3\left(a^2+b^2\right)^2 d} + \frac{a(Ab-a}{2b\left(a^2+b^2\right)d}$$

$$= -\frac{\left(3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B\right)\sqrt{\tan(c+dx)}}{4b^3\left(a^2+b^2\right)^2 d} + \frac{a(Ab-a}{2b\left(a^2+b^2\right)d}$$

$$= -\frac{\left(3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B\right)\sqrt{\tan(c+dx)}}{4b^3\left(a^2+b^2\right)^2 d} + \frac{a(Ab-a}{2b\left(a^2+b^2\right)d}$$

$$= \frac{a^{3/2}\left(3a^4Ab+6a^2Ab^3+35Ab^5-15a^5B-46a^3b^2B-63ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c}}{\sqrt{a}}\right.}{4b^{7/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{a^{3/2}\left(3a^4Ab+6a^2Ab^3+35Ab^5-15a^5B-46a^3b^2B-63ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c}}{\sqrt{a}}\right.}{4b^{7/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)-a^3(A+B)+3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [B] time = 6.31232, size = 1563, normalized size = 2.6

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(7/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,
x]
```

```
[Out] -(((-1)^(1/4)*a^3*A*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*d
)) - (3*(-1)^(3/4)*a^2*A*b*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b
^2)^3*d) + (3*(-1)^(1/4)*a*A*b^2*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a
^2 + b^2)^3*d) + ((-1)^(3/4)*A*b^3*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/(
(a^2 + b^2)^3*d) + ((-1)^(3/4)*a^3*B*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])
/((a^2 + b^2)^3*d) - (3*(-1)^(1/4)*a^2*b*B*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d
*x]]])/((a^2 + b^2)^3*d) - (3*(-1)^(3/4)*a*b^2*B*ArcTan[(-1)^(3/4)*Sqrt[Tan
[c + d*x]]])/((a^2 + b^2)^3*d) + ((-1)^(1/4)*b^3*B*ArcTan[(-1)^(3/4)*Sqrt[T
an[c + d*x]]])/((a^2 + b^2)^3*d) + (3*a^(11/2)*A*ArcTan[(Sqrt[b]*Sqrt[Tan[c
 + d*x]])/Sqrt[a]])/(4*b^(5/2)*(a^2 + b^2)^3*d) + (3*a^(7/2)*A*ArcTan[(Sqrt
[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(2*Sqrt[b]*(a^2 + b^2)^3*d) + (35*a^(3/2)
*A*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(4*(a^2 + b^2)^3*d
) - (15*a^(13/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(4*b^(7/2)
*(a^2 + b^2)^3*d) - (23*a^(9/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[
a]])/(2*b^(3/2)*(a^2 + b^2)^3*d) - (63*a^(5/2)*Sqrt[b]*B*ArcTan[(Sqrt[b]*Sq
rt[Tan[c + d*x]])/Sqrt[a]])/(4*(a^2 + b^2)^3*d) - ((-1)^(1/4)*a^3*A*ArcTanh
[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*d) + (3*(-1)^(3/4)*a^2*A*b*
ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*d) + (3*(-1)^(1/4)*a
*A*b^2*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*d) - ((-1)^(3
/4)*A*b^3*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*d) - ((-1)
^(3/4)*a^3*B*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*d) - (3
*(-1)^(1/4)*a^2*b*B*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 + b^2)^3*
d) + (3*(-1)^(3/4)*a*b^2*B*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2 +
b^2)^3*d) + ((-1)^(1/4)*b^3*B*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/((a^2
 + b^2)^3*d) - (2*a*A*Sqrt[Tan[c + d*x]])/(b^2*d*(a + b*Tan[c + d*x])^2) +
(a^3*A*Sqrt[Tan[c + d*x]])/(2*b^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (
10*a^2*B*Sqrt[Tan[c + d*x]])/(b^3*d*(a + b*Tan[c + d*x])^2) + (2*B*Sqrt[Tan
[c + d*x]])/(3*b*d*(a + b*Tan[c + d*x])^2) - (5*a^4*B*Sqrt[Tan[c + d*x]])/(
2*b^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (8*a^2*B*Sqrt[Tan[c + d*x]])/
(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (2*b*B*Sqrt[Tan[c + d*x]])/(3*
(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (2*A*Tan[c + d*x]^(3/2))/(b*d*(a +
b*Tan[c + d*x])^2) + (10*a*B*Tan[c + d*x]^(3/2))/(b^2*d*(a + b*Tan[c + d*x]
)^2) + (2*B*Tan[c + d*x]^(5/2))/(b*d*(a + b*Tan[c + d*x])^2) + (3*a^2*A*Sqr
t[Tan[c + d*x]])/(4*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])) + (3*a^4*A*Sqrt[T
an[c + d*x]])/(4*b^2*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])) + (2*A*b^2*Sqrt[
Tan[c + d*x]])/((a^2 + b^2)^2*d*(a + b*Tan[c + d*x])) - (15*a^5*B*Sqrt[Tan[
c + d*x]])/(4*b^3*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])) - (31*a^3*B*Sqrt[Ta
n[c + d*x]])/(4*b*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x])) - (6*a*b*B*Sqrt[Tan
[c + d*x]])/((a^2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Maple [B] time = 0.064, size = 1864, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] -3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/4/d
/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*
a^2*b-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-
3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/4/d
/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2-5/4/d*a^6/b/(a^2+b^2)^3/(a+b*tan(d*x+
c))^2*tan(d*x+c)^(3/2)*A-9/2/d*a^4*b/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x
+c)^(3/2)*A-13/4/d*a^2*b^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*
A+9/4/d*a^7/b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*B+17/4/d*a^
3*b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*B-3/4/d*a^7/b^2/(a^2+
b^2)^3/(a+b*tan(d*x+c))^2*A*tan(d*x+c)^(1/2)-3/2/d/(a^2+b^2)^3*A*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^
2+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/
(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/4/d/(a^2+b^
2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))*a^3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*ta
n(d*x+c)^(1/2))*b^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)
^(1/2))*a^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*a^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/
4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3+13/2/d*a^5/(a^2+b^2)^3/(a+b*tan(d*x+
c))^2*tan(d*x+c)^(3/2)*B-7/2/d*a^5/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*A*tan(d*x
+c)^(1/2)+3/2/d*a^4/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)
^(1/2))*A-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b
^3-1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(
1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+1/4/d/(a^2+b^2)^3*A*2^(1/2)*ln(
(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c)))*b^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^
3+3/4/d*a^6/b^2/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/
2))*A+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b
+35/4/d*a^2*b^2/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/
2))*A-15/4/d*a^7/b^3/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b
)^(1/2))*B-23/2/d*a^5/b/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(
a*b)^(1/2))*B-3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2
))*a*b^2-63/4/d*a^3*b/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*
b)^(1/2))*B+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*
```

```
a^2*b-11/4/d*a^3*b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*A*tan(d*x+c)^(1/2)+7/4/
d*a^8/b^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*B*tan(d*x+c)^(1/2)+11/2/d*a^6/b/(a
^2+b^2)^3/(a+b*tan(d*x+c))^2*B*tan(d*x+c)^(1/2)+15/4/d*a^4*b/(a^2+b^2)^3/(a
+b*tan(d*x+c))^2*B*tan(d*x+c)^(1/2)+2/d*B/b^3*tan(d*x+c)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] Timed out
```

3.411 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=534

$$\frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx}\right.}{\sqrt{2}d\left(a^2+b^2\right)^3}$$

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3
*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (Sqrt[a]*(a^4*A*b + 18*a^2*A*b^3 -
 15*A*b^5 + 3*a^5*B + 6*a^3*b^2*B + 35*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a]])/(4*b^(5/2)*(a^2 + b^2)^3*d) + ((3*a^2*b*(A - B) - b^3*(A
 - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3*(A -
B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Tan[c + d*x]^(3/2
))/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (a*(a^2*A*b - 7*A*b^3 + 3*a
^3*B + 11*a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*b^2*(a^2 + b^2)^2*d*(a + b*Tan[c
+ d*x]))
```

Rubi [A] time = 1.23018, antiderivative size = 534, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3605, 3645, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2bd\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx}\right.}{\sqrt{2}d\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3
*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (Sqrt[a]*(a^4*A*b + 18*a^2*A*b^3 -
 15*A*b^5 + 3*a^5*B + 6*a^3*b^2*B + 35*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a]])/(4*b^(5/2)*(a^2 + b^2)^3*d) + ((3*a^2*b*(A - B) - b^3*(A
```

```
- B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3*(A -
B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Tan[c + d*x]^(3/2
))/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - (a*(a^2*A*b - 7*A*b^3 + 3*a
^3*B + 11*a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*b^2*(a^2 + b^2)^2*d*(a + b*Tan[c
+ d*x]))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\sqrt{\tan(c+dx)}\left(-\frac{3}{2}a(Ab-aB)+2b(Ab-aB)\tan(c+dx)\right.}{(a+b\tan(c+dx)}}{2b\left(a^2+b^2\right.}$$

$$= \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\tan}}{4b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx}$$

$$= \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\tan}}{4b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx}$$

$$= \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\tan}}{4b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx}$$

$$= \frac{a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\tan}}{4b^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx}$$

$$= \frac{\sqrt{a}\left(a^4Ab+18a^2Ab^3-15Ab^5+3a^5B+6a^3b^2B+35ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+d}}{\sqrt{a}}\right.}{4b^{5/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\sqrt{a}\left(a^4Ab+18a^2Ab^3-15Ab^5+3a^5B+6a^3b^2B+35ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+d}}{\sqrt{a}}\right.}{4b^{5/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)+3a^2b(A+B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c}\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 6.29704, size = 690, normalized size = 1.29

$$-\frac{2B\tan^{\frac{3}{2}}(c+dx)}{bd(a+b\tan(c+dx))^2}-\frac{2\left(-\frac{(-3aB-Ab)\sqrt{\tan(c+dx)}}{3bd(a+b\tan(c+dx))^2}-\frac{2\left(\frac{\left(\frac{1}{4}ab^2(3aB+Ab)-a\left(-\frac{1}{4}a\left(3a^2B+aAb-3b^2B\right)-\frac{3Ab^3}{4}\right)\right)\sqrt{\tan(c+dx)}}{2ad\left(a^2+b^2\right)(a+b\tan(c+dx))^2}+\frac{\left(\frac{3}{8}a^2b^2\left(3a^2B+aAb+4b^2B\right)-a\left(-\frac{3}{8}a^2\cdots\right.\right.}{ad\left(a^2\cdots\right.}\cdots\right)}{\cdots}\cdots\right)}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,
x]
```

```
[Out] (-2*B*Tan[c + d*x]^(3/2))/(b*d*(a + b*Tan[c + d*x])^2) - (2*(-((-(A*b) - 3*
a*B)*Sqrt[Tan[c + d*x]])/(3*b*d*(a + b*Tan[c + d*x])^2) - (2*((((a*b^2*(A*b
 + 3*a*B))/4 - a*((-3*A*b^3)/4 - (a*(a*A*b + 3*a^2*B - 3*b^2*B))/4))*Sqrt[T
an[c + d*x]])/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (((2*((3*a^3*b^3
*(a^2*A - A*b^2 + 2*a*b*B))/2 + (3*a^3*b^2*(a^2*A*b - 7*A*b^3 + 3*a^3*B + 1
1*a*b^2*B))/16 + (3*a^4*(a^3*A*b + 9*a*A*b^3 + 3*a^4*B + 3*a^2*b^2*B + 8*b^
4*B))/16)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*(a
^2 + b^2)*d) + (-(((-1)^(1/4)*((-3*a^2*b^2*(3*a^2*A*b - A*b^3 - a^3*B + 3*a
*b^2*B))/2 + ((3*I)/2)*a^2*b^2*(a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B))*Arc
Tan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d) - ((-1)^(1/4)*((-3*a^2*b^2*(3*a^2*A*
b - A*b^3 - a^3*B + 3*a*b^2*B))/2 - ((3*I)/2)*a^2*b^2*(a^3*A - 3*a*A*b^2 +
3*a^2*b*B - b^3*B))*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d)/(a^2 + b^2))
/(a*(a^2 + b^2)) + (((3*a^2*b^2*(a*A*b + 3*a^2*B + 4*b^2*B))/8 - a*((-3*a^2
*(a^2*A*b + 4*A*b^3 + 3*a^3*B))/8 - (3*a*b^3*(a*A + b*B))/2))*Sqrt[Tan[c +
d*x]])/(a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])))/(2*a*(a^2 + b^2))))/(3*b)))/
b
```

Maple [B] time = 0.062, size = 1843, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] -3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d
/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2/d/(a^2+
b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/d/(a^2+b^2)^
3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/2/d/(a^2+b^2)^3*A*2^
(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+1/4/d/(a^2+b^2)^3*A*2^(1/2)
*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan
(d*x+c)))*b^3+1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3-1/4/d/(a^2+b^2)^3*A*
2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1
/2)+tan(d*x+c)))*a^3+1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(
1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-11/4/d*a^3/(a
^2+b^2)^3/(a+b*tan(d*x+c))^2*b^2*tan(d*x+c)^(1/2)*B+1/4/d*a^5/(a^2+b^2)^3/b
/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-1/2/d/(a^2+b^2)^3*A*2
^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*A*2^(1/2)*a
rctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1
+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)
*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1
/2))*b^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^
3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+9/2/d*
a^3/(a^2+b^2)^3*b/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-3/4/
d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/
2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-3/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
*a*b^2+3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2-9/2/d*a^4/(a^2+b^2)^3/(a+
b*tan(d*x+c))^2*b*tan(d*x+c)^(3/2)*B-13/4/d*a^2/(a^2+b^2)^3/(a+b*tan(d*x+c)
)^2*b^3*tan(d*x+c)^(3/2)*B-1/4/d*a^6/(a^2+b^2)^3/(a+b*tan(d*x+c))^2/b*tan(d
*x+c)^(1/2)*A-3/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+ta
n(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+5/2/d*a^3/(a^2+b^2
)^3/(a+b*tan(d*x+c))^2*b^2*tan(d*x+c)^(3/2)*A+9/4/d*a/(a^2+b^2)^3/(a+b*tan(
d*x+c))^2*b^4*tan(d*x+c)^(3/2)*A-5/4/d*a^6/(a^2+b^2)^3/(a+b*tan(d*x+c))^2/b
*tan(d*x+c)^(3/2)*B-15/4/d*a/(a^2+b^2)^3*b^3/(a*b)^(1/2)*arctan(tan(d*x+c)^
(1/2)*b/(a*b)^(1/2))*A+3/4/d*a^6/(a^2+b^2)^3/b^2/(a*b)^(1/2)*arctan(tan(d*x
+c)^(1/2)*b/(a*b)^(1/2))*B+35/4/d*a^2/(a^2+b^2)^3*b^2/(a*b)^(1/2)*arctan(ta
n(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+3/2/d*a^4/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b*
tan(d*x+c)^(1/2)*A+7/4/d*a^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^3*tan(d*x+c)^
(1/2)*A-3/4/d*a^7/(a^2+b^2)^3/(a+b*tan(d*x+c))^2/b^2*tan(d*x+c)^(1/2)*B+1/4
/d*a^5/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*A-7/2/d*a^5/(a^2+b^2
)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(1/2)*B+3/2/d*a^4/(a^2+b^2)^3/(a*b)^(1/2)
```

```
*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-3/2/d/(a^2+b^2)^3*B*2^(1/2)*arcta
n(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+
2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2
)*tan(d*x+c)^(1/2))*a^2*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] Timed out
```

3.412 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3} dx$

Optimal. Leaf size=533

$$-\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^3}+\frac{\left(3a^2b(A-B)+a^3(-(A+B)\right.}{}$$

```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((3*a^2*b*(A -
 B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + ((3*a^4*A*b - 26*a^2*A*b^3 + 3*
A*b^5 + a^5*B + 18*a^3*b^2*B - 15*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x
]])/Sqrt[a]])/(4*Sqrt[a]*b^(3/2)*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2
*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3*a*b^2*(A
 - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Sqrt[Tan[c + d
*x]])/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + ((3*a^2*A*b - 5*A*b^3 +
a^3*B + 9*a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*b*(a^2 + b^2)^2*d*(a + b*Tan[c +
d*x]))
```

Rubi [A] time = 1.22818, antiderivative size = 533, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3605, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^3}+\frac{\left(3a^2b(A-B)+a^3(-(A+B)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```



```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((3*a^2*b*(A -
 B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + ((3*a^4*A*b - 26*a^2*A*b^3 + 3*
A*b^5 + a^5*B + 18*a^3*b^2*B - 15*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x
]])/Sqrt[a]])/(4*Sqrt[a]*b^(3/2)*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2
```

```
*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3*a*b^2*(A
 - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Sqrt[Tan[c + d
*x]])/(2*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + ((3*a^2*A*b - 5*A*b^3 +
a^3*B + 9*a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*b*(a^2 + b^2)^2*d*(a + b*Tan[c +
d*x]))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
```

```
!GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{-\frac{1}{2}a(Ab-aB)+2b(Ab-aB)\tan(c+dx)+\frac{1}{2}\left(3aAb+a^2B\right.}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}}{2b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\left(3a^2Ab-5Ab^3+a^3B+9ab^2B\right)\sqrt{\tan(c+}}{4b\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\left(3a^2Ab-5Ab^3+a^3B+9ab^2B\right)\sqrt{\tan(c+}}{4b\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\left(3a^2Ab-5Ab^3+a^3B+9ab^2B\right)\sqrt{\tan(c+}}{4b\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= \frac{a(Ab-aB)\sqrt{\tan(c+dx)}}{2b\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\left(3a^2Ab-5Ab^3+a^3B+9ab^2B\right)\sqrt{\tan(c+}}{4b\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= \frac{\left(3a^4Ab-26a^2Ab^3+3Ab^5+a^5B+18a^3b^2B-15ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}b^{3/2}\left(a^2+b^2\right)^3 d} +$$

$$= \frac{\left(3a^4Ab-26a^2Ab^3+3Ab^5+a^5B+18a^3b^2B-15ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{4\sqrt{a}b^{3/2}\left(a^2+b^2\right)^3 d} +$$

$$= -\frac{\left(3a^2b(A-B)-b^3(A-B)-a^3(A+B)+3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c\right.}}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 5.67479, size = 333, normalized size = 0.62

$$\frac{\frac{\left(a^2B+3aAb+4b^2B\right)\sqrt{\tan(c+dx)}}{a^2+b^2} - \frac{2(a+b\tan(c+dx))\left(-\frac{3}{4}a^{5/2}\sqrt{b}\left(a^2+b^2\right)\left(3a^2Ab+a^3B+9ab^2B-5Ab^3\right)\sqrt{\tan(c+dx)}+(a+b\tan(c+dx))\left(-\frac{3}{4}a^2\left(-26a^2Ab^3+3a^4Ab+18\right.\right.\right.}{}}{6bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,
x]
```

```
[Out] (-4*B*Sqrt[Tan[c + d*x]] + ((3*a*A*b + a^2*B + 4*b^2*B)*Sqrt[Tan[c + d*x]])
/(a^2 + b^2) - (2*(a + b*Tan[c + d*x])*((-3*a^(5/2)*Sqrt[b]*(a^2 + b^2)*(3*
a^2*A*b - 5*A*b^3 + a^3*B + 9*a*b^2*B)*Sqrt[Tan[c + d*x]])/4 + ((-3*a^2*(3*
a^4*A*b - 26*a^2*A*b^3 + 3*A*b^5 + a^5*B + 18*a^3*b^2*B - 15*a*b^4*B)*ArcTa
n[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/4 - 3*(-1)^(1/4)*a^(5/2)*b^(3/2)*(
(a + I*b)^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + (a - I*b)^3*(
A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]))*(a + b*Tan[c + d*x])))/(a
^(5/2)*Sqrt[b]*(a^2 + b^2)^3))/(6*b*d*(a + b*Tan[c + d*x])^2)
```

Maple [B] time = 0.059, size = 1835, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] 3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/4/d/
(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(1
/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a
^2*b+3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3
/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/4/d/
(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+3/4/d*a^4*b/(a^2+b^2)^3/(a+b*tan(d*x+c
))^2*tan(d*x+c)^(3/2)*A-1/2/d*a^2*b^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*
x+c)^(3/2)*A+5/2/d*a^3*b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*
B+3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/2/
d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/4/d/(a^
2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan
(d*x+c)^(1/2))*a^3-1/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3+1/2/d/(a^2+b^2)
^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d/(a^2+b^2)^3*B*2^(
1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arc
tan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+
2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan
(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3+1/4/
d*a^5/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*B+5/4/d*a^5/(a^2+b^2)
^3/(a+b*tan(d*x+c))^2*A*tan(d*x+c)^(1/2)+3/4/d*a^4/(a^2+b^2)^3/(a*b)^(1/2)*
arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan
```

```
(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)
*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-
1/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2
^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan
(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+9/4/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d
*x+c)^(3/2)*B*a*b^4-3/4/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*a*b^4*tan(d*x+c)^(
1/2)*A+7/4/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*a^2*b^3*tan(d*x+c)^(1/2)*B-3/2/
d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-13/2/d*a^
2*b^2/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+1/4/
d*a^5/b/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-15
/4/d/(a^2+b^2)^3*b^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B*a
+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+9/2/
d*a^3*b/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-3/
2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+1/2/d*a^
3*b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*A*tan(d*x+c)^(1/2)-1/4/d*a^6/b/(a^2+b^
2)^3/(a+b*tan(d*x+c))^2*B*tan(d*x+c)^(1/2)+3/2/d*a^4*b/(a^2+b^2)^3/(a+b*tan
(d*x+c))^2*B*tan(d*x+c)^(1/2)+3/4/d/(a^2+b^2)^3*b^4/(a*b)^(1/2)*arctan(tan(
d*x+c)^(1/2)*b/(a*b)^(1/2))*A-5/4/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+
c)^(3/2)*A*b^5
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] Timed out

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.413 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=531

$$-\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^3}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab\right.}{}$$

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((a^3*(A - B)
- 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((15*a^4*A*b - 18*a^2*A*b^3 - A
*b^5 - 3*a^5*B + 26*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x
]])/Sqrt[a]])/(4*a^(3/2)*Sqrt[b]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3
*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((3*a^2*b*(A - B) - b^3*(A
 - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((A*b - a*B)*Sqrt[Tan[c + d*x
]])/(2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - ((7*a^2*A*b - A*b^3 - 3*a^3*
B + 5*a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*a*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]
))
```

Rubi [A] time = 1.31205, antiderivative size = 531, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3608, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^3}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```


```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((a^3*(A - B)
- 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((15*a^4*A*b - 18*a^2*A*b^3 - A
*b^5 - 3*a^5*B + 26*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x
]])/Sqrt[a]])/(4*a^(3/2)*Sqrt[b]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3
*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
```

```
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((3*a^2*b*(A - B) - b^3*(A
 - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((A*b - a*B)*Sqrt[Tan[c + d*x
]])/(2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) - ((7*a^2*A*b - A*b^3 - 3*a^3*
B + 5*a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*a*(a^2 + b^2)^2*d*(a + b*Tan[c + d*x]
))
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{\int \frac{-\frac{1}{2}b(Ab-aB)-2b(aA+bB)\tan(c+dx)+\frac{3}{2}b(Ab-aB)\,\mathrm{t}}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}}{2b\left(a^2+b^2\right)}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{\left(7a^2Ab-Ab^3-3a^3B+5ab^2B\right)\sqrt{\tan(c}}{4a\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{\left(7a^2Ab-Ab^3-3a^3B+5ab^2B\right)\sqrt{\tan(c}}{4a\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{\left(7a^2Ab-Ab^3-3a^3B+5ab^2B\right)\sqrt{\tan(c}}{4a\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= -\frac{(Ab-aB)\sqrt{\tan(c+dx)}}{2\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} - \frac{\left(7a^2Ab-Ab^3-3a^3B+5ab^2B\right)\sqrt{\tan(c}}{4a\left(a^2+b^2\right)^2 d(a+b\tan(c+dx))}$$

$$= -\frac{\left(15a^4Ab-18a^2Ab^3-Ab^5-3a^5B+26a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\left(a^2+b^2\right)^3 d}$$

$$= -\frac{\left(15a^4Ab-18a^2Ab^3-Ab^5-3a^5B+26a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\left(a^2+b^2\right)^3 d}$$

$$= -\frac{\left(a^3(A-B)-3ab^2(A-B)+3a^2b(A+B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c}\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 6.11245, size = 344, normalized size = 0.65

$$\frac{2(a+b\tan(c+dx))\left(\frac{1}{4}a^{3/2}b^{3/2}\left(a^2+b^2\right)\left(-7a^2Ab+3a^3B-5ab^2B+Ab^3\right)\sqrt{\tan(c+dx)}-(a+b\tan(c+dx))\left(-\frac{1}{4}ab\left(18a^2Ab^3-15a^4Ab-26a^3b^2B+3a^5B+3ab^4B+Ab^5\right)\tan^{-1}\left(\right.\right.\right.}{a^{3/2}b^{3/2}\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,
x]
```

```
[Out] (b*(A*b - a*B)*Tan[c + d*x]^(3/2) - (A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b*T
an[c + d*x]) + (2*(a + b*Tan[c + d*x])*((a^(3/2)*b^(3/2)*(a^2 + b^2)*(-7*a^
2*A*b + A*b^3 + 3*a^3*B - 5*a*b^2*B)*Sqrt[Tan[c + d*x]])/4 - (-(a*b*(-15*a^
4*A*b + 18*a^2*A*b^3 + A*b^5 + 3*a^5*B - 26*a^3*b^2*B + 3*a*b^4*B)*ArcTan[(
Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/4 + (-1)^(1/4)*a^(5/2)*b^(3/2)*((I*a
- b)^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] - (I*a + b)^3*(A + I
*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]))*(a + b*Tan[c + d*x])))/(a^(3/2
)*b^(3/2)*(a^2 + b^2)^2))/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2)
```

Maple [B] time = 0.075, size = 1835, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] 3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+1/4/d/
(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^6/a*tan(d*x+c)^(3/2)*A-3/4/d/(a^2+b^2)^3/(
a+b*tan(d*x+c))^2*tan(d*x+c)^(1/2)*B*a*b^4+3/2/d/(a^2+b^2)^3*A*2^(1/2)*arct
an(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+
2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2
)*tan(d*x+c)^(1/2))*a*b^2-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan
(d*x+c)^(1/2))*a*b^2-5/4/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^5*tan(d*x+c)^(3
/2)*B-1/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
)/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-1/4/d/(a^2+b^2)^3/(a+b*tan(d
*x+c))^2*tan(d*x+c)^(1/2)*A*b^5+3/4/d/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*
x+c)^(1/2)*b/(a*b)^(1/2))*B*b^4-1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*t
an(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3+1/
4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3-1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
*b^3+1/2/d*a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^2*tan(d*x+c)^(1/2)*B+1/2/d/
(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2
)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*B*2
^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*a
rctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1
+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2
)*tan(d*x+c)^(1/2))*b^3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d
*x+c)^(1/2))*b^3-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1
/2))*b^3-15/4/d*a^3/(a^2+b^2)^3*b/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*
b)^(1/2))*A+3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(
```

```
d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b+1/4/d/(a^2+b^2)^3/a/
(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A*b^5+3/4/d/(a^2+b^2)^3*
B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^
(1/2)+tan(d*x+c)))*a*b^2-3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(1/2)*tan(d*x+
c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+3/4/d*a
^4/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b*tan(d*x+c)^(3/2)*B-1/2/d*a^2/(a^2+b^2)^
3/(a+b*tan(d*x+c))^2*b^3*tan(d*x+c)^(3/2)*B+3/4/d/(a^2+b^2)^3*B*2^(1/2)*ln(
(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c)))*a^2*b-7/4/d*a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^2*tan(d*x+c)^(3/2)*A
-3/2/d*a/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^4*tan(d*x+c)^(3/2)*A+9/2/d*a/(a^2
+b^2)^3*b^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-13/2/d*a^2
/(a^2+b^2)^3*b^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-9/4/d
*a^4/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b*tan(d*x+c)^(1/2)*A-5/2/d*a^2/(a^2+b^2
)^3/(a+b*tan(d*x+c))^2*b^3*tan(d*x+c)^(1/2)*A+5/4/d*a^5/(a^2+b^2)^3/(a+b*ta
n(d*x+c))^2*tan(d*x+c)^(1/2)*B+3/4/d*a^4/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan
(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2
)*tan(d*x+c)^(1/2))*a^2*b+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan
(d*x+c)^(1/2))*a*b^2+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c
)^(1/2))*a^2*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{\tan(c + dx)}}{(a + b\tan(c + dx))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/(a + b*tan(c + d*x))**3, x
)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] Timed out
```

3.414 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=534

$$\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^3}-\frac{\left(3a^2b(A-B)+a^3(-(A+B))\right.}{}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B)
 - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (Sqrt[b]*(35*a^4*A*b + 6*a^2*A*b^3
 + 3*A*b^5 - 15*a^5*B + 18*a^3*b^2*B + a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a]])/(4*a^(5/2)*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3*a*b^2*(A
 - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*(A -
B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + (b*(A*b - a*B)*Sqrt[Tan[c + d*x]
])/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b*(11*a^2*A*b + 3*A*b^3 -
7*a^3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*a^2*(a^2 + b^2)^2*d*(a + b*Tan[c
+ d*x]))
```

Rubi [A] time = 1.24971, antiderivative size = 534, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab^2(A+B)-b^3(A-B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)^3}-\frac{\left(3a^2b(A-B)+a^3(-(A+B))\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^3),x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B)
 - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (Sqrt[b]*(35*a^4*A*b + 6*a^2*A*b^3
 + 3*A*b^5 - 15*a^5*B + 18*a^3*b^2*B + a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a]])/(4*a^(5/2)*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3*a*b^2*(A
 - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] +
```

```
Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*(A -
B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + (b*(A*b - a*B)*Sqrt[Tan[c + d*x]
])/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b*(11*a^2*A*b + 3*A*b^3 -
7*a^3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(4*a^2*(a^2 + b^2)^2*d*(a + b*Tan[c
+ d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^3}\,dx = \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\frac{1}{2}\left(4a^2A+3Ab^2+abB\right)-2a(Ab-aB)\tan(c+dx)+\frac{3}{2}b(A}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}}{2a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\tan(}}{4a^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx)}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\tan(}}{4a^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx)}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\tan(}}{4a^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx)}$$

$$= \frac{b(Ab-aB)\sqrt{\tan(c+dx)}}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\tan(}}{4a^2\left(a^2+b^2\right)^2 d(a+b\tan(c+dx)}$$

$$= \frac{\sqrt{b}\left(35a^4Ab+6a^2Ab^3+3Ab^5-15a^5B+18a^3b^2B+ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx}}{\sqrt{a}}\right.}{4a^{5/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\sqrt{b}\left(35a^4Ab+6a^2Ab^3+3Ab^5-15a^5B+18a^3b^2B+ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx}}{\sqrt{a}}\right.}{4a^{5/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)-a^3(A+B)+3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c}\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 4.48383, size = 288, normalized size = 0.54

$$\frac{\frac{b\left(11a^2Ab-7a^3B+ab^2B+3Ab^3\right)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)(a+b\tan(c+dx))} + \frac{2\left(\frac{1}{2}\sqrt{b}\left(6a^2Ab^3+35a^4Ab+18a^3b^2B-15a^5B+ab^4B+3Ab^5\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)-2\sqrt[4]{-1}a^{5/2}\left((a+ib)^3(A-iB)\tan^{-1}\right.\right.}{a^{3/2}\left(a^2+b^2\right)^2}}{4ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^3),
x]
```

```
[Out] ((2*((Sqrt[b]*(35*a^4*A*b + 6*a^2*A*b^3 + 3*A*b^5 - 15*a^5*B + 18*a^3*b^2*B
 + a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/2 - 2*(-1)^(1/4)*
a^(5/2)*((a + I*b)^3*(A - I*B)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + (a -
 I*b)^3*(A + I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])))/(a^(3/2)*(a^2 +
 b^2)^2) + (2*b*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(a + b*Tan[c + d*x])^2 + (b
*(11*a^2*A*b + 3*A*b^3 - 7*a^3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(a*(a^2 + b
^2)*(a + b*Tan[c + d*x])))/(4*a*(a^2 + b^2)*d)
```

Maple [B] time = 0.079, size = 1843, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x)
```

```
[Out] -3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2+3/4/d
/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(
1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*
a^2*b-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-
3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/4/d
/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+11/4/d*a^2*b^3/(a^2+b^2)^3/(a+b*tan(d
*x+c))^2*tan(d*x+c)^(3/2)*A-7/4/d*a^3*b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*ta
n(d*x+c)^(3/2)*B-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1
/2))*a*b^2-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*
a*b^2-3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
)/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+1/4/d*b^5/(a^2+b^2)^3/a/(a
*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+1/2/d/(a^2+b^2)^3*A*2^(1
/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arct
an(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/
2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^
3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d/
(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2
)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*A*2
^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/4/d/(a^2+b^2)^3*B*2^(1/2)*
ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c)))*a^3-1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2)
)*b^3-1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
)/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3+1/4/d/(a^2+b^2)^3*A*2^(1/2)*
ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(
```

```
d*x+c)))*b^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))
*b^3+3/4/d*b^6/(a^2+b^2)^3/a^2/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^
(1/2))*A-3/2/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/2)*B*a*b^4+9/2/
d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*a*b^4*tan(d*x+c)^(1/2)*A-5/2/d/(a^2+b^2)^3
/(a+b*tan(d*x+c))^2*a^2*b^3*tan(d*x+c)^(1/2)*B+1/4/d*b^6/(a^2+b^2)^3/(a+b*t
an(d*x+c))^2/a*tan(d*x+c)^(3/2)*B+3/4/d*b^7/(a^2+b^2)^3/(a+b*tan(d*x+c))^2/
a^2*tan(d*x+c)^(3/2)*A+3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*a^2*b+35/4/d*a^2*b^2/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^
(1/2)*b/(a*b)^(1/2))*A+5/4/d*b^6/(a^2+b^2)^3/(a+b*tan(d*x+c))^2/a*tan(d*x+c
)^(1/2)*A+9/2/d/(a^2+b^2)^3*b^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)
^(1/2))*B*a-3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))
*a*b^2-15/4/d*a^3*b/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)
^(1/2))*B-1/4/d*b^5/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(1/2)*B+3/2/d
/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+13/4/d*a^3*
b^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*A*tan(d*x+c)^(1/2)-9/4/d*a^4*b/(a^2+b^2)
^3/(a+b*tan(d*x+c))^2*B*tan(d*x+c)^(1/2)+3/2/d/(a^2+b^2)^3*b^4/(a*b)^(1/2)*
arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A+7/2/d/(a^2+b^2)^3/(a+b*tan(d*x+c))
^2*tan(d*x+c)^(3/2)*A*b^5
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.54849, size = 1062, normalized size = 1.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] 1/2*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b + 3*sqrt(2)*B*a^2*b
- 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 - sqrt(2)*B*b^3)*ar
ctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/(a^6*d + 3*a^4*b^2*d + 3
*a^2*b^4*d + b^6*d) + 1/2*(sqrt(2)*A*a^3 + sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*
b + 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b
^3 - sqrt(2)*B*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/(
a^6*d + 3*a^4*b^2*d + 3*a^2*b^4*d + b^6*d) + 1/4*(sqrt(2)*A*a^3 - sqrt(2)*B
*a^3 + 3*sqrt(2)*A*a^2*b + 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2
)*B*a*b^2 - sqrt(2)*A*b^3 - sqrt(2)*B*b^3)*log(sqrt(2)*sqrt(tan(d*x + c)) +
 tan(d*x + c) + 1)/(a^6*d + 3*a^4*b^2*d + 3*a^2*b^4*d + b^6*d) - 1/4*(sqrt(
2)*A*a^3 - sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b + 3*sqrt(2)*B*a^2*b - 3*sqrt(2
)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 - sqrt(2)*B*b^3)*log(-sqrt(2)
*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^6*d + 3*a^4*b^2*d + 3*a^2*b^4*d
+ b^6*d) - 1/4*(15*B*a^5*b - 35*A*a^4*b^2 - 18*B*a^3*b^3 - 6*A*a^2*b^4 - B*
a*b^5 - 3*A*b^6)*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^8*d + 3*a^6*b^2
*d + 3*a^4*b^4*d + a^2*b^6*d)*sqrt(a*b)) - 1/4*(7*B*a^3*b^2*tan(d*x + c)^(3
/2) - 11*A*a^2*b^3*tan(d*x + c)^(3/2) - B*a*b^4*tan(d*x + c)^(3/2) - 3*A*b^
5*tan(d*x + c)^(3/2) + 9*B*a^4*b*sqrt(tan(d*x + c)) - 13*A*a^3*b^2*sqrt(tan
```

```
(d*x + c)) + B*a^2*b^3*sqrt(tan(d*x + c)) - 5*A*a*b^4*sqrt(tan(d*x + c)))/(
(a^6*d + 2*a^4*b^2*d + a^2*b^4*d)*(b*tan(d*x + c) + a)^2)
```

3.415 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=601

$$-\frac{b^{3/2}\left(46a^2Ab^3+63a^4Ab-6a^3b^2B-35a^5B-3ab^4B+15Ab^5\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{7/2}d\left(a^2+b^2\right)^3}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab\right.}{}$$

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3
*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (b^(3/2)*(63*a^4*A*b + 46*a^2*A*b^
3 + 15*A*b^5 - 35*a^5*B - 6*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a]])/(4*a^(7/2)*(a^2 + b^2)^3*d) + ((3*a^2*b*(A - B) - b^3
*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3*(A
 - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - (8*a^4*A + 31*a^2*A*b^2 + 15*
A*b^4 - 11*a^3*b*B - 3*a*b^3*B)/(4*a^3*(a^2 + b^2)^2*d*Sqrt[Tan[c + d*x]])
+ (b*(A*b - a*B))/(2*a*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]
)^2) + (b*(13*a^2*A*b + 5*A*b^3 - 9*a^3*B - a*b^2*B))/(4*a^2*(a^2 + b^2)^2*
d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.69065, antiderivative size = 601, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{b^{3/2}\left(46a^2Ab^3+63a^4Ab-6a^3b^2B-35a^5B-3ab^4B+15Ab^5\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{4a^{7/2}d\left(a^2+b^2\right)^3}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3),x]
```

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3
*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (b^(3/2)*(63*a^4*A*b + 46*a^2*A*b^
3 + 15*A*b^5 - 35*a^5*B - 6*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan
```

```
[c + d*x]])/Sqrt[a]])/(4*a^(7/2)*(a^2 + b^2)^3*d) + ((3*a^2*b*(A - B) - b^3
*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3*(A
 - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - (8*a^4*A + 31*a^2*A*b^2 + 15*
A*b^4 - 11*a^3*b*B - 3*a*b^3*B)/(4*a^3*(a^2 + b^2)^2*d*Sqrt[Tan[c + d*x]])
+ (b*(A*b - a*B))/(2*a*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]
)^2) + (b*(13*a^2*A*b + 5*A*b^3 - 9*a^3*B - a*b^2*B))/(4*a^2*(a^2 + b^2)^2*
d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
```

```
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx = \frac{b(Ab-aB)}{2a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2} + \frac{\int \frac{\frac{1}{2}\left(4a^2A+5Ab^2-abB\right)-2a(Ab-a}{\tan^{\frac{3}{2}}(c+dx}}{2a}$$

$$= \frac{b(Ab-aB)}{2a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2} + \frac{b\left(13a^2Ab+5Ab^3\right.}{4a^2\left(a^2+b^2\right)^2 d\sqrt{\tan(c+}}$$

$$= -\frac{8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B}{4a^3\left(a^2+b^2\right)^2 d\sqrt{\tan(c+dx)}} + \frac{b(Ab-a}{2a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}}$$

$$= -\frac{8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B}{4a^3\left(a^2+b^2\right)^2 d\sqrt{\tan(c+dx)}} + \frac{b(Ab-a}{2a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}}$$

$$= -\frac{8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B}{4a^3\left(a^2+b^2\right)^2 d\sqrt{\tan(c+dx)}} + \frac{b(Ab-a}{2a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}}$$

$$= -\frac{8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B}{4a^3\left(a^2+b^2\right)^2 d\sqrt{\tan(c+dx)}} + \frac{b(Ab-a}{2a\left(a^2+b^2\right)d\sqrt{\tan(c+dx)}}$$

$$= -\frac{b^{3/2}\left(63a^4Ab+46a^2Ab^3+15Ab^5-35a^5B-6a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan}}{}\right.}{4a^{7/2}\left(a^2+b^2\right)^3 d}$$

$$= -\frac{b^{3/2}\left(63a^4Ab+46a^2Ab^3+15Ab^5-35a^5B-6a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan}}{}\right.}{4a^{7/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)+3a^2b(A+B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [C] time = 6.26299, size = 585, normalized size = 0.97

$$\frac{b(Ab-aB)}{2ad\left(a^2+b^2\right)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2} + \frac{\frac{\frac{1}{2}b^2\left(4a^2A-abB+5Ab^2\right)+\frac{9}{2}a^2b(Ab-aB)}{ad\left(a^2+b^2\right)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))} + \frac{-\frac{31a^2Ab^2+8a^4A-11a^3bB-3ab^3B+15Ab^4}{2ad\sqrt{\tan(c+dx)}} - 2\left(\frac{2\left(a^4(-b)\right.}{}\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3),
x]
```

```
[Out] (b*(A*b - a*B))/(2*a*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^
2) + (((-2*((2*(-(a^4*b*(a^2*A - A*b^2 + 2*a*b*B)) + (a^2*b*(8*a^4*A + 31*a
^2*A*b^2 + 15*A*b^4 - 11*a^3*b*B - 3*a*b^3*B))/8 + (b^2*(24*a^4*A*b + 31*a^
2*A*b^3 + 15*A*b^5 - 8*a^5*B - 3*a^3*b^2*B - 3*a*b^4*B))/8)*ArcTan[(Sqrt[b]
*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*(a^2 + b^2)*d) + (-(((-1)^(
1/4)*(a^3*(3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B) - I*a^3*(a^3*A - 3*a*A*b^
2 + 3*a^2*b*B - b^3*B))*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d) - ((-1)^(
1/4)*(a^3*(3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B) + I*a^3*(a^3*A - 3*a*A*b^
2 + 3*a^2*b*B - b^3*B))*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]])/d)/(a^2 + b
^2)))/a - (8*a^4*A + 31*a^2*A*b^2 + 15*A*b^4 - 11*a^3*b*B - 3*a*b^3*B)/(2*a
*d*Sqrt[Tan[c + d*x]]))/(a*(a^2 + b^2)) + ((9*a^2*b*(A*b - a*B))/2 + (b^2*(
4*a^2*A + 5*A*b^2 - a*b*B))/2)/(a*(a^2 + b^2)*d*Sqrt[Tan[c + d*x]]*(a + b*T
an[c + d*x])))/(2*a*(a^2 + b^2))
```

Maple [B] time = 0.067, size = 1864, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^3,x)
```

```
[Out] -3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-11/2/
d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^6/a*tan(d*x+c)^(3/2)*A+9/2/d/(a^2+b^2)^3
/(a+b*tan(d*x+c))^2*tan(d*x+c)^(1/2)*B*a*b^4-3/2/d/(a^2+b^2)^3*A*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-
1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b+3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1
/2)*tan(d*x+c)^(1/2))*a*b^2+3/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*t
an(d*x+c)^(1/2))*a*b^2+3/4/d*b^6/a^2/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x
+c)^(1/2)*b/(a*b)^(1/2))*B-7/4/d*b^8/a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan
(d*x+c)^(3/2)*A+3/4/d*b^7/a^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(3/
2)*B-9/4/d*b^7/a^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*A*tan(d*x+c)^(1/2)+7/2/d/
(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^5*tan(d*x+c)^(3/2)*B+1/4/d/(a^2+b^2)^3*A*2
^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/
2)+tan(d*x+c)))*b^3-13/2/d/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*tan(d*x+c)^(1/2)*
A*b^5+3/2/d/(a^2+b^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*
B*b^4+1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
```

```
)/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^3-1/4/d/(a^2+b^2)^3*A*2^(1/2)*
ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c)))*a^3+1/4/d/(a^2+b^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan
(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b^3-15/4/d*b^7/a^3/(a^2+b
^2)^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A-2/d/a^3*A/tan(d*
x+c)^(1/2)+13/4/d*a^3/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^2*tan(d*x+c)^(1/2)*B
-1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3-1/2/d/(
a^2+b^2)^3*A*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2
)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d/(a^2+b^2)^3*B*2^
(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*ar
ctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(-1
+2^(1/2)*tan(d*x+c)^(1/2))*b^3+1/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2
)*tan(d*x+c)^(1/2))*b^3+1/2/d/(a^2+b^2)^3*A*2^(1/2)*arctan(1+2^(1/2)*tan(d*
x+c)^(1/2))*b^3-3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+
tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a^2*b-23/2/d/(a^2+b^2)
^3/a/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*A*b^5-3/4/d/(a^2+b^
2)^3*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*
x+c)^(1/2)+tan(d*x+c)))*a*b^2+3/4/d/(a^2+b^2)^3*A*2^(1/2)*ln((1-2^(1/2)*tan
(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a*b^2+11
/4/d*a^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^3*tan(d*x+c)^(3/2)*B-3/4/d/(a^2+b
^2)^3*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))*a^2*b-15/4/d*a/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^4*
tan(d*x+c)^(3/2)*A-63/4/d*a/(a^2+b^2)^3*b^3/(a*b)^(1/2)*arctan(tan(d*x+c)^(
1/2)*b/(a*b)^(1/2))*A+35/4/d*a^2/(a^2+b^2)^3*b^2/(a*b)^(1/2)*arctan(tan(d*x
+c)^(1/2)*b/(a*b)^(1/2))*B-17/4/d*a^2/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*b^3*ta
n(d*x+c)^(1/2)*A+5/4/d*b^6/a/(a^2+b^2)^3/(a+b*tan(d*x+c))^2*B*tan(d*x+c)^(1
/2)-3/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b-3
/2/d/(a^2+b^2)^3*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a*b^2-3/2/d/
(a^2+b^2)^3*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a^2*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [A] time = 1.65004, size = 1092, normalized size = 1.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2*b + 3*sqrt(2)*B*a^2*b
 - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*b^3 - sqrt(2)*B*b^3)*a
rctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/(a^6*d + 3*a^4*b^2*d +
3*a^2*b^4*d + b^6*d) - 1/2*(sqrt(2)*A*a^3 - sqrt(2)*B*a^3 + 3*sqrt(2)*A*a^2
*b + 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 + 3*sqrt(2)*B*a*b^2 - sqrt(2)*A*
b^3 - sqrt(2)*B*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/
(a^6*d + 3*a^4*b^2*d + 3*a^2*b^4*d + b^6*d) + 1/4*(sqrt(2)*A*a^3 + sqrt(2)*
B*a^3 - 3*sqrt(2)*A*a^2*b + 3*sqrt(2)*B*a^2*b - 3*sqrt(2)*A*a*b^2 - 3*sqrt(
2)*B*a*b^2 + sqrt(2)*A*b^3 - sqrt(2)*B*b^3)*log(sqrt(2)*sqrt(tan(d*x + c))
```

```
+ tan(d*x + c) + 1)/(a^6*d + 3*a^4*b^2*d + 3*a^2*b^4*d + b^6*d) - 1/4*(sqrt
(2)*A*a^3 + sqrt(2)*B*a^3 - 3*sqrt(2)*A*a^2*b + 3*sqrt(2)*B*a^2*b - 3*sqrt(
2)*A*a*b^2 - 3*sqrt(2)*B*a*b^2 + sqrt(2)*A*b^3 - sqrt(2)*B*b^3)*log(-sqrt(2
)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^6*d + 3*a^4*b^2*d + 3*a^2*b^4*d
 + b^6*d) + 1/4*(35*B*a^5*b^2 - 63*A*a^4*b^3 + 6*B*a^3*b^4 - 46*A*a^2*b^5 +
 3*B*a*b^6 - 15*A*b^7)*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^9*d + 3*a
^7*b^2*d + 3*a^5*b^4*d + a^3*b^6*d)*sqrt(a*b)) + 1/4*(11*B*a^3*b^3*tan(d*x
+ c)^(3/2) - 15*A*a^2*b^4*tan(d*x + c)^(3/2) + 3*B*a*b^5*tan(d*x + c)^(3/2)
 - 7*A*b^6*tan(d*x + c)^(3/2) + 13*B*a^4*b^2*sqrt(tan(d*x + c)) - 17*A*a^3*
b^3*sqrt(tan(d*x + c)) + 5*B*a^2*b^4*sqrt(tan(d*x + c)) - 9*A*a*b^5*sqrt(ta
n(d*x + c)))/((a^7*d + 2*a^5*b^2*d + a^3*b^4*d)*(b*tan(d*x + c) + a)^2) - 2
*A/(a^3*d*sqrt(tan(d*x + c)))
```

3.416 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=156

$$\frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+}\right.}{2\sqrt{2}d}$$

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*B*Tan[c + d*x]^(3/2))/(3*d)
```

Rubi [A] time = 0.10962, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d}+\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+}\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*B*Tan[c + d*x]^(3/2))/(3*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \tan^{\frac{5}{2}}(c+dx)\,dx$$

$$= \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d} - B\int \sqrt{\tan(c+dx)}\,dx$$

$$= \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{B\,\text{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{(2B)\,\text{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$

$$= \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d} + \frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} - \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\right.}{}$$

$$= \frac{2B\tan^{\frac{3}{2}}(c+dx)}{3d} - \frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d} - \frac{B\,\text{Subst}\left(\int\right.}{}$$

$$= -\frac{B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} + \frac{B\log\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right.}{2\sqrt{2}d}$$

$$= \frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\log\left(1\right.}{}$$

Mathematica [C] time = 0.0466169, size = 38, normalized size = 0.24

$$-\frac{2B\tan^{\frac{3}{2}}(c+dx)\left(\text{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\tan^2(c+dx)\right)-1\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
),x]
```

```
[Out] (-2*B*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Tan[c + d*x]^2])*Tan[c + d*x]^(
3/2))/(3*d)
```

Maple [A] time = 0.023, size = 118, normalized size = 0.8

$$\frac{2B}{3d}(\tan(dx+c))^{\frac{3}{2}}-\frac{B\sqrt{2}}{2d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{2d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{4d}\ln\left(\left(1-\sqrt{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 2/3*B*tan(d*x+c)^(3/2)/d-1/2*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)
-1/2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)-1/4/d*B*2^(1/2)*ln((1-
2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)
))
```

Maxima [A] time = 1.54973, size = 166, normalized size = 1.06

$$\frac{8B\tan(dx+c)^{\frac{3}{2}}-3\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)-\sqrt{2}\right.}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/12*(8*B*tan(d*x + c)^(3/2) - 3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2
*sqrt(tan(d*x + c)))) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan
(d*x + c)))) - sqrt(2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) +
 sqrt(2)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))*B)/d
```

Fricas [B] time = 2.54263, size = 1466, normalized size = 9.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/12*(12*sqrt(2)*d*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B^3*d*(B^4/d^4)^(1/4)*s
qrt(sin(d*x + c)/cos(d*x + c)) + B^4 - sqrt(2)*d*(B^4/d^4)^(1/4)*sqrt((sqrt
(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) +
B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^6*sin(d*x + c))/cos(d*x + c)))/B^4)*
cos(d*x + c) + 12*sqrt(2)*d*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B^3*d*(B^4/d^4
)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c)) - B^4 - sqrt(2)*d*(B^4/d^4)^(1/4)*s
qrt(-(sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d
*x + c) - B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) - B^6*sin(d*x + c))/cos(d*x +
c)))/B^4)*cos(d*x + c) + 3*sqrt(2)*d*(B^4/d^4)^(1/4)*cos(d*x + c)*log((sqrt
(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) +
B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^6*sin(d*x + c))/cos(d*x + c)) - 3*sq
rt(2)*d*(B^4/d^4)^(1/4)*cos(d*x + c)*log(-(sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*
sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - B^4*d^2*sqrt(B^4/d^4)*cos(d*
x + c) - B^6*sin(d*x + c))/cos(d*x + c)) + 8*B*sqrt(sin(d*x + c)/cos(d*x +
c))*sin(d*x + c))/(d*cos(d*x + c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] Timed out
```

3.417 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=154

$$\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}+\frac{2B\sqrt{\tan(c+dx)}}{d}+\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c\right.}}{2\sqrt{2}d}$$

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*B*Sqrt[Tan[c + d*x]])/d
```

Rubi [A] time = 0.104313, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}+\frac{2B\sqrt{\tan(c+dx)}}{d}+\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c\right.}}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) + (2*B*Sqrt[Tan[c + d*x]])/d
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \tan^{\frac{3}{2}}(c+dx)\,dx$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{d} - B\int \frac{1}{\sqrt{\tan(c+dx)}}\,dx$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{d} - \frac{(2B)\,\mathrm{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1+x^2}{1+x^4}\right.}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d} - \frac{B\,\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} - \frac{B\log\left(1+\sqrt{2}\sqrt{\tan(c+dx)}+\right.}{2\sqrt{2}d}$$

$$= \frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{B\log\left(1\right.}{}$$

Mathematica [A] time = 0.11429, size = 138, normalized size = 0.9

$$\frac{B\left(2\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-2\sqrt{2}\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)+8\sqrt{\tan(c+dx)}+\sqrt{2}\log\left(\tan(c+dx)-\sqrt{2}\right.\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
),x]
```

```
[Out] (B*(2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - 2*Sqrt[2]*ArcTan[1 +
 Sqrt[2]*Sqrt[Tan[c + d*x]]] + Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
 + 8*Sqrt[Tan[c + d*x]]))/(4*d)
```

Maple [A] time = 0.023, size = 118, normalized size = 0.8

$$2\,\frac{B\sqrt{\tan(dx+c)}}{d}-\frac{B\sqrt{2}}{2\,d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{2\,d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{4\,d}\ln\left(\left(1+\sqrt{2}\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 2*B*tan(d*x+c)^(1/2)/d-1/2*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)-1
/2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)-1/4/d*B*2^(1/2)*ln((1+2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))
```

Maxima [A] time = 1.68618, size = 166, normalized size = 1.08

$$-\frac{2\,\sqrt{2}B\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan(dx+c)}\right)\right)+2\,\sqrt{2}B\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}-2\,\sqrt{\tan(dx+c)}\right)\right)+\sqrt{2}B\log\left(\sqrt{2}\sqrt{\tan(\right.}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*B*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*
sqrt(2)*B*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*B
*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*B*log(-sqrt(2
)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 8*B*sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 2.29899, size = 1311, normalized size = 8.51

$$\frac{4\sqrt{2}d\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}Bd^3\left(\frac{B^4}{d^4}\right)^{\frac{3}{4}}\sqrt{\frac{\sin(dx+c)}{\cos(dx+c)}}-\sqrt{2}d^3\left(\frac{B^4}{d^4}\right)^{\frac{3}{4}}\sqrt{\frac{\sqrt{2}Bd\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\sqrt{\frac{\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)+d^2\sqrt{\frac{B^4}{d^4}}\cos(dx+c)+B^2\sin(dx+c)}{\cos(dx+c)}}+B^4}{B^4}\right)+4\sqrt{2}d\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*d*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B*d^3*(B^4/d^4)^(3/4)*sqr
t(sin(d*x + c)/cos(d*x + c)) - sqrt(2)*d^3*(B^4/d^4)^(3/4)*sqrt((sqrt(2)*B*
d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) + d^2*sqrt(B
^4/d^4)*cos(d*x + c) + B^2*sin(d*x + c))/cos(d*x + c)) + B^4)/B^4) + 4*sqrt
(2)*d*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x +
 c)/cos(d*x + c)) - sqrt(2)*d^3*(B^4/d^4)^(3/4)*sqrt(-(sqrt(2)*B*d*(B^4/d^4
)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - d^2*sqrt(B^4/d^4)*co
s(d*x + c) - B^2*sin(d*x + c))/cos(d*x + c)) - B^4)/B^4) - sqrt(2)*d*(B^4/d
^4)^(1/4)*log((sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*
cos(d*x + c) + d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^2*sin(d*x + c))/cos(d*x +
 c)) + sqrt(2)*d*(B^4/d^4)^(1/4)*log(-(sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin
(d*x + c)/cos(d*x + c))*cos(d*x + c) - d^2*sqrt(B^4/d^4)*cos(d*x + c) - B^2
*sin(d*x + c))/cos(d*x + c)) + 8*B*sqrt(sin(d*x + c)/cos(d*x + c)))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\tan^{\frac{3}{2}}(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(tan(c + d*x)**(3/2), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] Timed out
```

3.418 $\int \frac{\sqrt{\tan(c+dx)}(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=138

$$-\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}+\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log}{}$$

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d
*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.0991125, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {21, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}+\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d
*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \sqrt{\tan(c+dx)}\,dx$$
$$= \frac{B\,\text{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{(2B)\,\text{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$
$$= -\frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} + \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+a}\right.}{d}$$
$$= \frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d} + \frac{B\,\text{Subst}\left(\int \frac{1}{1+\sqrt{2}x+x^2}\,dx, x, \sqrt{\text{ta}}\right.}{2d}$$
$$= \frac{B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} - \frac{B\log\left(1+\sqrt{2}\sqrt{\tan(c+dx)}+\right.}{2\sqrt{2}d}$$
$$= -\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{B\log}{}$$

Mathematica [C] time = 0.019991, size = 36, normalized size = 0.26

$$\frac{2B\tan^{\frac{3}{2}}(c+dx)\text{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\tan^2(c+dx)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
),x]
```

```
[Out] (2*B*Hypergeometric2F1[3/4, 1, 7/4, -Tan[c + d*x]^2]*Tan[c + d*x]^(3/2))/(3
*d)
```

Maple [A] time = 0.035, size = 104, normalized size = 0.8

$$\frac{B\sqrt{2}}{4d}\ln\left(\left(1-\sqrt{2}\sqrt{\tan(dx+c)}+\tan(dx+c)\right)\left(1+\sqrt{2}\sqrt{\tan(dx+c)}+\tan(dx+c)\right)^{-1}\right)+\frac{B\sqrt{2}}{2d}\arctan\left(1+\sqrt{2}\sqrt{\tan\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/4/d*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))+1/2*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)
+1/2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)
```

Maxima [A] time = 1.55446, size = 147, normalized size = 1.07

$$\frac{\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)-\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan(dx+\right.\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqr
t(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*log(sq
rt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)*sqrt(ta
n(d*x + c)) + tan(d*x + c) + 1))*B/d
```

Fricas [B] time = 2.29129, size = 1283, normalized size = 9.3

$$-\sqrt{2}\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}B^3d\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\sqrt{\frac{\sin(dx+c)}{\cos(dx+c)}}+B^4-\sqrt{2}d\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\sqrt{\frac{\sqrt{2}B^3d^3\left(\frac{B^4}{d^4}\right)^{\frac{3}{4}}\sqrt{\frac{\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)+B^4d^2\sqrt{\frac{B^4}{d^4}}\cos(dx+c)+B^6\sin}{\cos(dx+c)}}}{B^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -sqrt(2)*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B^3*d*(B^4/d^4)^(1/4)*sqrt(sin(d*
x + c)/cos(d*x + c)) + B^4 - sqrt(2)*d*(B^4/d^4)^(1/4)*sqrt((sqrt(2)*B^3*d^
3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) + B^4*d^2*sq
rt(B^4/d^4)*cos(d*x + c) + B^6*sin(d*x + c))/cos(d*x + c)))/B^4) - sqrt(2)*
(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B^3*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/co
s(d*x + c)) - B^4 - sqrt(2)*d*(B^4/d^4)^(1/4)*sqrt(-(sqrt(2)*B^3*d^3*(B^4/d
^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - B^4*d^2*sqrt(B^4/d
^4)*cos(d*x + c) - B^6*sin(d*x + c))/cos(d*x + c)))/B^4) - 1/4*sqrt(2)*(B^4
/d^4)^(1/4)*log((sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x
+ c))*cos(d*x + c) + B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^6*sin(d*x + c))
/cos(d*x + c)) + 1/4*sqrt(2)*(B^4/d^4)^(1/4)*log(-(sqrt(2)*B^3*d^3*(B^4/d^4
)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - B^4*d^2*sqrt(B^4/d^4
)*cos(d*x + c) - B^6*sin(d*x + c))/cos(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\sqrt{\tan\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(sqrt(tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] Timed out
```

3.419 $\int \frac{aB+bB\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=138

$$-\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\,\mathrm{lo}}{}$$

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d
*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.0960232, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {21, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}+\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\,\mathrm{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])),x]
```


```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d
*x]] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
```

```
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx = B\int \frac{1}{\sqrt{\tan(c+dx)}}\,dx$$
$$= \frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$
$$= \frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} + \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$
$$= \frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d} + \frac{B\,\text{Subst}\left(\int \frac{1}{1+\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d}$$
$$= -\frac{B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} + \frac{B\log\left(1+\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d}$$
$$= -\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\log\left(1\ldots\right.}{}$$

Mathematica [A] time = 0.0331924, size = 110, normalized size = 0.8

$$\frac{B\left(-2\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)+2\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)-\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c+dx)}+1\right)+\log\left(\ldots\right.\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])
),x]
```

```
[Out] (B*(-2*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] + 2*ArcTan[1 + Sqrt[2]*Sqrt[T
an[c + d*x]]] - Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] + Log[1
+ Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(2*Sqrt[2]*d)
```

Maple [A] time = 0.04, size = 104, normalized size = 0.8

$$\frac{B\sqrt{2}}{4\,d}\ln\left(\left(1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}+\tan\left(dx+c\right)\right)\left(1-\sqrt{2}\sqrt{\tan\left(dx+c\right)}+\tan\left(dx+c\right)\right)^{-1}\right)+\frac{B\sqrt{2}}{2\,d}\arctan\left(1+\sqrt{2}\sqrt{\tan\left(\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/4/d*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d
*x+c)^(1/2)+tan(d*x+c)))+1/2*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)
+1/2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)
```

Maxima [A] time = 1.6794, size = 151, normalized size = 1.09

$$\frac{2\,\sqrt{2}B\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)+2\,\sqrt{2}B\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}-2\,\sqrt{\tan\left(dx+c\right)}\right)\right)+\sqrt{2}B\log\left(\sqrt{2}\sqrt{\tan\left(dx\right.}\right.}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*B*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*s
qrt(2)*B*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*B*
log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*B*log(-sqrt(2)
*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))/d
```

Fricas [B] time = 2.32481, size = 1245, normalized size = 9.02

$$-\sqrt{2}\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}Bd^3\left(\frac{B^4}{d^4}\right)^{\frac{3}{4}}\sqrt{\frac{\sin(dx+c)}{\cos(dx+c)}}-\sqrt{2}d^3\left(\frac{B^4}{d^4}\right)^{\frac{3}{4}}\sqrt{\frac{\sqrt{2}Bd\left(\frac{B^4}{d^4}\right)^{\frac{1}{4}}\sqrt{\frac{\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)+d^2\sqrt{\frac{B^4}{d^4}}\cos(dx+c)+B^2\sin(dx+c)}{\cos(dx+c)}}+B}{B^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -sqrt(2)*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*
x + c)/cos(d*x + c)) - sqrt(2)*d^3*(B^4/d^4)^(3/4)*sqrt((sqrt(2)*B*d*(B^4/d
^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) + d^2*sqrt(B^4/d^4)*
cos(d*x + c) + B^2*sin(d*x + c))/cos(d*x + c)) + B^4)/B^4) - sqrt(2)*(B^4/d
^4)^(1/4)*arctan(-(sqrt(2)*B*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x
+ c)) - sqrt(2)*d^3*(B^4/d^4)^(3/4)*sqrt(-(sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt
(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - d^2*sqrt(B^4/d^4)*cos(d*x + c) -
 B^2*sin(d*x + c))/cos(d*x + c)) - B^4)/B^4) + 1/4*sqrt(2)*(B^4/d^4)^(1/4)*
log((sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x +
c) + d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^2*sin(d*x + c))/cos(d*x + c)) - 1/4
*sqrt(2)*(B^4/d^4)^(1/4)*log(-(sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c
)/cos(d*x + c))*cos(d*x + c) - d^2*sqrt(B^4/d^4)*cos(d*x + c) - B^2*sin(d*x
 + c))/cos(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{\sqrt{\tan\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(1/sqrt(tan(c + d*x)), x)
```

Giac [A] time = 1.70236, size = 159, normalized size = 1.15

$$\frac{1}{4}B\left(\frac{2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)}{d}+\frac{2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan\left(dx+c\right)}\right)\right)}{d}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan\left(\right.}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] 1/4*B*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d + 2
*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/d + sqrt(2)*
log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d - sqrt(2)*log(-sqrt(2)
*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d)
```

3.420 $\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=154

$$\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2B}{d\sqrt{\tan(c+dx)}}-\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c-\right.}}{2\sqrt{2}d}$$

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*B)/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.104938, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2B}{d\sqrt{\tan(c+dx)}}-\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c-\right.}}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*B)/(d*Sqrt[Tan[c + d*x]])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{aB + bB\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = B\int \frac{1}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

$$= -\frac{2B}{d\sqrt{\tan(c+dx)}} - B\int \sqrt{\tan(c+dx)}\,dx$$

$$= -\frac{2B}{d\sqrt{\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= -\frac{2B}{d\sqrt{\tan(c+dx)}} - \frac{(2B)\,\mathrm{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$

$$= -\frac{2B}{d\sqrt{\tan(c+dx)}} + \frac{B\,\mathrm{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1+x^2}{1+x^4}\right.}{}$$

$$= -\frac{2B}{d\sqrt{\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d} - \frac{B\,\mathrm{Subst}\left(\int \frac{}{1}\right.}{}$$

$$= -\frac{B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} + \frac{B\log\left(1+\sqrt{2}\sqrt{\tan(c+dx)}+\right.}{2\sqrt{2}d}$$

$$= \frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\log\left(1-\right.}{}$$

Mathematica [C] time = 0.0281061, size = 34, normalized size = 0.22

$$-\frac{2B\text{Hypergeometric2F1}\left(-\frac{1}{4},1,\frac{3}{4},-\tan^2(c+dx)\right)}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])
),x]
```

```
[Out] (-2*B*Hypergeometric2F1[-1/4, 1, 3/4, -Tan[c + d*x]^2])/(d*Sqrt[Tan[c + d*x
]])
```

Maple [A] time = 0.028, size = 118, normalized size = 0.8

$$-2\,\frac{B}{d\sqrt{\tan(dx+c)}}-\frac{B\sqrt{2}}{2d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{2d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{4d}\ln\left(\left(1-\sqrt{2}\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] -2*B/d/tan(d*x+c)^(1/2)-1/2*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)-
1/2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)-1/4/d*B*2^(1/2)*ln((1-2
^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))
)
```

Maxima [A] time = 1.78807, size = 165, normalized size = 1.07

$$-\frac{\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)-\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan(dx+c\right.\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/4*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*s
qrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*log(
sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)*sqrt(
tan(d*x + c)) + tan(d*x + c) + 1))*B + 8*B/sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 2.12926, size = 1569, normalized size = 10.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/4*(8*B*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c)*sin(d*x + c) + 4*(sqr
t(2)*d*cos(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B^3*d*(
B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c)) + B^4 - sqrt(2)*d*(B^4/d^4)^
(1/4)*sqrt((sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c))
*cos(d*x + c) + B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^6*sin(d*x + c))/cos(
d*x + c)))/B^4) + 4*(sqrt(2)*d*cos(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4)^(1/4)*
arctan(-(sqrt(2)*B^3*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c)) - B^
4 - sqrt(2)*d*(B^4/d^4)^(1/4)*sqrt(-(sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(s
in(d*x + c)/cos(d*x + c))*cos(d*x + c) - B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c)
 - B^6*sin(d*x + c))/cos(d*x + c)))/B^4) + (sqrt(2)*d*cos(d*x + c)^2 - sqrt
(2)*d)*(B^4/d^4)^(1/4)*log((sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x +
c)/cos(d*x + c))*cos(d*x + c) + B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^6*si
n(d*x + c))/cos(d*x + c)) - (sqrt(2)*d*cos(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4
)^(1/4)*log(-(sqrt(2)*B^3*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c
))*cos(d*x + c) - B^4*d^2*sqrt(B^4/d^4)*cos(d*x + c) - B^6*sin(d*x + c))/co
s(d*x + c)))/(d*cos(d*x + c)^2 - d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\frac{1}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(tan(c + d*x)**(-3/2), x)
```

Giac [A] time = 1.7781, size = 177, normalized size = 1.15

$$-\frac{1}{4}\,B\left(\frac{2\,\sqrt{2}\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)}{d}+\frac{2\,\sqrt{2}\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}-2\,\sqrt{\tan\left(dx+c\right)}\right)\right)}{d}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan\left(d\right.}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] -1/4*B*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d +
2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/d - sqrt(2)
*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + sqrt(2)*log(-sqrt(2
)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 8/(d*sqrt(tan(d*x + c))))
```

3.421 $\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=156

$$\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c\right.}{2\sqrt{2}d}$$

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*B)/(3*d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 0.0989388, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d}-\frac{B\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d}-\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)}+\frac{B\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan(c\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])),x]
```



```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] +
Tan[c + d*x]])/(2*Sqrt[2]*d) - (2*B)/(3*d*Tan[c + d*x]^(3/2))
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = B\int \frac{1}{\tan^{\frac{5}{2}}(c+dx)}\,dx$$

$$= -\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)} - B\int \frac{1}{\sqrt{\tan(c+dx)}}\,dx$$

$$= -\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= -\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{(2B)\,\mathrm{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d}$$

$$= -\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{B\,\mathrm{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1+x^2}{1+x^4}\right.}{}$$

$$= -\frac{2B}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d} - \frac{B\,\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)}{2\sqrt{2}d} - \frac{B\log\left(1+\sqrt{2}\sqrt{\tan(c+dx)}+\mathrm{ta}\right.}{2\sqrt{2}d}$$

$$= \frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} - \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d} + \frac{B\log\left(1-\right.}{}$$

Mathematica [C] time = 0.0279196, size = 36, normalized size = 0.23

$$-\frac{2B\text{Hypergeometric2F1}\left(-\frac{3}{4},1,\frac{1}{4},-\tan^2(c+dx)\right)}{3d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])
),x]
```

```
[Out] (-2*B*Hypergeometric2F1[-3/4, 1, 1/4, -Tan[c + d*x]^2])/(3*d*Tan[c + d*x]^(
3/2))
```

Maple [A] time = 0.027, size = 118, normalized size = 0.8

$$-\frac{2B}{3d}(\tan(dx+c))^{-\frac{3}{2}}-\frac{B\sqrt{2}}{2d}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{2d}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{B\sqrt{2}}{4d}\ln\left(\left(1+\sqrt{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] -2/3*B/d/tan(d*x+c)^(3/2)-1/2*B*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2
)-1/2*B*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))/d*2^(1/2)-1/4/d*B*2^(1/2)*ln((1
+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c
)))
```

Maxima [A] time = 1.79317, size = 167, normalized size = 1.07

$$-\frac{6\sqrt{2}B\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+6\sqrt{2}B\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)+3\sqrt{2}B\log\left(\sqrt{2}\sqrt{\tan(\right.}{12d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/12*(6*sqrt(2)*B*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 6
*sqrt(2)*B*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + 3*sqrt(2
)*B*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 3*sqrt(2)*B*log(-s
qrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + 8*B/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 2.13258, size = 1526, normalized size = 9.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/12*(8*B*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c)^2 + 12*(sqrt(2)*d*co
s(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4)^(1/4)*arctan(-(sqrt(2)*B*d^3*(B^4/d^4)^
(3/4)*sqrt(sin(d*x + c)/cos(d*x + c)) - sqrt(2)*d^3*(B^4/d^4)^(3/4)*sqrt((s
qrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) + d
^2*sqrt(B^4/d^4)*cos(d*x + c) + B^2*sin(d*x + c))/cos(d*x + c)) + B^4)/B^4)
 + 12*(sqrt(2)*d*cos(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4)^(1/4)*arctan(-(sqrt(
2)*B*d^3*(B^4/d^4)^(3/4)*sqrt(sin(d*x + c)/cos(d*x + c)) - sqrt(2)*d^3*(B^4
/d^4)^(3/4)*sqrt(-(sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x +
c))*cos(d*x + c) - d^2*sqrt(B^4/d^4)*cos(d*x + c) - B^2*sin(d*x + c))/cos(d
*x + c)) - B^4)/B^4) - 3*(sqrt(2)*d*cos(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4)^(
1/4)*log((sqrt(2)*B*d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d
*x + c) + d^2*sqrt(B^4/d^4)*cos(d*x + c) + B^2*sin(d*x + c))/cos(d*x + c))
+ 3*(sqrt(2)*d*cos(d*x + c)^2 - sqrt(2)*d)*(B^4/d^4)^(1/4)*log(-(sqrt(2)*B*
d*(B^4/d^4)^(1/4)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - d^2*sqrt(B
^4/d^4)*cos(d*x + c) - B^2*sin(d*x + c))/cos(d*x + c)))/(d*cos(d*x + c)^2 -
 d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [A] time = 1.76265, size = 178, normalized size = 1.14

$$-\frac{1}{12}\,B\left(\frac{6\,\sqrt{2}\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+2\,\sqrt{\tan\left(dx+c\right)}\right)\right)}{d}+\frac{6\,\sqrt{2}\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}-2\,\sqrt{\tan\left(dx+c\right)}\right)\right)}{d}+\frac{3\,\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] -1/12*B*(6*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))/d +
 6*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))/d + 3*sqrt
(2)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d - 3*sqrt(2)*log(-s
qrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/d + 8/(d*tan(d*x + c)^(3/2)))
```

3.422 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=256

$$-\frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}d\left(a^2+b^2\right)}+\frac{B(a+b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a+b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a-$$

```
[Out] ((a + b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d)
- ((a + b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
) - (2*a^(5/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(b^(3/2)*(a^
2 + b^2)*d) - ((a - b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
)/(2*Sqrt[2]*(a^2 + b^2)*d) + ((a - b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + (2*B*Sqrt[Tan[c + d*x]])/(b*d
)
```

Rubi [A] time = 0.526203, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.361, Rules used = {21, 3566, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}d\left(a^2+b^2\right)}+\frac{B(a+b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a+b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a-$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] ((a + b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d)
- ((a + b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
) - (2*a^(5/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(b^(3/2)*(a^
2 + b^2)*d) - ((a - b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
)/(2*Sqrt[2]*(a^2 + b^2)*d) + ((a - b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + (2*B*Sqrt[Tan[c + d*x]])/(b*d
)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
```

```
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3566

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m - 2)*(c
+ d*Tan[e + f*x])^(n + 1))/(d*f*(m + n - 1)), x] + Dist[1/(d*(m + n - 1)),
Int[(a + b*Tan[e + f*x])^(m - 3)*(c + d*Tan[e + f*x])^n*Simp[a^3*d*(m + n -
 1) - b^2*(b*c*(m - 2) + a*d*(1 + n)) + b*d*(m + n - 1)*(3*a^2 - b^2)*Tan[e
 + f*x] - b^2*(b*c*(m - 2) - a*d*(3*m + 2*n - 4))*Tan[e + f*x]^2, x], x], x
] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && GtQ[m, 2] && (GeQ[n, -1] || In
tegerQ[m]) &&  !(IGtQ[n, 2] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
```

```
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = B\int \frac{\tan^{\frac{5}{2}}(c+dx)}{a+b\tan(c+dx)}\,dx$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{(2B)\int \frac{-\frac{a}{2}-\frac{1}{2}b\tan(c+dx)-\frac{1}{2}a\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{b}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{(2B)\int \frac{-\frac{b^2}{2}-\frac{1}{2}ab\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{b\left(a^2+b^2\right)} - \frac{\left(a^3B\right)\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+}}{b\left(a^2+b^2\right)}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{(4B)\,\text{Subst}\left(\int \frac{-\frac{b^2}{2}-\frac{1}{2}abx^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{b\left(a^2+b^2\right)d} - \frac{\left(a^3B\right)\text{Su}}{}$$

$$= \frac{2B\sqrt{\tan(c+dx)}}{bd} + \frac{((a-b)B)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{\left(a^2+b^2\right)d} - \frac{\left(2a^3B\right)}{}$$

$$= -\frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\left(a^2+b^2\right)d} + \frac{2B\sqrt{\tan(c+dx)}}{bd} - \frac{((a-b)B)\,\text{Subst}\left(\int \frac{\sqrt{2}}{-1-}\right.}{2\sqrt{2}\left(a\right.}$$

$$= -\frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\left(a^2+b^2\right)d} - \frac{(a-b)B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+\right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= \frac{(a+b)B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(a+b)B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx\right.}{\sqrt{2}\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.187767, size = 156, normalized size = 0.61

$$\frac{B\left(-2a^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+2a^2\sqrt{b}\sqrt{\tan(c+dx)}+\sqrt[4]{-1}b^{3/2}(b-ia)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right)+\sqrt[4]{-1}b^{3/2}(b+ia)\,\text{t}\right.}{b^{3/2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
)^2,x]
```

```
[Out] (B*((-1)^(1/4)*b^(3/2)*((-I)*a + b)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] -
 2*a^(5/2)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]] + (-1)^(1/4)*b^(3/2
)*(I*a + b)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] + 2*a^2*Sqrt[b]*Sqrt[Tan
[c + d*x]] + 2*b^(5/2)*Sqrt[Tan[c + d*x]]))/(b^(3/2)*(a^2 + b^2)*d)
```

Maple [A] time = 0.043, size = 325, normalized size = 1.3

$$2\,\frac{B\sqrt{\tan(dx+c)}}{bd}-2\,\frac{Ba^{3}}{bd\left(a^{2}+b^{2}\right)\sqrt{ab}}\arctan\left(\frac{\sqrt{\tan(dx+c)}b}{\sqrt{ab}}\right)-\frac{B\sqrt{2}b}{2\,d\left(a^{2}+b^{2}\right)}\arctan\left(-1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 2*B*tan(d*x+c)^(1/2)/b/d-2/d/b*a^3/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^
(1/2)*b/(a*b)^(1/2))*B-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+
c)^(1/2))*b-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*
x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*
arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2
)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a-1
/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/2/d/(a^2+b
^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 86.3829, size = 18137, normalized size = 70.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="fricas")
```

```
[Out] [1/4*(4*sqrt(2)*(a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*d^5*sqrt((B^2*a^4 + 2
*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 +
 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8
 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2*B^6
*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d
^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4
 + 4*a^2*b^6 + b^8)*d^4)) - sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2
*b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B
^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)
) - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4
 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8
)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a
*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2
 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*
a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^
4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sq
rt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*s
qrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4)
)*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)
 + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a
^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 +
2*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 +
 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2
- 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/(
(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^
2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c
)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^
10*a^2*b^2 + B^10*b^4)) + 4*sqrt(2)*(a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*d
^5*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*
d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2
*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*
```

```
b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arcta
n(((B^6*a^8 + 2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 +
 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*
a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^8*b + 4*a^6*b^3
+ 6*a^4*b^5 + 4*a^2*b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*
sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*
a^2*b^6 + b^8)*d^4)) - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6
)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^
4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^
5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*
a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4
+ B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(
2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)
*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3
*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2
*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2
 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos
(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^10*b
 + 3*B^3*a^8*b^3 + 2*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11
)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2
 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a
^9 + 2*B^5*a^7*b^2 - 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a
^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*s
qrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*
sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4
))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4
))/(B^10*a^4 - 2*B^10*a^2*b^2 + B^10*b^4)) + 2*B^5*a^2*sqrt(-a/b)*log(-(6*a
*b*cos(d*x + c)*sin(d*x + c) - (a^2 - b^2)*cos(d*x + c)^2 - b^2 - 4*(a*b*co
s(d*x + c)^2 - b^2*cos(d*x + c)*sin(d*x + c))*sqrt(-a/b)*sqrt(sin(d*x + c)/
cos(d*x + c)))/(2*a*b*cos(d*x + c)*sin(d*x + c) + (a^2 - b^2)*cos(d*x + c)^
2 + b^2)) - sqrt(2)*(2*(B^2*a^3*b^2 + B^2*a*b^4)*d^3*sqrt(B^4/((a^4 + 2*a^2
*b^2 + b^4)*d^4)) - (B^4*a^2*b + B^4*b^3)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2
+ B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sq
rt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^
3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*
d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*
sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2
*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^
4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/
4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) + sqrt
(2)*(2*(B^2*a^3*b^2 + B^2*a*b^4)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)
) - (B^4*a^2*b + B^4*b^3)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a
```

^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2
*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*
log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*
a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x +
c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 +
2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x
 + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 -
2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) + 8*(B^5*a^2 + B^5*b^2
)*sqrt(sin(d*x + c)/cos(d*x + c)))/((B^4*a^2*b + B^4*b^3)*d), 1/4*(4*sqrt(2
)*(a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*d^5*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 +
 B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^
4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 +
 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2*B^6*a^6*b^2 - 2*B
^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4
*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 +
 b^8)*d^4)) - sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^7 + b^9)*d^
7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B
^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^2*a^7 +
 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b
^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt(
(B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*s
qrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*
a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x +
c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 +
2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x
 + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 -
2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2
 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a^6*b^5
- 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2
+ b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6
*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5*a^3*b^
6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b
^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^
2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)
*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c)
)*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B
^10*b^4)) + 4*sqrt(2)*(a^6*b + 3*a^4*b^3 + 3*a^2*b^5 + b^7)*d^5*sqrt((B^2*a
^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/(
(a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((

a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)
/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 +
2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 +
4*a^2*b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4
- 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)
*d^4)) - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^
4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6
+ b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^
3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^
2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2
*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 -
 B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^
4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c
))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*
d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2
*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^
(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^
4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b
^3 + 2*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4
/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((
a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7
*b^2 - 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b
^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 +
 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*
x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 -
 2*B^10*a^2*b^2 + B^10*b^4)) - 8*B^5*a^2*sqrt(a/b)*arctan(b*sqrt(a/b)*sqrt(
sin(d*x + c)/cos(d*x + c))/a) - sqrt(2)*(2*(B^2*a^3*b^2 + B^2*a*b^4)*d^3*sq
rt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - (B^4*a^2*b + B^4*b^3)*d)*sqrt((B^2*
a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/
((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/(
(a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b
^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sq
rt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4
 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b
^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*
a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*
B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*
b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/
cos(d*x + c)) + sqrt(2)*(2*(B^2*a^3*b^2 + B^2*a*b^4)*d^3*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4)) - (B^4*a^2*b + B^4*b^3)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*
b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^
2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2

```
 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^
2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7
- B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x +
c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)
*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^
2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))
^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) +
8*(B^5*a^2 + B^5*b^2)*sqrt(sin(d*x + c)/cos(d*x + c)))/((B^4*a^2*b + B^4*b^
3)*d)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.423 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=237

$$\frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}d\left(a^2+b^2\right)}+\frac{B(a-b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a-b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{B(a+b}{}$$

```
[Out] ((a - b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d)
- ((a - b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
) + (2*a^(3/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[b]*(a^
2 + b^2)*d) + ((a + b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
)/(2*Sqrt[2]*(a^2 + b^2)*d) - ((a + b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.303643, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {21, 3573, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}d\left(a^2+b^2\right)}+\frac{B(a-b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a-b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{B(a+b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] ((a - b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d)
- ((a - b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
) + (2*a^(3/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[b]*(a^
2 + b^2)*d) + ((a + b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
)/(2*Sqrt[2]*(a^2 + b^2)*d) - ((a + b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3573

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(3/2)/((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(c^2 + d^2), Int[Simp[a^2*c - b^2*c + 2
*a*b*d + (2*a*b*c - a^2*d + b^2*d)*Tan[e + f*x], x]/Sqrt[a + b*Tan[e + f*x]
], x], x] + Dist[(b*c - a*d)^2/(c^2 + d^2), Int[(1 + Tan[e + f*x]^2)/(Sqrt[
a + b*Tan[e + f*x]]*(c + d*Tan[e + f*x])), x], x] /; FreeQ[{a, b, c, d, e,
f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = B\int \frac{\tan^{\frac{3}{2}}(c+dx)}{a+b\tan(c+dx)}\,dx$$

$$= \frac{B\int \frac{-a+b\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a^2+b^2} + \frac{\left(a^2B\right)\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{(2B)\,\mathrm{Subst}\left(\int \frac{-a+bx^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{\left(a^2+b^2\right)d} + \frac{\left(a^2B\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}(a+bx)}\,dx, x, \mathrm{t}\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{\left(2a^2B\right)\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{\left(a^2+b^2\right)d} - \frac{((a-b)B)\,\mathrm{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\left(a^2+b^2\right)d} - \frac{((a-b)B)\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+\right.}{2\left(a^2+b^2\right)d}$$

$$= \frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\left(a^2+b^2\right)d} + \frac{(a+b)B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+\right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= \frac{(a-b)B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(a-b)B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx}\right.}{\sqrt{2}\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.254611, size = 228, normalized size = 0.96

$$\frac{B\left(8b^{3/2}\tan^{\frac{3}{2}}(c+dx)\mathrm{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\tan^2(c+dx)\right)+3a\left(8\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+2\sqrt{2}\sqrt{b}\tan^{-1}\left(1-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
)^2,x]
```

```
[Out] (B*(3*a*(2*Sqrt[2]*Sqrt[b]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - 2*Sqrt[
2]*Sqrt[b]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] + 8*Sqrt[a]*ArcTan[(Sqrt[
b]*Sqrt[Tan[c + d*x]])/Sqrt[a]] + Sqrt[2]*Sqrt[b]*Log[1 - Sqrt[2]*Sqrt[Tan[
c + d*x]] + Tan[c + d*x]] - Sqrt[2]*Sqrt[b]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]] + Tan[c + d*x]]) + 8*b^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -Tan[c + d*
x]^2]*Tan[c + d*x]^(3/2)))/(12*Sqrt[b]*(a^2 + b^2)*d)
```

Maple [A] time = 0.041, size = 305, normalized size = 1.3

$$2\frac{a^2B}{d\left(a^2+b^2\right)\sqrt{ab}}\arctan\left(\frac{\sqrt{\tan\left(dx+c\right)}b}{\sqrt{ab}}\right)-\frac{B\sqrt{2}a}{2d\left(a^2+b^2\right)}\arctan\left(1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)-\frac{B\sqrt{2}a}{2d\left(a^2+b^2\right)}\arctan\left(-1-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 2/d*a^2/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B-1/2/
d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/2/d/(a^2+b^2)*
B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/4/d/(a^2+b^2)*B*2^(1/2)*l
n((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*a+1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b+1/2/d/(a^2+b^2)*B*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1
/2)*tan(d*x+c)^(1/2))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 84.2287, size = 17946, normalized size = 75.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="fricas")
```

```
[Out] [-1/4*(4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 + 2*
B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8
+ 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6*a
^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4
))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 +
 4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^5*b^4 + 4*a^3*b^6
 + a*b^8)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4
*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))
+ (B^2*a^6*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^5*sqrt((B^4*a^4 -
 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*
d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b
^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 +
 B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B
^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*
a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)
)*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt
((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqr
t(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*
sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) +
 (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4
 + 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^11 + 3*B^3*a^9*b^2 + 2*B^
3*a^7*b^4 - 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^7*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4
*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b + 2*B^5*a^6*b^3
- 2*B^5*a^2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a
^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*
a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^
2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/
cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10
*a^2*b^2 + B^10*b^4)) + 4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*s
qrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*
sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4
))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2
+ B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-(
(B^6*a^8 + 2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6
*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a
^5*b^4 + 4*a^3*b^6 + a*b^8)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqr
t((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2
*b^6 + b^8)*d^4)) + (B^2*a^6*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d
^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 +
 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b
 + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4
```

- 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B
^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*
((B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a
^2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*
cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^
3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^
2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*
x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^11 + 3*
B^3*a^9*b^2 + 2*B^3*a^7*b^4 - 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d
^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 +
B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*
b + 2*B^5*a^6*b^3 - 2*B^5*a^2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*
b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt
((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqr
t(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*
sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/
(B^10*a^4 - 2*B^10*a^2*b^2 + B^10*b^4)) - 2*B^5*a*sqrt(-a/b)*log(-(6*a*b*co
s(d*x + c)*sin(d*x + c) - (a^2 - b^2)*cos(d*x + c)^2 - b^2 + 4*(a*b*cos(d*x
 + c)^2 - b^2*cos(d*x + c)*sin(d*x + c))*sqrt(-a/b)*sqrt(sin(d*x + c)/cos(d
*x + c)))/(2*a*b*cos(d*x + c)*sin(d*x + c) + (a^2 - b^2)*cos(d*x + c)^2 + b
^2)) + sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4)) + (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4
 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)
))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))
^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((
a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*a^4*b
^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos
(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2
*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4
/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(
sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6
*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) - sqrt(2)*(2*(B
^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (B^4*a^
2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*
b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*
a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6
 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^
4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5 + B
^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*a^5
 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2
 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 +
 b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x
 + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2
 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)))/((B^4*a^2 + B^4*b^2)*d), -1/4*(4*s

qrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 + 2*B^2*a^2*b^
2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2
+ b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 +
 b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^
2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6*a^6*b^2 - 2
*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B
^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6
 + b^8)*d^4)) + sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^5*b^4 + 4*a^3*b^6 + a*b^8)*
d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 +
 B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^2*a^6
*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2
*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqr
t((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sq
rt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))
*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 +
 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*a^4*b^3 -
B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x
+ c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*a^4
+ 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d
*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4
- 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b
^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^11 + 3*B^3*a^9*b^2 + 2*B^3*a^7*b^4
- 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^
2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 +
 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b + 2*B^5*a^6*b^3 - 2*B^5*a^
2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6
*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 +
B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^
4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x +
c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 +
 B^10*b^4)) + 4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a
^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/(
(a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((
a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)
/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 +
 2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a
^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^5*b^4 + 4
*a^3*b^6 + a*b^8)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4
 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8
)*d^4)) + (B^2*a^6*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^5*sqrt((B
^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6
 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b
^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a

```
^2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^
2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^6*
b - B^3*a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x +
c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)
*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^
2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))
^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B
^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^11 + 3*B^3*a^9*b^
2 + 2*B^3*a^7*b^4 - 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^7*sqrt(B^
4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/(
(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b + 2*B^5*
a^6*b^3 - 2*B^5*a^2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*
b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4
+ 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d
*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4
- 2*B^10*a^2*b^2 + B^10*b^4)) - 8*B^5*a*sqrt(a/b)*arctan(b*sqrt(a/b)*sqrt(s
in(d*x + c)/cos(d*x + c))/a) + sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(
B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 +
 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 +
B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)
*((B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d
*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b
^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a
^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 +
 b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d
*x + c)) - sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^
2 + b^4)*d^4)) + (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2
*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*
d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d
^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^
4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^6*b - B^3*a
^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))
*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt(
(B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*s
qrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) +
(B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)))/((B^4*a^2
+ B^4*b^2)*d)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.424 $\int \frac{\sqrt{\tan(c+dx)}(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=237

$$-\frac{B(a+b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{B(a+b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{2\sqrt{a}\sqrt{b}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{d\left(a^2+b^2\right)}+B($$

```
[Out] -(((a + b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
)) + ((a + b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2
)*d) - (2*Sqrt[a]*Sqrt[b]*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(
(a^2 + b^2)*d) + ((a - b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - ((a - b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.277556, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {21, 3572, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{B(a+b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{B(a+b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{2\sqrt{a}\sqrt{b}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{d\left(a^2+b^2\right)}+B($$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -(((a + b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
)) + ((a + b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2
)*d) - (2*Sqrt[a]*Sqrt[b]*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(
(a^2 + b^2)*d) + ((a - b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - ((a - b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3572

```
Int[Sqrt[(a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[1/(c^2 + d^2), Int[Simp[a*c + b*d + (b*c -
a*d)*Tan[e + f*x], x]/Sqrt[a + b*Tan[e + f*x]], x], x] - Dist[(d*(b*c - a*d
))/(c^2 + d^2), Int[(1 + Tan[e + f*x]^2)/(Sqrt[a + b*Tan[e + f*x]]*(c + d*T
an[e + f*x])), x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0] && NeQ
[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = B\int \frac{\sqrt{\tan(c+dx)}}{a+b\tan(c+dx)}\,dx$$

$$= \frac{B\int \frac{b+a\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a^2+b^2} - \frac{(abB)\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{(2B)\,\text{Subst}\left(\int \frac{b+ax^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{(a^2+b^2)\,d} - \frac{(abB)\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(a+bx)}\,dx, x, \text{t}\right.}{(a^2+b^2)\,d}$$

$$= -\frac{((a-b)B)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{(a^2+b^2)\,d} - \frac{(2abB)\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx\right.}{(a^2+b^2)}$$

$$= -\frac{2\sqrt{a}\sqrt{b}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{(a^2+b^2)\,d} + \frac{((a-b)B)\,\text{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2}\,dx, x, \sqrt{\text{tan}}\right.}{2\sqrt{2}\,(a^2+b^2)\,d}$$

$$= -\frac{2\sqrt{a}\sqrt{b}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{(a^2+b^2)\,d} + \frac{(a-b)B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(\right.}{2\sqrt{2}\,(a^2+b^2)\,d}$$

$$= -\frac{(a+b)B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\,(a^2+b^2)\,d} + \frac{(a+b)B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+\right.}{\sqrt{2}\,(a^2+b^2)\,d}$$

Mathematica [C] time = 0.16619, size = 205, normalized size = 0.86

$$\frac{B\left(8a\tan^{\frac{3}{2}}(c+dx)\text{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\tan^2(c+dx)\right)-24\sqrt{a}\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)-6\sqrt{2}b\tan^{-1}\left(1-\sqrt{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
)^2,x]
```

```
[Out] (B*(-6*Sqrt[2]*b*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] + 6*Sqrt[2]*b*ArcTa
n[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] - 24*Sqrt[a]*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt
[Tan[c + d*x]])/Sqrt[a]] - 3*Sqrt[2]*b*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] +
 Tan[c + d*x]] + 3*Sqrt[2]*b*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d
*x]] + 8*a*Hypergeometric2F1[3/4, 1, 7/4, -Tan[c + d*x]^2]*Tan[c + d*x]^(3/
2)))/(12*(a^2 + b^2)*d)
```

Maple [A] time = 0.057, size = 304, normalized size = 1.3

$$-2\frac{Bab}{d\left(a^{2}+b^{2}\right)\sqrt{ab}}\arctan\left(\frac{\sqrt{\tan\left(dx+c\right)}b}{\sqrt{ab}}\right)+\frac{B\sqrt{2}b}{2d\left(a^{2}+b^{2}\right)}\arctan\left(1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)+\frac{B\sqrt{2}b}{2d\left(a^{2}+b^{2}\right)}\arctan\left(-1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -2/d*b/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*a*B+1/2
/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/2/d/(a^2+b^2)
*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b+1/4/d/(a^2+b^2)*B*2^(1/2)*
ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(
d*x+c)))*b+1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a+1/2/d/(a^2+b^2)*B*2^(1/2)*a
rctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(
1/2)*tan(d*x+c)^(1/2))*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 55.7172, size = 18178, normalized size = 76.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="fricas")
```

```
[Out] [-1/4*(4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 + 2*
B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8
+ 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2*B^6*
a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^
4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4
+ 4*a^2*b^6 + b^8)*d^4)) - sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*
b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^
4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))
 - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4
- 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)
*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*
b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2
+ B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(
B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a
^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4
))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqr
t((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sq
rt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))
*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)
+ (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2
*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4
 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 +
4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 -
 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((
a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2
*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a
^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)
/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^1
0*a^2*b^2 + B^10*b^4)) + 4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*
sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2
*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^
4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2
 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan((
(B^6*a^8 + 2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6
*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^8*b + 4*a^6*b^3 + 6
*a^4*b^5 + 4*a^2*b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqr
t((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2
*b^6 + b^8)*d^4)) - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d
^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 +
 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b
 + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4
```

- 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B^10*b^4)) - 2*sqrt(-a*b)*B^5*log(-(6*a*b*cos(d*x + c)*sin(d*x + c) - (a^2 - b^2)*cos(d*x + c)^2 - b^2 - 4*(a*cos(d*x + c)^2 - b*cos(d*x + c)*sin(d*x + c))*sqrt(-a*b)*sqrt(sin(d*x + c)/cos(d*x + c)))/(2*a*b*cos(d*x + c)*sin(d*x + c) + (a^2 - b^2)*cos(d*x + c)^2 + b^2)) - sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) + sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)))/((B^4*a^2 + B^4*b^2)*d), -1/4*(4*sqrt(2)

*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^
2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)
*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*
d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*
a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2*B^6*a^6*b^2 - 2*B^6*
a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^
4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^
8)*d^4)) - sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^7 + b^9)*d^7*s
qrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*
b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^2*a^7 + 3*
B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2
+ B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^
2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^
4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt
(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^
2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3
*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c)
- (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B
^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x +
c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B
^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a^6*b^5 - 2
*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^
4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5*a^3*b^6 -
B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2
+ 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b
^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^
4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(
B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B^10
*b^4)) + 4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 +
2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6
*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d
^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4
+ 4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2
*b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B
^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)
) - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4
- 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8
)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a
*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2

+ B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 - B^3*
a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^
4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sq
rt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*s
qrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4)
)*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)
+ (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a
^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 +
2*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 +
4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2
- 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/(
(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^
2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c
)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^
10*a^2*b^2 + B^10*b^4)) + 8*sqrt(a*b)*B^5*arctan((2*a*b*cos(d*x + c)^2*sin(
d*x + c) + (a^2 - b^2)*cos(d*x + c)^3 + b^2*cos(d*x + c))*sqrt(a*b)*sqrt(si
n(d*x + c)/cos(d*x + c))/(2*a*b^2*cos(d*x + c)^3 - 2*a*b^2*cos(d*x + c) - (
b^3 + (a^2*b - b^3)*cos(d*x + c)^2)*sin(d*x + c))) - sqrt(2)*(2*(B^2*a^3*b
+ B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - (B^4*a^2 + B^4*b
^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b
^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 +
B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^
4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*
cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d
^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^
5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^
4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4
)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B
^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^
4)*sin(d*x + c))/cos(d*x + c)) + sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqr
t(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) - (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4
+ 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a
^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4
+ B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(
2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)
*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3
*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2
*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2
+ b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos
(d*x + c)))/((B^4*a^2 + B^4*b^2)*d)]

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{\sqrt{\tan (c+dx)}}{a+b\tan (c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] B*Integral(sqrt(tan(c + d*x))/(a + b*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.425 $\int \frac{aB+bB\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=237

$$\frac{2b^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d\left(a^2+b^2\right)}-\frac{B(a-b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{B(a-b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a+b}{}$$

```
[Out] -(((a - b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
)) + ((a - b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2
)*d) + (2*b^(3/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*
(a^2 + b^2)*d) - ((a + b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + ((a + b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.278357, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {21, 3574, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{2b^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}d\left(a^2+b^2\right)}-\frac{B(a-b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}+\frac{B(a-b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a+b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] -(((a - b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
)) + ((a - b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2
)*d) + (2*b^(3/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*
(a^2 + b^2)*d) - ((a + b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]])/(2*Sqrt[2]*(a^2 + b^2)*d) + ((a + b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*
x]] + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3574

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)/((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[1/(c^2 + d^2), Int[(a + b*Tan[e + f*x])^m*
(c - d*Tan[e + f*x]), x], x] + Dist[d^2/(c^2 + d^2), Int[((a + b*Tan[e + f*
x])^m*(1 + Tan[e + f*x]^2))/(c + d*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2
, 0] &&  !IntegerQ[m]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^2}\,dx = B\int \frac{1}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx$$

$$= \frac{B\int \frac{a-b\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a^2+b^2} + \frac{\left(b^2B\right)\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{(2B)\,\mathrm{Subst}\left(\int \frac{a-bx^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{\left(a^2+b^2\right)d} + \frac{\left(b^2B\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}(a+bx)}\,dx, x, \tan\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{((a-b)B)\,\mathrm{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{\left(a^2+b^2\right)d} + \frac{\left(2b^2B\right)\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x,\right.}{\left(a^2+b^2\right)d}$$

$$= \frac{2b^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\left(a^2+b^2\right)d} + \frac{((a-b)B)\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+d\right.}{2\left(a^2+b^2\right)d}$$

$$= \frac{2b^{3/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\left(a^2+b^2\right)d} - \frac{(a+b)B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx\right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= -\frac{(a-b)B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} + \frac{(a-b)B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx\right.}{\sqrt{2}\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.194028, size = 226, normalized size = 0.95

$$\frac{B\left(-8\sqrt{a}b\tan^{\frac{3}{2}}(c+dx)\text{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\tan^2(c+dx)\right)-6\sqrt{2}a^{3/2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)+6\sqrt{2}a^{3/2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])
^2),x]
```

```
[Out] (B*(-6*Sqrt[2]*a^(3/2)*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] + 6*Sqrt[2]*a
^(3/2)*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] + 24*b^(3/2)*ArcTan[(Sqrt[b]*
Sqrt[Tan[c + d*x]])/Sqrt[a]] - 3*Sqrt[2]*a^(3/2)*Log[1 - Sqrt[2]*Sqrt[Tan[c
 + d*x]] + Tan[c + d*x]] + 3*Sqrt[2]*a^(3/2)*Log[1 + Sqrt[2]*Sqrt[Tan[c + d
*x]] + Tan[c + d*x]] - 8*Sqrt[a]*b*Hypergeometric2F1[3/4, 1, 7/4, -Tan[c +
d*x]^2]*Tan[c + d*x]^(3/2)))/(12*Sqrt[a]*(a^2 + b^2)*d)
```

Maple [A] time = 0.061, size = 305, normalized size = 1.3

$$2\frac{b^2B}{d\left(a^2+b^2\right)\sqrt{ab}}\arctan\left(\frac{\sqrt{\tan\left(dx+c\right)}b}{\sqrt{ab}}\right)+\frac{B\sqrt{2}a}{2d\left(a^2+b^2\right)}\arctan\left(1+\sqrt{2}\sqrt{\tan\left(dx+c\right)}\right)+\frac{B\sqrt{2}a}{2d\left(a^2+b^2\right)}\arctan\left(-1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] 2/d*b^2/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)^(1/2)*b/(a*b)^(1/2))*B+1/2/
d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/2/d/(a^2+b^2)*
B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a+1/4/d/(a^2+b^2)*B*2^(1/2)*l
n((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d
*x+c)))*a-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*ar
ctan(1+2^(1/2)*tan(d*x+c)^(1/2))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1
/2)*tan(d*x+c)^(1/2))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 52.6959, size = 18194, normalized size = 76.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algor
ithm="fricas")
```

```
[Out] [1/4*(4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 + 2*B
^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 +
 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6*a^
6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)
)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 +
4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^5*b^4 + 4*a^3*b^6
+ a*b^8)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*
a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) +
 (B^2*a^6*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^5*sqrt((B^4*a^4 -
2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d
^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^
5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 +
B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^
4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*a
^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))
*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt(
(B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*s
qrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) +
(B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^11 + 3*B^3*a^9*b^2 + 2*B^3
*a^7*b^4 - 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^7*sqrt(B^4/((a^4 +
 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*
a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b + 2*B^5*a^6*b^3 -
 2*B^5*a^2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^
8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a
^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2
*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/c
os(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*
a^2*b^2 + B^10*b^4)) + 4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sq
rt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*s
qrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4)
)*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 +
 B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((
B^6*a^8 + 2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a
^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*
b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^
5*b^4 + 4*a^3*b^6 + a*b^8)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt
((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*
b^6 + b^8)*d^4)) + (B^2*a^6*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^
5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 +
4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b
+ 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4
```

- 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^
4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*(
(B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^
2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*c
os(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3
 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2
*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x
 + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^11 + 3*B
^3*a^9*b^2 + 2*B^3*a^7*b^4 - 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^
7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B
^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b
 + 2*B^5*a^6*b^3 - 2*B^5*a^2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b
^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt(
(B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*s
qrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(
B^10*a^4 - 2*B^10*a^2*b^2 + B^10*b^4)) + 2*B^5*b*sqrt(-b/a)*log(-(6*a*b*cos
(d*x + c)*sin(d*x + c) - (a^2 - b^2)*cos(d*x + c)^2 - b^2 + 4*(a^2*cos(d*x
+ c)^2 - a*b*cos(d*x + c)*sin(d*x + c))*sqrt(-b/a)*sqrt(sin(d*x + c)/cos(d*
x + c)))/(2*a*b*cos(d*x + c)*sin(d*x + c) + (a^2 - b^2)*cos(d*x + c)^2 + b^
2)) + sqrt(2)*(2*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4)) + (B^4*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4
- 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))
)/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^
(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a
^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*a^4*b^
3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(
d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*
a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/
((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(s
in(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*
a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) - sqrt(2)*(2*(B^
2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (B^4*a^2
 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b
^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a
^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6
- B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4
)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5 + B^
3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*a^5
- 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2
+ B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x
+ c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2
+ B^6*b^4)*sin(d*x + c))/cos(d*x + c)))/((B^4*a^2 + B^4*b^2)*d), 1/4*(4*sqr

t(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4 + 2*B^2*a^2*b^2
+ B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2
+ 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6*a^6*b^2 - 2*B
^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4
*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 +
 b^8)*d^4)) + sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^5*b^4 + 4*a^3*b^6 + a*b^8)*d^
7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B
^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^2*a^6*b
 + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b
^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt(
(B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*s
qrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*a^4*b^3 - B^
3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x +
c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*a^4 +
2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x
 + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 -
2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2
 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^11 + 3*B^3*a^9*b^2 + 2*B^3*a^7*b^4 -
2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2
+ b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6
*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b + 2*B^5*a^6*b^3 - 2*B^5*a^2*
b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b
^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^
2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)
*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c)
)*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B
^10*b^4)) + 4*sqrt(2)*(a^6 + 3*a^4*b^2 + 3*a^2*b^4 + b^6)*d^5*sqrt((B^2*a^4
 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a
^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/(
(a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2
*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^
4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4
*b^4 + 4*a^2*b^6 + b^8)*d^4)) - sqrt(2)*((a^9 + 4*a^7*b^2 + 6*a^5*b^4 + 4*a
^3*b^6 + a*b^8)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 -
 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*
d^4)) + (B^2*a^6*b + 3*B^2*a^4*b^3 + 3*B^2*a^2*b^5 + B^2*b^7)*d^5*sqrt((B^4
*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 +
 b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3
 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2

```
*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*
sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^6*b
- B^3*a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4
)*d^4))*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c)
)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d
^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*
b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(
1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4
/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^11 + 3*B^3*a^9*b^2
+ 2*B^3*a^7*b^4 - 2*B^3*a^5*b^6 - 3*B^3*a^3*b^8 - B^3*a*b^10)*d^7*sqrt(B^4/
((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a
^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + (B^5*a^8*b + 2*B^5*a^
6*b^3 - 2*B^5*a^2*b^7 - B^5*b^9)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^
4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 +
2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x
 + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 -
2*B^10*a^2*b^2 + B^10*b^4)) + 8*B^5*b*sqrt(b/a)*arctan((2*a^2*b*cos(d*x + c
)^2*sin(d*x + c) + a*b^2*cos(d*x + c) + (a^3 - a*b^2)*cos(d*x + c)^3)*sqrt(
b/a)*sqrt(sin(d*x + c)/cos(d*x + c))/(2*a*b^2*cos(d*x + c)^3 - 2*a*b^2*cos(
d*x + c) - (b^3 + (a^2*b - b^3)*cos(d*x + c)^2)*sin(d*x + c))) + sqrt(2)*(2
*(B^2*a^3*b + B^2*a*b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (B^4
*a^2 + B^4*b^2)*d)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a
^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B
^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*
a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 +
 b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5
+ B^3*b^7)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*
a^5 - 2*B^5*a^3*b^2 + B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*
b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^
2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(
d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*
b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c)) - sqrt(2)*(2*(B^2*a^3*b + B^2*a*
b^3)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)) + (B^4*a^2 + B^4*b^2)*d)*s
qrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*
sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4
))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 -
B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x
+ c) - sqrt(2)*((B^3*a^6*b - B^3*a^4*b^3 - B^3*a^2*b^5 + B^3*b^7)*d^3*sqrt(
B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + (B^5*a^5 - 2*B^5*a^3*b^2
+ B^5*a*b^4)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 - 2*(a
^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2
*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4
 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d
*x + c))/cos(d*x + c)))/((B^4*a^2 + B^4*b^2)*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{a\sqrt{\tan (c+dx)}+b\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] B*Integral(1/(a*sqrt(tan(c + d*x)) + b*tan(c + d*x)**(3/2)), x)
```

Giac [A] time = 2.1338, size = 312, normalized size = 1.32

$$\frac{1}{4}\left(\frac{8\,b^2\arctan\left(\frac{b\sqrt{\tan(dx+c)}}{\sqrt{ab}}\right)}{\left(a^2d+b^2d\right)\sqrt{ab}}+\frac{2\left(\sqrt{2}a-\sqrt{2}b\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)}{a^2d+b^2d}+\frac{2\left(\sqrt{2}a-\sqrt{2}b\right)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\cdot\right.\right.}{a^2d+b^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algor
ithm="giac")
```

```
[Out] 1/4*(8*b^2*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^2*d + b^2*d)*sqrt(a*b
)) + 2*(sqrt(2)*a - sqrt(2)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x
 + c))))/(a^2*d + b^2*d) + 2*(sqrt(2)*a - sqrt(2)*b)*arctan(-1/2*sqrt(2)*(s
qrt(2) - 2*sqrt(tan(d*x + c))))/(a^2*d + b^2*d) + (sqrt(2)*a + sqrt(2)*b)*l
og(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^2*d + b^2*d) - (sqrt(2
)*a + sqrt(2)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^2*d
 + b^2*d))*B
```

3.426 $\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=256

$$-\frac{2b^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d\left(a^2+b^2\right)}+\frac{B(a+b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a+b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a-$$

```
[Out] ((a + b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d)
- ((a + b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
) - (2*b^(5/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^
2 + b^2)*d) - ((a - b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
)/(2*Sqrt[2]*(a^2 + b^2)*d) + ((a - b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - (2*B)/(a*d*Sqrt[Tan[c + d*x]]
)
```

Rubi [A] time = 0.452596, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.361, Rules used = {21, 3569, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{2b^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}d\left(a^2+b^2\right)}+\frac{B(a+b)\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a+b)\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)}{\sqrt{2}d\left(a^2+b^2\right)}-\frac{B(a-$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] ((a + b)*B*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d)
- ((a + b)*B*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)*d
) - (2*b^(5/2)*B*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(a^(3/2)*(a^
2 + b^2)*d) - ((a - b)*B*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
)/(2*Sqrt[2]*(a^2 + b^2)*d) + ((a - b)*B*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - (2*B)/(a*d*Sqrt[Tan[c + d*x]]
)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
```

```
&& EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
a + b*x])
```

Rule 3569

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m + 1)*(c
+ d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(a^2 + b^2)*(b*c - a*d)), x] + Dist[1
/((m + 1)*(a^2 + b^2)*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d
*Tan[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2) - b*(b*c -
a*d)*(m + 1)*Tan[e + f*x] - b^2*d*(m + n + 2)*Tan[e + f*x]^2, x], x], x] /;
 FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
&& NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && LtQ[m, -1] && (LtQ[n, 0] || Intege
rQ[m]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
```

```
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx = B\int \frac{1}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$$

$$= -\frac{2B}{ad\sqrt{\tan(c+dx)}} - \frac{(2B)\int \frac{\frac{b}{2}+\frac{1}{2}a\tan(c+dx)+\frac{1}{2}b\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))}\,dx}{a}$$

$$= -\frac{2B}{ad\sqrt{\tan(c+dx)}} - \frac{(2B)\int \frac{\frac{ab}{2}+\frac{1}{2}a^2\tan(c+dx)}{\sqrt{\tan(c+dx)}}\,dx}{a\left(a^2+b^2\right)} - \frac{\left(b^3B\right)\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}}{a\left(a^2+b^2\right)}$$

$$= -\frac{2B}{ad\sqrt{\tan(c+dx)}} - \frac{(4B)\,\text{Subst}\left(\int \frac{\frac{ab}{2}+\frac{a^2x^2}{2}}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{a\left(a^2+b^2\right)d} - \frac{\left(b^3B\right)\text{Subs}}{}$$

$$= -\frac{2B}{ad\sqrt{\tan(c+dx)}} + \frac{((a-b)B)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{\left(a^2+b^2\right)d} - \frac{\left(2b^3B\right)\text{S}}{}$$

$$= -\frac{2b^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)d} - \frac{2B}{ad\sqrt{\tan(c+dx)}} - \frac{((a-b)B)\,\text{Subst}\left(\int \frac{\sqrt{2}+2}{-1-\sqrt{2}x}\right.}{2\sqrt{2}\left(a^2+\right.}$$

$$= -\frac{2b^{5/2}B\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)d} - \frac{(a-b)B\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+d\right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= \frac{(a+b)B\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(a+b)B\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d}$$

Mathematica [C] time = 0.50179, size = 132, normalized size = 0.52

$$\frac{B\left(-\frac{2b^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}} - \frac{2\left(a^2+b^2\right)}{a\sqrt{\tan(c+dx)}} - (-1)^{3/4}(a+ib)\tan^{-1}\left((-1)^{3/4}\sqrt{\tan(c+dx)}\right) + \sqrt[4]{-1}(b+ia)\tanh^{-1}\left((-1)^{3/4}\sqrt{\tan\right.\right.}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])
^2),x]
```

```
[Out] (B*(-((-1)^(3/4)*(a + I*b)*ArcTan[(-1)^(3/4)*Sqrt[Tan[c + d*x]]]) - (2*b^(5
/2)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/a^(3/2) + (-1)^(1/4)*(I*a
 + b)*ArcTanh[(-1)^(3/4)*Sqrt[Tan[c + d*x]]] - (2*(a^2 + b^2))/(a*Sqrt[Tan[
c + d*x]])))/((a^2 + b^2)*d)
```

Maple [A] time = 0.044, size = 325, normalized size = 1.3

$$-2\,\frac{B}{ad\sqrt{\tan(dx+c)}}-2\,\frac{Bb^3}{ad\left(a^2+b^2\right)\sqrt{ab}}\arctan\left(\frac{\sqrt{\tan(dx+c)}b}{\sqrt{ab}}\right)-\frac{B\sqrt{2}b}{2\,d\left(a^2+b^2\right)}\arctan\left(1+\sqrt{2}\sqrt{\tan(dx+c)}\right)-\frac{}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] -2*B/a/d/tan(d*x+c)^(1/2)-2/d/a*b^3/(a^2+b^2)/(a*b)^(1/2)*arctan(tan(d*x+c)
^(1/2)*b/(a*b)^(1/2))*B-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+
c)^(1/2))*b-1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*b
-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1-2^
(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*b-1/4/d/(a^2+b^2)*B*2^(1/2)*ln((1-2^(1/
2)*tan(d*x+c)^(1/2)+tan(d*x+c))/(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c)))*a-
1/2/d/(a^2+b^2)*B*2^(1/2)*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*a-1/2/d/(a^2+b
^2)*B*2^(1/2)*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*a
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 53.4171, size = 19458, normalized size = 76.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x, algor
ithm="fricas")
```

```
[Out] [1/4*(4*sqrt(2)*((a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5*cos(d*x + c)^2 -
 (a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 +
 B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b
^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^
4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 +
 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2*B^6*a^6*b^2 - 2*B
^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4
*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 +
 b^8)*d^4)) - sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^7 + b^9)*d^
7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B
^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^2*a^7 +
 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b
^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt(
(B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*s
qrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2
*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*
a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x +
c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 +
2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4
+ 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x
 + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 -
2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2
 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a^6*b^5
- 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2
+ b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6
*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5*a^3*b^
6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b
^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^
2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)
*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c)
)*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B
^10*b^4)) + 4*sqrt(2)*((a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5*cos(d*x +
c)^2 - (a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5)*sqrt((B^2*a^4 + 2*B^2*a^2
*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b
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^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^
2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6
*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6*a^6*b^2
- 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt
((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*
b^6 + b^8)*d^4)) + sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^7 + b^
9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^
2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^2*
a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4 - 2*B^4*
a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*
sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2
*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^
4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^
4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 -
B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d
*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a
^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/(
(a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(si
n(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a
^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^
2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a^6
*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a^2
*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^
2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5*a
^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*
a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2
+ B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 +
b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x
+ c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^
2 + B^10*b^4)) + 8*(B^5*a^2 + B^5*b^2)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(
d*x + c)*sin(d*x + c) + sqrt(2)*((B^4*a^3 + B^4*a*b^2)*d*cos(d*x + c)^2 - (
B^4*a^3 + B^4*a*b^2)*d - 2*((B^2*a^4*b + B^2*a^2*b^3)*d^3*cos(d*x + c)^2 -
(B^2*a^4*b + B^2*a^2*b^3)*d^3)*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqr
t((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sq
rt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))
*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^
4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x +
c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^
4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3
+ B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5
*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a
^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x
+ c))/cos(d*x + c)) - sqrt(2)*((B^4*a^3 + B^4*a*b^2)*d*cos(d*x + c)^2 - (B
^4*a^3 + B^4*a*b^2)*d - 2*((B^2*a^4*b + B^2*a^2*b^3)*d^3*cos(d*x + c)^2 - (

B^2*a^4*b + B^2*a^2*b^3)*d^3)*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt
((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqr
t(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*
(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4
*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c
) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4
/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 +
 B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*
b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^
4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 +
2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x
+ c))/cos(d*x + c)) + 2*(B^5*b^2*cos(d*x + c)^2 - B^5*b^2)*sqrt(-b/a)*log(-
(6*a*b*cos(d*x + c)*sin(d*x + c) - (a^2 - b^2)*cos(d*x + c)^2 - b^2 - 4*(a^
2*cos(d*x + c)^2 - a*b*cos(d*x + c)*sin(d*x + c))*sqrt(-b/a)*sqrt(sin(d*x +
 c)/cos(d*x + c)))/(2*a*b*cos(d*x + c)*sin(d*x + c) + (a^2 - b^2)*cos(d*x +
 c)^2 + b^2)))/((B^4*a^3 + B^4*a*b^2)*d*cos(d*x + c)^2 - (B^4*a^3 + B^4*a*b
^2)*d), 1/4*(4*sqrt(2)*((a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5*cos(d*x +
 c)^2 - (a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5)*sqrt((B^2*a^4 + 2*B^2*a^
2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*
b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b
^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^
6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(-((B^6*a^8 + 2*B^6*a^6*b^
2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sq
rt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^
2*b^6 + b^8)*d^4)) - sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^7 +
b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*
b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^
2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4 - 2*B^
4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))
)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d
^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*
b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((
a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2
 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos
(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2
*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4
/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(
sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6
*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*
a^2*b^2 + b^4)*d^4))^(3/4) - sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a
^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a
^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*
b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5
*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 +
4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b

^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B^10*b^4)) + 4*sqrt(2)*((a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5*cos(d*x + c)^2 - (a^7 + 3*a^5*b^2 + 3*a^3*b^4 + a*b^6)*d^5)*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4)*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4))*arctan(((B^6*a^8 + 2*B^6*a^6*b^2 - 2*B^6*a^2*b^6 - B^6*b^8)*d^4*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) + sqrt(2)*((a^8*b + 4*a^6*b^3 + 6*a^4*b^5 + 4*a^2*b^7 + b^9)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^2*a^7 + 3*B^2*a^5*b^2 + 3*B^2*a^3*b^4 + B^2*a*b^6)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*sin(d*x + c))/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4) + sqrt(2)*((B^3*a^10*b + 3*B^3*a^8*b^3 + 2*B^3*a^6*b^5 - 2*B^3*a^4*b^7 - 3*B^3*a^2*b^9 - B^3*b^11)*d^7*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)) - (B^5*a^9 + 2*B^5*a^7*b^2 - 2*B^5*a^3*b^6 - B^5*a*b^8)*d^5*sqrt((B^4*a^4 - 2*B^4*a^2*b^2 + B^4*b^4)/((a^8 + 4*a^6*b^2 + 6*a^4*b^4 + 4*a^2*b^6 + b^8)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(3/4))/(B^10*a^4 - 2*B^10*a^2*b^2 + B^10*b^4)) + 8*(B^5*a^2 + B^5*b^2)*sqrt(sin(d*x + c)/cos(d*x + c))*cos(d*x + c)*sin(d*x + c) + sqrt(2)*((B^4*a^3 + B^4*a*b^2)*d*cos(d*x + c)^2 - (B^4*a^3 + B^4*a*b^2)*d - 2*((B^2*a^4*b + B^2*a^2*b^3)*d^3*cos(d*x + c)^2 - (B^2*a^4*b + B^2*a^2*b^3)*d^3)*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) + sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a

```
^2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 +
 2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))
/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/
((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*
sin(d*x + c))/cos(d*x + c)) - sqrt(2)*((B^4*a^3 + B^4*a*b^2)*d*cos(d*x + c)
^2 - (B^4*a^3 + B^4*a*b^2)*d - 2*((B^2*a^4*b + B^2*a^2*b^3)*d^3*cos(d*x + c
)^2 - (B^2*a^4*b + B^2*a^2*b^3)*d^3)*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)
))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 + 2*(a^5*b + 2*a^3*b^3 + a*b^5)*
d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/(B^2*a^4 - 2*B^2*a^2*b^2 + B^2
*b^4))*(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4)*log(((B^4*a^6 - B^4*a^4*b^
2 - B^4*a^2*b^4 + B^4*b^6)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(
d*x + c) - sqrt(2)*((B^3*a^7 - B^3*a^5*b^2 - B^3*a^3*b^4 + B^3*a*b^6)*d^3*s
qrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4))*cos(d*x + c) - (B^5*a^4*b - 2*B^5*a^
2*b^3 + B^5*b^5)*d*cos(d*x + c))*sqrt((B^2*a^4 + 2*B^2*a^2*b^2 + B^2*b^4 +
2*(a^5*b + 2*a^3*b^3 + a*b^5)*d^2*sqrt(B^4/((a^4 + 2*a^2*b^2 + b^4)*d^4)))/
(B^2*a^4 - 2*B^2*a^2*b^2 + B^2*b^4))*sqrt(sin(d*x + c)/cos(d*x + c))*(B^4/(
(a^4 + 2*a^2*b^2 + b^4)*d^4))^(1/4) + (B^6*a^4 - 2*B^6*a^2*b^2 + B^6*b^4)*s
in(d*x + c))/cos(d*x + c)) - 8*(B^5*b^2*cos(d*x + c)^2 - B^5*b^2)*sqrt(b/a)
*arctan((2*a^2*b*cos(d*x + c)^2*sin(d*x + c) + a*b^2*cos(d*x + c) + (a^3 -
a*b^2)*cos(d*x + c)^3)*sqrt(b/a)*sqrt(sin(d*x + c)/cos(d*x + c))/(2*a*b^2*c
os(d*x + c)^3 - 2*a*b^2*cos(d*x + c) - (b^3 + (a^2*b - b^3)*cos(d*x + c)^2)
*sin(d*x + c))))/((B^4*a^3 + B^4*a*b^2)*d*cos(d*x + c)^2 - (B^4*a^3 + B^4*a
*b^2)*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{a\tan^{\frac{3}{2}}(c+dx)+b\tan^{\frac{5}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] B*Integral(1/(a*tan(c + d*x)**(3/2) + b*tan(c + d*x)**(5/2)), x)
```

Giac [A] time = 1.50406, size = 335, normalized size = 1.31

$$-\frac{1}{4}\left(\frac{8\,b^{3}\arctan\left(\frac{b\sqrt{\tan(dx+c)}}{\sqrt{ab}}\right)}{\left(a^{3}d+ab^{2}d\right)\sqrt{ab}}+\frac{2\left(\sqrt{2}a+\sqrt{2}b\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)}{a^{2}d+b^{2}d}+\frac{2\left(\sqrt{2}a+\sqrt{2}b\right)\arctan\left(-\frac{1}{2}\sqrt{2}\right.}{a^{2}d+b^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x, algor
ithm="giac")
```

```
[Out] -1/4*(8*b^3*arctan(b*sqrt(tan(d*x + c))/sqrt(a*b))/((a^3*d + a*b^2*d)*sqrt(
a*b)) + 2*(sqrt(2)*a + sqrt(2)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(
d*x + c))))/(a^2*d + b^2*d) + 2*(sqrt(2)*a + sqrt(2)*b)*arctan(-1/2*sqrt(2)
*(sqrt(2) - 2*sqrt(tan(d*x + c))))/(a^2*d + b^2*d) - (sqrt(2)*a - sqrt(2)*b
)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^2*d + b^2*d) + (sqr
t(2)*a - sqrt(2)*b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1)/(a^
2*d + b^2*d) + 8/(a*d*sqrt(tan(d*x + c))))*B
```

3.427 $\int \tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=264

$$\frac{\left(a^2(-B)+4aAb-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4b^{3/2}d}+\frac{\sqrt{-b+ia}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(4Ab-aB)\sqrt{\tan(c+d}}{4b}$$

```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d + ((4*a*A*b - a^2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(4*b^(3/2)*d) + (Sqrt[I*a + b]*(I*
A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
)/d + ((4*A*b - a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(4*b*d) +
 (B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2))/(2*b*d)
```

Rubi [A] time = 1.91252, antiderivative size = 264, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(a^2(-B)+4aAb-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4b^{3/2}d}+\frac{\sqrt{-b+ia}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(4Ab-aB)\sqrt{\tan(c+d}}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d + ((4*a*A*b - a^2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(4*b^(3/2)*d) + (Sqrt[I*a + b]*(I*
A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
)/d + ((4*A*b - a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(4*b*d) +
 (B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2))/(2*b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
```

```
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{B\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}{2bd} + \frac{\int \sqrt{a+b\tan(c+dx)}\left(-\frac{a\ldots}{2}\ldots\right.}{\ldots}$$

$$= \frac{(4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4bd} + \frac{B\sqrt{\tan(c+\ldots}}{\ldots}$$

$$= \frac{(4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4bd} + \frac{B\sqrt{\tan(c+\ldots}}{\ldots}$$

$$= \frac{(4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4bd} + \frac{B\sqrt{\tan(c+\ldots}}{\ldots}$$

$$= \frac{(4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4bd} + \frac{B\sqrt{\tan(c+\ldots}}{\ldots}$$

$$= \frac{(4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4bd} + \frac{B\sqrt{\tan(c+\ldots}}{\ldots}$$

$$= \frac{(4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4bd} + \frac{B\sqrt{\tan(c+\ldots}}{\ldots}$$

$$= \frac{\left(4aAb-a^2B-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4b^{3/2}d} + \frac{(4Ab-a\ldots}{\ldots}$$

$$= \frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\left(4aAb-a^2B-\ldots\right.}{\ldots}$$

Mathematica [A] time = 4.02347, size = 294, normalized size = 1.11

$$\frac{-\frac{\sqrt{a}\left(a^2B-4aAb+8b^2B\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}} + (4Ab-aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} - 4(-1)^{3/4}b\sqrt{-a-ib}(A\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (-4*(-1)^(3/4)*Sqrt[-a - I*b]*b*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b
]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + 4*(-1)^(1/4)*Sqrt[a - I*b
```

```
]*b*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ b*Tan[c + d*x]]] + (4*A*b - a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*
x]] + 2*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2) - (Sqrt[a]*(-4*a*A*
b + a^2*B + 8*b^2*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 +
 (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]]))/(4*b*d)
```

Maple [B] time = 0.717, size = 2181075, normalized size = 8261.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\tan(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^(3/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*tan(d*x+c)**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*tan(d*x+c)^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.428 $\int \sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=201

$$\frac{\sqrt{-b+ia}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(aB+2Ab)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}-\frac{\sqrt{b+ia}(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d + ((2*A*b + a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/
Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[b]*d) - (Sqrt[I*a + b]*(A - I*B)*ArcTanh[(
Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + (B*Sqrt[Ta
n[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 1.54709, antiderivative size = 201, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3610, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\sqrt{-b+ia}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(aB+2Ab)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}-\frac{\sqrt{b+ia}(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d + ((2*A*b + a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/
Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[b]*d) - (Sqrt[I*a + b]*(A - I*B)*ArcTanh[(
Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + (B*Sqrt[Ta
n[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/d
```

Rule 3610

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist
[1/(m + n), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n - 1)*S
imp[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (A*b*c + a*B*c + a*A*d - b*B*d)*(m
+ n)*Tan[e + f*x] + (A*b*d*(m + n) + B*(a*d*m + b*c*n))*Tan[e + f*x]^2, x],
```

```
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a
^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[0, m, 1] && LtQ[0, n, 1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \int \frac{-\frac{aB}{2}+(aA-bB)\,\mathrm{t}}{\sqrt{\tan}}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\mathrm{Subst}\left(\int \frac{-\frac{aB}{2}+(aA-bB)}{\sqrt{x}\sqrt{a+}}\right.}{}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\mathrm{Subst}\left(\int\left(\frac{2Ab+aB}{2\sqrt{x}\sqrt{a+bx}}\right.\right.}{}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{\mathrm{Subst}\left(\int \frac{Ab+aB-(aA-}{\sqrt{x}\sqrt{a+bx}(1+}\right.}{}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{\mathrm{Subst}\left(\int\left(\frac{aA-bB+i(Ab}{2(i-x)\sqrt{x}\sqrt{a}}\right.\right.}{}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{((a-ib)(A-iB))\,\mathrm{Sub}}{}$$

$$= \frac{(2Ab+aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d} + \frac{B\sqrt{\tan(c+dx)}\sqrt{a+}}{d}$$

$$= \frac{\sqrt{ia-b}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{(2Ab+aB)\,\mathrm{tanh}}{\sqrt{}}$$

Mathematica [A] time = 3.00635, size = 241, normalized size = 1.2

$$\frac{-\sqrt[4]{-1}\sqrt{-a-ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)-\sqrt[4]{-1}\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)+\frac{(aB+2Ab)\sqrt{a+}}{}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (-((-1)^(1/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]) - (-1)^(1/4)*Sqrt[a - I*b]*(A
 - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Ta
n[c + d*x]]] + B*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + ((2*A*b + a*
B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[a + b*Tan[c + d*x]])/
(Sqrt[a]*Sqrt[b]*Sqrt[1 + (b*Tan[c + d*x])/a]))/d
```

Maple [B] time = 0.712, size = 2178530, normalized size = 10838.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*sqrt(tan(d*x + c)),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan (c + dx))\sqrt{a + b\tan (c + dx)}\sqrt{\tan (c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*sqrt(tan(c + d*x)),
x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.429 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=169

$$-\frac{\sqrt{-b+ia}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{\sqrt{b+ia}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{2\sqrt{b}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d) + (2*Sqrt[b]*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]])/d - (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a
+ b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d
```

Rubi [A] time = 0.643919, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3614, 3616, 3615, 93, 203, 206, 3634, 63, 217}

$$-\frac{\sqrt{-b+ia}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{\sqrt{b+ia}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{2\sqrt{b}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```

```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d) + (2*Sqrt[b]*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]])/d - (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a
+ b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d
```

Rule 3614

```
Int[(Sqrt[(a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]]*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/Sqrt[(c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol] :> In
t[Simp[a*A - b*B + (A*b + a*B)*Tan[e + f*x], x]/(Sqrt[a + b*Tan[e + f*x]]*S
qrt[c + d*Tan[e + f*x]]), x] + Dist[b*B, Int[(1 + Tan[e + f*x]^2)/(Sqrt[a +
 b*Tan[e + f*x]]*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
 f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0
]
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx &= (bB)\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx+\int \frac{aA-bB+(Ab+aB)}{\sqrt{\tan(c+dx)}\sqrt{a+b}}\\ &= \frac{1}{2}((a-ib)(A-iB))\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx+\frac{1}{2}((a+ib\\ &= \frac{((a-ib)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{(1-ix)\sqrt{x}\sqrt{a+bx}}\,dx,x,\tan(c+dx)\right)}{2d}+\frac{((a+ib)}{}\\ &= \frac{((a-ib)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{1-(ia+b)x^2}\,dx,x,\frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{((a+ib)(A}{}\\ &= -\frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{2\sqrt{b}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx}}{\sqrt{a+b\tan(c+d}}\right.}{d}\end{aligned}$$

Mathematica [A] time = 1.12404, size = 208, normalized size = 1.23

$$\frac{(-1)^{3/4}\sqrt{-a-ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)-\sqrt[4]{-1}\sqrt{a-ib}(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)+\frac{2\sqrt{a}\sqrt{b}B\sqrt{\frac{b\,t}{}}}{}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]
],x]
```

```
[Out] ((-1)^(3/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - (-1)^(1/4)*Sqrt[a - I*b]*(I*A
```

```
+ B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
 + d*x]]] + (2*Sqrt[a]*Sqrt[b]*B*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[
a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/Sqrt[a + b*Tan[c + d*x]])/d
```

Maple [B] time = 0.753, size = 2177043, normalized size = 12881.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)/sqrt(tan(d*x + c)),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}}{\sqrt{\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))/sqrt(tan(c + d*x)),
x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: AttributeError
```

3.430 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=154

$$-\frac{\sqrt{-b+ia}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b+ia}(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

```
[Out] -((Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d) + (Sqrt[I*a + b]*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d
*x]])/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.541165, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {3608, 3616, 3615, 93, 203, 206}

$$-\frac{\sqrt{-b+ia}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b+ia}(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```


```
[Out] -((Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d) + (Sqrt[I*a + b]*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d
*x]])/(d*Sqrt[Tan[c + d*x]])
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
```

```
[2*m, 2*n])
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - 2\int \frac{\frac{1}{2}(-Ab-aB)+\frac{1}{2}(aA-bB)\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{1}{2}((ia-b)(A+iB))\int \frac{1-i\tan(c+d}{\sqrt{\tan(c+dx)}\sqrt{a+b\,\mathrm{ta}}}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{((ia+b)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{(1-ix)\sqrt{x}\sqrt{a+bx}}\,dx,\right.}{2d}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{((ia+b)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{1-(ia+b)x^2}\,dx, x, \right.}{d}$$

$$= -\frac{\sqrt{ia-b}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\sqrt{ia+b}(A-iB)\tanh^{-1}\left(\right.}{d}$$

Mathematica [A] time = 0.534558, size = 168, normalized size = 1.09

$$\frac{\sqrt[4]{-1}\sqrt{-a-ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right) + \sqrt[4]{-1}\sqrt{a-ib}(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right) - \frac{2A\sqrt{a+b\tan(c+dx)}}{\sqrt{\tan(c+dx)}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2
),x]
```

```
[Out] ((-1)^(1/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + (-1)^(1/4)*Sqrt[a - I*b]*(A -
I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
 + d*x]]] - (2*A*Sqrt[a + b*Tan[c + d*x]])/Sqrt[Tan[c + d*x]])/d
```

Maple [B] time = 0.74, size = 2178373, normalized size = 14145.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}}{\tan^{\frac{3}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))/tan(c + d*x)**(3/2),
 x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.431 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=199

$$\frac{\sqrt{-b+ia}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+Ab)\sqrt{a+b\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}}+\frac{\sqrt{b+ia}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d + (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt
[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d*x]
])/(3*d*Tan[c + d*x]^(3/2)) - (2*(A*b + 3*a*B)*Sqrt[a + b*Tan[c + d*x]])/(3
*a*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.757254, antiderivative size = 199, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3608, 3649, 3616, 3615, 93, 203, 206}

$$\frac{\sqrt{-b+ia}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+Ab)\sqrt{a+b\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}}+\frac{\sqrt{b+ia}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d + (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt
[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d*x]
])/(3*d*Tan[c + d*x]^(3/2)) - (2*(A*b + 3*a*B)*Sqrt[a + b*Tan[c + d*x]])/(3
*a*d*Sqrt[Tan[c + d*x]])
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
```

```
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2}{3}\int \frac{\frac{1}{2}(-Ab-3aB)+\frac{3}{2}(aA-bB)\tan(c+d}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}} + \frac{4\int \frac{-\frac{3}{4}a(}{\sqrt{}}}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}} - \frac{1}{2}((a-ib$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}} - \frac{((a-ib)(}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3ad\sqrt{\tan(c+dx)}} - \frac{((a-ib)(}{}$$

$$= \frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\sqrt{ia+b}(iA+B)\tanh^{-1}\left(\frac{\sqrt{i}}{\sqrt{}}\right.}{d}$$

Mathematica [A] time = 1.39414, size = 194, normalized size = 0.97

$$\frac{-\frac{2\sqrt{a+b\tan(c+dx)}((3aB+Ab)\tan(c+dx)+aA)}{a\tan^{\frac{3}{2}}(c+dx)} - 3(-1)^{3/4}\sqrt{-a-ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right) + 3\sqrt[4]{-1}\sqrt{a-ib}(B+iA)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2
),x]
```

```
[Out] (-3*(-1)^(3/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + 3*(-1)^(1/4)*Sqrt[a - I*b]*
(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*
Tan[c + d*x]]] - (2*Sqrt[a + b*Tan[c + d*x]]*(a*A + (A*b + 3*a*B)*Tan[c + d
*x]))/(a*Tan[c + d*x]^(3/2)))/(3*d)
```

Maple [B] time = 0.704, size = 2178959, normalized size = 10949.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}}{\tan(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)/tan(d*x + c)^(5/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}}{\tan^{\frac{5}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))/tan(c + d*x)**(5/2),
 x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.432 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=250

$$\frac{2\left(15a^2A-5abB+2Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15a^2d\sqrt{\tan(c+dx)}}+\frac{\sqrt{-b+ia}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(5aB+Ab)\sqrt{a+b\tan(c}}{15ad\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d - (Sqrt[I*a + b]*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt
[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d*x]
])/(5*d*Tan[c + d*x]^(5/2)) - (2*(A*b + 5*a*B)*Sqrt[a + b*Tan[c + d*x]])/(1
5*a*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A + 2*A*b^2 - 5*a*b*B)*Sqrt[a + b*Ta
n[c + d*x]])/(15*a^2*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 1.05805, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3608, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A-5abB+2Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15a^2d\sqrt{\tan(c+dx)}}+\frac{\sqrt{-b+ia}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(5aB+Ab)\sqrt{a+b\tan(c}}{15ad\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/d - (Sqrt[I*a + b]*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt
[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d*x]
])/(5*d*Tan[c + d*x]^(5/2)) - (2*(A*b + 5*a*B)*Sqrt[a + b*Tan[c + d*x]])/(1
5*a*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A + 2*A*b^2 - 5*a*b*B)*Sqrt[a + b*Ta
n[c + d*x]])/(15*a^2*d*Sqrt[Tan[c + d*x]])
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
```

```
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2}{5}\int \frac{\frac{1}{2}(-Ab-5aB)+\frac{5}{2}(aA-bB)\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c}}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)} + \frac{4\int \frac{\frac{1}{4}(-15a}{}}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A\right.}{}$$

$$= \frac{\sqrt{ia-b}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{\sqrt{ia+b}(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+}}{\sqrt{a+}}\right.}{d}$$

Mathematica [A] time = 2.46453, size = 226, normalized size = 0.9

$$\frac{\frac{2\sqrt{a+b\tan(c+dx)}\left(\left(15a^2A-5abB+2Ab^2\right)\tan^2(c+dx)-3a^2A-a(5aB+Ab)\tan(c+dx)\right)}{a^2\tan^{\frac{5}{2}}(c+dx)}-15\sqrt[4]{-1}\sqrt{-a-ib}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2
),x]
```

```
[Out] (-15*(-1)^(1/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 15*(-1)^(1/4)*Sqrt[a - I*b
]*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]] + (2*Sqrt[a + b*Tan[c + d*x]]*(-3*a^2*A - a*(A*b + 5*a*B)*
Tan[c + d*x] + (15*a^2*A + 2*A*b^2 - 5*a*b*B)*Tan[c + d*x]^2))/(a^2*Tan[c +
 d*x]^(5/2)))/(15*d)
```

Maple [B] time = 0.701, size = 2182092, normalized size = 8728.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.433 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=314

$$\frac{2\left(35a^2A-7abB+4Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(35a^2Ab+105a^3B+14ab^2B-8Ab^3\right)\sqrt{a+b\tan(c+dx)}}{105a^3d\sqrt{\tan(c+dx)}}-\frac{\sqrt{-b+i}}{}$$

```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d) - (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d
*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*(A*b + 7*a*B)*Sqrt[a + b*Tan[c + d*x]])
/(35*a*d*Tan[c + d*x]^(5/2)) + (2*(35*a^2*A + 4*A*b^2 - 7*a*b*B)*Sqrt[a + b
*Tan[c + d*x]])/(105*a^2*d*Tan[c + d*x]^(3/2)) + (2*(35*a^2*A*b - 8*A*b^3 +
 105*a^3*B + 14*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(105*a^3*d*Sqrt[Tan[c +
d*x]])
```

Rubi [A] time = 1.3429, antiderivative size = 314, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3608, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(35a^2A-7abB+4Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(35a^2Ab+105a^3B+14ab^2B-8Ab^3\right)\sqrt{a+b\tan(c+dx)}}{105a^3d\sqrt{\tan(c+dx)}}-\frac{\sqrt{-b+i}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),x]
```


```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d) - (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*A*Sqrt[a + b*Tan[c + d
*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*(A*b + 7*a*B)*Sqrt[a + b*Tan[c + d*x]])
/(35*a*d*Tan[c + d*x]^(5/2)) + (2*(35*a^2*A + 4*A*b^2 - 7*a*b*B)*Sqrt[a + b
*Tan[c + d*x]])/(105*a^2*d*Tan[c + d*x]^(3/2)) + (2*(35*a^2*A*b - 8*A*b^3 +
 105*a^3*B + 14*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(105*a^3*d*Sqrt[Tan[c +
d*x]])
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
```

```
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2}{7}\int \frac{\frac{1}{2}(-Ab-7aB)+\frac{7}{2}(aA-bB)\tan(c+dx)}{\tan^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35ad\tan^{\frac{5}{2}}(c+dx)} + \frac{4\int \frac{\frac{1}{4}(-35a}{}}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A\right.}{}$$

$$= -\frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{\sqrt{ia+b}(iA+B)\tanh^{-1}\left(\frac{\sqrt{i}}{\sqrt{}}\right.}{d}$$

Mathematica [A] time = 3.76991, size = 265, normalized size = 0.84

$$\frac{\frac{2\sqrt{a+b\tan(c+dx)}\left(a\left(35a^2A-7abB+4Ab^2\right)\tan^2(c+dx)+\left(35a^2Ab+105a^3B+14ab^2B-8Ab^3\right)\tan^3(c+dx)-3a^2(7aB+Ab)\tan(c+dx)-15a^3A\right)}{a^3\tan^{\frac{7}{2}}(c+dx)}+105(-1)^{3/4}\sqrt{-a}}{105d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2
),x]
```

```
[Out] (105*(-1)^(3/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 105*(-1)^(1/4)*Sqrt[a - I*
```

```
b]*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]] + (2*Sqrt[a + b*Tan[c + d*x]]*(-15*a^3*A - 3*a^2*(A*b + 7
*a*B)*Tan[c + d*x] + a*(35*a^2*A + 4*A*b^2 - 7*a*b*B)*Tan[c + d*x]^2 + (35*
a^2*A*b - 8*A*b^3 + 105*a^3*B + 14*a*b^2*B)*Tan[c + d*x]^3))/(a^3*Tan[c + d
*x]^(7/2)))/(105*d)
```

Maple [B] time = 0.735, size = 2183144, normalized size = 6952.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)

[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="maxima")

[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="fricas")

[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.434 $\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=323

$$\frac{\left(a^2(-B)+6aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd}+\frac{\left(6a^2Ab+a^3(-B)-24ab^2B-16Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx}}{\sqrt{a+b\tan(c+d}}\right.}{8b^{3/2}d}$$

```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((6*a^2*A*b - 16*A*b^3 - a^3*B - 24*a*b^2*B)*ArcTa
nh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(8*b^(3/2)*d) +
((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]])/d + ((6*a*A*b - a^2*B - 8*b^2*B)*Sqrt[Tan[c + d*x]]*S
qrt[a + b*Tan[c + d*x]])/(8*b*d) + ((6*A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b
*Tan[c + d*x])^(3/2))/(12*b*d) + (B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])
^(5/2))/(3*b*d)
```

Rubi [A] time = 2.55959, antiderivative size = 323, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(a^2(-B)+6aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd}+\frac{\left(6a^2Ab+a^3(-B)-24ab^2B-16Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx}}{\sqrt{a+b\tan(c+d}}\right.}{8b^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((6*a^2*A*b - 16*A*b^3 - a^3*B - 24*a*b^2*B)*ArcTa
nh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(8*b^(3/2)*d) +
((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]])/d + ((6*a*A*b - a^2*B - 8*b^2*B)*Sqrt[Tan[c + d*x]]*S
qrt[a + b*Tan[c + d*x]])/(8*b*d) + ((6*A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b
*Tan[c + d*x])^(3/2))/(12*b*d) + (B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])
^(5/2))/(3*b*d)
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{B\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}}{3bd} + \frac{\int \frac{(a+b\tan(c+dx))^{3/2}(}{}}{}$$

$$= \frac{(6Ab-aB)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}{12bd} + \frac{B\sqrt{\tan(}}{}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd} +$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd} +$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd} +$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd} +$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd} +$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8bd} +$$

$$= \frac{\left(6a^2Ab-16Ab^3-a^3B-24ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{8b^{3/2}d}$$

$$= \frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\left(6a^2Ab-16\right.}{}$$

Mathematica [A] time = 4.2701, size = 347, normalized size = 1.07

$$\frac{-3\left(a^2B-6aAb+8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} - \frac{3\sqrt{a}\left(-6a^2Ab+a^3B+24ab^2B+16Ab^3\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}} + }{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (24*(-1)^(3/4)*(-a - I*b)^(3/2)*b*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I
*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + 24*(-1)^(1/4)*(a - I*b)
^(3/2)*b*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sq
rt[a + b*Tan[c + d*x]]] - 3*(-6*a*A*b + a^2*B + 8*b^2*B)*Sqrt[Tan[c + d*x]]
*Sqrt[a + b*Tan[c + d*x]] + 2*(6*A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c
 + d*x])^(3/2) + 8*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(5/2) - (3*Sqr
t[a]*(-6*a^2*A*b + 16*A*b^3 + a^3*B + 24*a*b^2*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[
c + d*x]]))/(24*b*d)
```

Maple [B] time = 0.767, size = 2400808, normalized size = 7432.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\tan(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*tan(d*x + c)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.435 $\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=268

$$\frac{(3a^2B+12aAb-8b^2B)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4\sqrt{b}d}+\frac{(a+ib)^2(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(5aB+4Ab)\sqrt{\tan(c+}{4}$$

```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]])/(Sqrt[I*a - b]*d) + ((12*a*A*b + 3*a^2*B - 8*b^2*B)*ArcTan
h[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(4*Sqrt[b]*d) + (
(I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((4*A*b + 5*a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan
[c + d*x]])/(4*d) + (b*B*Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(2*d)
```

Rubi [A] time = 2.40697, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{(3a^2B+12aAb-8b^2B)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4\sqrt{b}d}+\frac{(a+ib)^2(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(5aB+4Ab)\sqrt{\tan(c+}{4}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]])/(Sqrt[I*a - b]*d) + ((12*a*A*b + 3*a^2*B - 8*b^2*B)*ArcTan
h[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(4*Sqrt[b]*d) + (
(I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((4*A*b + 5*a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan
[c + d*x]])/(4*d) + (b*B*Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(2*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
```

```
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{bB\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{2d} + \frac{1}{2}\int \frac{\sqrt{\tan(c+dx)}}{}$$

$$= \frac{(4Ab+5aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\tan^{\frac{3}{2}}}{}$$

$$= \frac{(4Ab+5aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\tan^{\frac{3}{2}}}{}$$

$$= \frac{(4Ab+5aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\tan^{\frac{3}{2}}}{}$$

$$= \frac{(4Ab+5aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\tan^{\frac{3}{2}}}{}$$

$$= \frac{(4Ab+5aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\tan^{\frac{3}{2}}}{}$$

$$= \frac{(4Ab+5aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\tan^{\frac{3}{2}}}{}$$

$$= \frac{\left(12aAb+3a^2B-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4\sqrt{b}d} + \frac{(4Ab}{}$$

$$= \frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} + \frac{\left(12aAb+3a^2\right.}{}$$

Mathematica [A] time = 2.48483, size = 290, normalized size = 1.08

$$\frac{\frac{\sqrt{a}\left(3a^2B+12aAb-8b^2B\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}} + (5aB+4Ab)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} + 4\sqrt[4]{-1}(-a-ib)^{3/2}(A+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (4*(-1)^(1/4)*(-a - I*b)^(3/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 4*(-1)^(1/4)*(a - I*b)^(3/
```

```
2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]] + (4*A*b + 5*a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d
*x]] + 2*b*B*Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]] + (Sqrt[a]*(12*a*A
*b + 3*a^2*B - 8*b^2*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[
1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]]))/(4*d)
```

Maple [B] time = 0.82, size = 2398581, normalized size = 8949.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*sqrt(tan(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

[Out] Timed out

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.436 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=204

$$-\frac{(-b+ia)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b}(3aB+2Ab)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{(b+ia)^{3/2}(A-iB)\tanh^{-1}\left(\ldots\right.}{d}$$

```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + (Sqrt[b]*(2*A*b + 3*a*B)*ArcTanh[(Sqrt[b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(3/2)*(A - I*B)*Ar
cTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + (b*
B*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 1.73133, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3607, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{(-b+ia)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b}(3aB+2Ab)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{(b+ia)^{3/2}(A-iB)\tanh^{-1}\left(\ldots\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + (Sqrt[b]*(2*A*b + 3*a*B)*ArcTanh[(Sqrt[b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(3/2)*(A - I*B)*Ar
cTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + (b*
B*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/d
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
```

```
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \int \frac{\frac{1}{2}a(2aA-bB)+\big(2aAb+a$$

$$= \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\text{Subst}\Big(\int \frac{\frac{1}{2}a(2aA-bB)+\big(2aAb+a^2B}{\sqrt{x}\sqrt{a+b}}$$

$$= \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\text{Subst}\Big(\int\Big(\frac{b(2Ab+3aB)}{2\sqrt{x}\sqrt{a+bx}} + \frac{a^2A-A}{}$$

$$= \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\text{Subst}\Big(\int \frac{a^2A-Ab^2-2abB+\big(2aAb+}{\sqrt{x}\sqrt{a+bx}(1+x^2}}{d}$$

$$= \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\text{Subst}\Big(\int\Big(\frac{-2aAb-a^2B+b^2B+i\big(a^2A}{2(i-x)\sqrt{x}\sqrt{a+}}$$

$$= \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\big((a+ib)^2(iA-B)\big)\,\text{Subst}\Big(\int}{2}$$

$$= \frac{\sqrt{b}(2Ab+3aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{bB\sqrt{\tan(c+dx)}\sqrt{a+b\,\text{ta}}}{d}$$

$$= -\frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\sqrt{b}(2Ab+3aB)\tanh}{d}$$

Mathematica [A] time = 0.962479, size = 243, normalized size = 1.19

$$\frac{-(-1)^{3/4}(-a-ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)-\sqrt[4]{-1}(a-ib)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)+\frac{\sqrt{a}\sqrt{b}(3}{}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*
x]],x]
```

```
[Out] (-((-1)^(3/4)*(-a - I*b)^(3/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]) - (-1)^(1/4)*(a - I*b)^(3/2
)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]] + b*B*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + (Sqrt[
a]*Sqrt[b]*(2*A*b + 3*a*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sq
rt[1 + (b*Tan[c + d*x])/a])/Sqrt[a + b*Tan[c + d*x]])/d
```

Maple [B] time = 0.826, size = 2396041, normalized size = 11745.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)/sqrt(tan(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\,(a + b\tan{(c + dx)})^{\frac{3}{2}}}{\sqrt{\tan{(c + dx)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(3/2)/sqrt(tan(c + d*x)
), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.437 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=209

$$-\frac{(a+ib)^2(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(b+ia)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}+$$

```
[Out] -(((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/(Sqrt[I*a - b]*d)) + (2*b^(3/2)*B*ArcTanh[(Sqrt[b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(3/2)*(I*A + B)*Ar
cTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*
a*A*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 1.68511, antiderivative size = 209, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3605, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{(a+ib)^2(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(b+ia)^{3/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}+$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```


```
[Out] -(((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/(Sqrt[I*a - b]*d)) + (2*b^(3/2)*B*ArcTanh[(Sqrt[b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(3/2)*(I*A + B)*Ar
cTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*
a*A*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
```

```
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
```

```
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + 2\int \frac{\frac{1}{2}a(2Ab+aB)-\frac{1}{2}\left(a^2A-Ab^2-2abI\right.}{\sqrt{\tan(c+dx)}\sqrt{a}}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}a(2Ab+aB)+\frac{1}{2}\left(-a^2A+Ab^2+2abB\right)x+}{\sqrt{x}\sqrt{a+bx}\left(1+x^2\right)}\right.}{d}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int\left(\frac{b^2B}{2\sqrt{x}\sqrt{a+bx}} + \frac{2aAb+a^2B-b^2B-\left(a^2A\right.}{2\sqrt{x}\sqrt{a+bx}(1}\right.\right.}{d}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{\mathrm{Subst}\left(\int \frac{2aAb+a^2B-b^2B-\left(a^2A-Ab^2-2abB\right)x}{\sqrt{x}\sqrt{a+bx}\left(1+x^2\right)}\,dx,\right.}{d}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} + \frac{\mathrm{Subst}\left(\int\left(\frac{a^2A-Ab^2-2abB+i\left(2aAb+a^2B-b^2B\right)}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \right.\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{\left((a-ib)^2(A-iB)\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}(i+x)\sqrt{a+bx}}\right.}{2d}$$

$$= \frac{2b^{3/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{2aA\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{\left((a-ib)^2(\right.}{}$$

$$= -\frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} + \frac{2b^{3/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c}}{\sqrt{a+b\tan(c}}\right.}{d}$$

Mathematica [C] time = 39.1459, size = 121803, normalized size = 582.79

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3
/2),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.814, size = 2396071, normalized size = 11464.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))^{\frac{3}{2}}}{\tan^{\frac{3}{2}}(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(3/2)/tan(c + d*x)**(3/
2), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.438 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=196

$$\frac{(-b+ia)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+4Ab)\sqrt{a+b\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}+\frac{(b+ia)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{t}}{\sqrt{a+b\,ta}}\right.}{d}$$

```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + b*Tan[c
+ d*x]])/(3*d*Tan[c + d*x]^(3/2)) - (2*(4*A*b + 3*a*B)*Sqrt[a + b*Tan[c + d
*x]])/(3*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.878494, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{(-b+ia)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+4Ab)\sqrt{a+b\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}}+\frac{(b+ia)^{3/2}(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{t}}{\sqrt{a+b\,ta}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```


```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + b*Tan[c
+ d*x]])/(3*d*Tan[c + d*x]^(3/2)) - (2*(4*A*b + 3*a*B)*Sqrt[a + b*Tan[c + d
*x]])/(3*d*Sqrt[Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
```

```
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{\frac{1}{2}a(4Ab+3aB)-\frac{3}{2}\left(a^2A-Ab^2-2\right.}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} - \frac{4\int}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} - \frac{1}{2}\Big((\Big.$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} - \frac{\Big((a}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{2(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{3d\sqrt{\tan(c+dx)}} - \frac{\Big((a}{}$$

$$= \frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{(ia+b)^{3/2}(A-iB)\tanh}{d}$$

Mathematica [A] time = 0.899557, size = 238, normalized size = 1.21

$$\frac{-2(3aB+4Ab)\tan(c+dx)\sqrt{a+b\tan(c+dx)}+(3bB-2aA)\sqrt{a+b\tan(c+dx)}+3\sqrt[4]{-1}\tan^{\frac{3}{2}}(c+dx)\Big(i(-a-ib)^{3/2}(A}{3d\tan^{\frac{3}{2}}(c+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5
/2),x]
```

```
[Out] (3*(-1)^(1/4)*(I*(-a - I*b)^(3/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I
*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + (a - I*b)^(3/2)*(I*A +
B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
 d*x]]])*Tan[c + d*x]^(3/2) - 3*b*B*Sqrt[a + b*Tan[c + d*x]] + (-2*a*A + 3*
b*B)*Sqrt[a + b*Tan[c + d*x]] - 2*(4*A*b + 3*a*B)*Tan[c + d*x]*Sqrt[a + b*T
an[c + d*x]])/(3*d*Tan[c + d*x]^(3/2))
```

Maple [B] time = 0.814, size = 2397670, normalized size = 12233.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}}{\tan(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)/tan(d*x + c)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.439 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=259

$$\frac{2\left(15a^2A-20abB-3Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15ad\sqrt{\tan(c+dx)}}+\frac{(a+ib)^2(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{2(5aB+6Ab)\sqrt{a+b\tan}}{15d\tan^{\frac{3}{2}}(c+dx)}$$

```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]])/(Sqrt[I*a - b]*d) + ((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sq
rt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[
a + b*Tan[c + d*x]])/(5*d*Tan[c + d*x]^(5/2)) - (2*(6*A*b + 5*a*B)*Sqrt[a +
 b*Tan[c + d*x]])/(15*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A - 3*A*b^2 - 20*a
*b*B)*Sqrt[a + b*Tan[c + d*x]])/(15*a*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 1.15287, antiderivative size = 259, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A-20abB-3Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15ad\sqrt{\tan(c+dx)}}+\frac{(a+ib)^2(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{2(5aB+6Ab)\sqrt{a+b\tan}}{15d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]])/(Sqrt[I*a - b]*d) + ((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sq
rt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[
a + b*Tan[c + d*x]])/(5*d*Tan[c + d*x]^(5/2)) - (2*(6*A*b + 5*a*B)*Sqrt[a +
 b*Tan[c + d*x]])/(15*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A - 3*A*b^2 - 20*a
*b*B)*Sqrt[a + b*Tan[c + d*x]])/(15*a*d*Sqrt[Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
```

```
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{\frac{1}{2}a(6Ab+5aB) - \frac{5}{2}\left(a^2A - Ab^2 - 2a\right.}{\tan^{\frac{5}{2}}(c+d}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(6Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} - \frac{4\int \frac{1}{4}}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(6Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(6Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(6Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{5d\tan^{\frac{5}{2}}(c+dx)} - \frac{2(6Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a\right.}{}$$

$$= \frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}\,d} + \frac{(ia+b)^{3/2}(iA+B)\tanh^{-1}}{d}$$

Mathematica [A] time = 2.2734, size = 286, normalized size = 1.1

$$\frac{4\left(15a^2A-20abB-3Ab^2\right)\tan^2(c+dx)\sqrt{a+b\tan(c+dx)}-4a(5aB+6Ab)\tan(c+dx)\sqrt{a+b\tan(c+dx)}-3a(4aA}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7
/2),x]
```

```
[Out] (30*(-1)^(1/4)*a*((-a - I*b)^(3/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a -
I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - (a - I*b)^(3/2)*(A - I
*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]])*Tan[c + d*x]^(5/2) - 15*a*b*B*Sqrt[a + b*Tan[c + d*x]] - 3*a*(4*a
*A - 5*b*B)*Sqrt[a + b*Tan[c + d*x]] - 4*a*(6*A*b + 5*a*B)*Tan[c + d*x]*Sqr
t[a + b*Tan[c + d*x]] + 4*(15*a^2*A - 3*A*b^2 - 20*a*b*B)*Tan[c + d*x]^2*Sq
rt[a + b*Tan[c + d*x]])/(30*a*d*Tan[c + d*x]^(5/2))
```

Maple [B] time = 0.875, size = 2398570, normalized size = 9260.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.440 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=311

$$\frac{2\left(35a^2A-42abB-3Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105ad\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(140a^2Ab+105a^3B-21ab^2B+6Ab^3\right)\sqrt{a+b\tan(c+dx)}}{105a^2d\sqrt{\tan(c+dx)}}-\frac{(-b+}{}$$

```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) - ((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a +
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + b*Tan
[c + d*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*(8*A*b + 7*a*B)*Sqrt[a + b*Tan[c
+ d*x]])/(35*d*Tan[c + d*x]^(5/2)) + (2*(35*a^2*A - 3*A*b^2 - 42*a*b*B)*Sqr
t[a + b*Tan[c + d*x]])/(105*a*d*Tan[c + d*x]^(3/2)) + (2*(140*a^2*A*b + 6*A
*b^3 + 105*a^3*B - 21*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(105*a^2*d*Sqrt[Ta
n[c + d*x]])
```

Rubi [A] time = 1.47729, antiderivative size = 311, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(35a^2A-42abB-3Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105ad\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(140a^2Ab+105a^3B-21ab^2B+6Ab^3\right)\sqrt{a+b\tan(c+dx)}}{105a^2d\sqrt{\tan(c+dx)}}-\frac{(-b+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),x]
```

```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) - ((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a +
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + b*Tan
[c + d*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*(8*A*b + 7*a*B)*Sqrt[a + b*Tan[c
+ d*x]])/(35*d*Tan[c + d*x]^(5/2)) + (2*(35*a^2*A - 3*A*b^2 - 42*a*b*B)*Sqr
t[a + b*Tan[c + d*x]])/(105*a*d*Tan[c + d*x]^(3/2)) + (2*(140*a^2*A*b + 6*A
*b^3 + 105*a^3*B - 21*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(105*a^2*d*Sqrt[Ta
n[c + d*x]])
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{\frac{1}{2}a(8Ab+7aB)-\frac{7}{2}\left(a^2A-Ab^2-2a\right.}{\tan^{\frac{7}{2}}(c+d}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(8Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} - \frac{4\int \frac{1}{4}}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(8Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(8Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(8Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(8Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)} - \frac{2(8Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35\right.}{}$$

$$= -\frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{(ia+b)^{3/2}(A-iB)\tanh}{d}$$

Mathematica [A] time = 5.35267, size = 346, normalized size = 1.11

$$\frac{a\tan^2(c+dx)\left(2a\left(35a^2A-42abB-3Ab^2\right)\sqrt{a+b\tan(c+dx)}+2\left(140a^2Ab+105a^3B-21ab^2B+6Ab^3\right)\tan(c+dx)\sqrt{\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9
/2),x]
```

```
[Out] (-35*a^3*b*B*Sqrt[a + b*Tan[c + d*x]] - 5*a^3*(6*a*A - 7*b*B)*Sqrt[a + b*Ta
n[c + d*x]] - 6*a^3*(8*A*b + 7*a*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]] +
```

```
a*Tan[c + d*x]^2*(-105*(-1)^(3/4)*a^2*((-a - I*b)^(3/2)*(A + I*B)*ArcTanh[
((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] +
(a - I*b)^(3/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])*Tan[c + d*x]^(3/2) + 2*a*(35*a^2*A - 3*A*b^
2 - 42*a*b*B)*Sqrt[a + b*Tan[c + d*x]] + 2*(140*a^2*A*b + 6*A*b^3 + 105*a^3
*B - 21*a*b^2*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]]))/(105*a^3*d*Tan[c +
d*x]^(7/2))
```

Maple [B] time = 0.849, size = 2400710, normalized size = 7719.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.441 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx$

Optimal. Leaf size=382

$$\frac{2\left(126a^2Ab+105a^3B-9ab^2B+4Ab^3\right)\sqrt{a+b\tan(c+dx)}}{315a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(21a^2A-24abB-Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105ad\tan^{\frac{5}{2}}(c+dx)}-\frac{2\left(-63a^2\right.}{}$$

```
[Out] ((I*a - b)^(3/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d - ((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + b*Tan[c
+ d*x]])/(9*d*Tan[c + d*x]^(9/2)) - (2*(10*A*b + 9*a*B)*Sqrt[a + b*Tan[c +
d*x]])/(63*d*Tan[c + d*x]^(7/2)) + (2*(21*a^2*A - A*b^2 - 24*a*b*B)*Sqrt[a
+ b*Tan[c + d*x]])/(105*a*d*Tan[c + d*x]^(5/2)) + (2*(126*a^2*A*b + 4*A*b^3
 + 105*a^3*B - 9*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(315*a^2*d*Tan[c + d*x]
^(3/2)) - (2*(315*a^4*A - 63*a^2*A*b^2 + 8*A*b^4 - 420*a^3*b*B - 18*a*b^3*B
)*Sqrt[a + b*Tan[c + d*x]])/(315*a^3*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 1.83193, antiderivative size = 382, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(126a^2Ab+105a^3B-9ab^2B+4Ab^3\right)\sqrt{a+b\tan(c+dx)}}{315a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(21a^2A-24abB-Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105ad\tan^{\frac{5}{2}}(c+dx)}-\frac{2\left(-63a^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(11/2),x
]
```


```
[Out] ((I*a - b)^(3/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d - ((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*A*Sqrt[a + b*Tan[c
+ d*x]])/(9*d*Tan[c + d*x]^(9/2)) - (2*(10*A*b + 9*a*B)*Sqrt[a + b*Tan[c +
d*x]])/(63*d*Tan[c + d*x]^(7/2)) + (2*(21*a^2*A - A*b^2 - 24*a*b*B)*Sqrt[a
+ b*Tan[c + d*x]])/(105*a*d*Tan[c + d*x]^(5/2)) + (2*(126*a^2*A*b + 4*A*b^3
 + 105*a^3*B - 9*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(315*a^2*d*Tan[c + d*x]
^(3/2)) - (2*(315*a^4*A - 63*a^2*A*b^2 + 8*A*b^4 - 420*a^3*b*B - 18*a*b^3*B
)*Sqrt[a + b*Tan[c + d*x]])/(315*a^3*d*Sqrt[Tan[c + d*x]])
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx = -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} + \frac{2}{9}\int \frac{\frac{1}{2}a(10Ab+9aB)-\frac{9}{2}\left(a^2A-Ab^2-2\right.}{\tan^{\frac{9}{2}}(c+a}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} - \frac{4\int}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(2\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(2\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(2\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(2\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(2\right.}{}$$

$$= -\frac{2aA\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)} - \frac{2(10Ab+9aB)\sqrt{a+b\tan(c+dx)}}{63d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(2\right.}{}$$

$$= -\frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} - \frac{(ia+b)^{3/2}(iA+B)\tanh^{-}}{d}$$

Mathematica [A] time = 6.63286, size = 474, normalized size = 1.24

$$-\frac{bB\sqrt{a+b\tan(c+dx)}}{4d\tan^{\frac{9}{2}}(c+dx)}+\frac{1}{4}\left(-\frac{(8aA-9bB)\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)}+\frac{2\left(-\frac{4a(9aB+10Ab)\sqrt{a+b\tan(c+dx)}}{7d\tan^{\frac{7}{2}}(c+dx)}-\frac{2\left(-\frac{6a(21a^2A-24abB-Ab^2)\sqrt{a+b}}{5d\tan^{\frac{5}{2}}(c+dx)}\right.}{}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(1
1/2),x]
```

```
[Out] -(b*B*Sqrt[a + b*Tan[c + d*x]])/(4*d*Tan[c + d*x]^(9/2)) + (-((8*a*A - 9*b*
B)*Sqrt[a + b*Tan[c + d*x]])/(9*d*Tan[c + d*x]^(9/2)) + (2*((-4*a*(10*A*b +
 9*a*B)*Sqrt[a + b*Tan[c + d*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*((-6*a*(21*
a^2*A - A*b^2 - 24*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(5*d*Tan[c + d*x]^(5/2)
) - (2*((a*(126*a^2*A*b + 4*A*b^3 + 105*a^3*B - 9*a*b^2*B)*Sqrt[a + b*Tan[c
 + d*x]])/(d*Tan[c + d*x]^(3/2)) - (2*((945*a^4*((-1)^(1/4)*(-a - I*b)^(3/2
)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]] - (-1)^(1/4)*(a - I*b)^(3/2)*(A - I*B)*ArcTanh[((-1)^(1/4
)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]))/(4*d) + (3*
a*(315*a^4*A - 63*a^2*A*b^2 + 8*A*b^4 - 420*a^3*b*B - 18*a*b^3*B)*Sqrt[a +
b*Tan[c + d*x]])/(2*d*Sqrt[Tan[c + d*x]])))/(3*a)))/(5*a)))/(7*a)))/(9*a))/
4
```

Maple [B] time = 0.852, size = 2404245, normalized size = 6293.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, algo
rithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, algo
rithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(11/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, algo
rithm="giac")
```

```
[Out] Timed out
```

3.442 $\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=397

$$\frac{\left(-5a^2B+40aAb-48b^2B\right)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}{96bd}+\frac{\left(40a^2Ab-5a^3B-112ab^2B-64Ab^3\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

```
[Out] -((((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + ((40*a^3*A*b - 320*a*A*b^3 - 5*a^4*B - 240*a^2*
b^2*B + 128*b^4*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
d*x]]])/(64*b^(3/2)*d) - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + ((40*a^2*A*b - 64*A*b^3
- 5*a^3*B - 112*a*b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(64*b
*d) + ((40*a*A*b - 5*a^2*B - 48*b^2*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*
x])^(3/2))/(96*b*d) + ((8*A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]
)^(5/2))/(24*b*d) + (B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(7/2))/(4*b*
d)
```

Rubi [A] time = 3.11969, antiderivative size = 397, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(-5a^2B+40aAb-48b^2B\right)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}{96bd}+\frac{\left(40a^2Ab-5a^3B-112ab^2B-64Ab^3\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + ((40*a^3*A*b - 320*a*A*b^3 - 5*a^4*B - 240*a^2*
b^2*B + 128*b^4*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
d*x]]])/(64*b^(3/2)*d) - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + ((40*a^2*A*b - 64*A*b^3
- 5*a^3*B - 112*a*b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(64*b
*d) + ((40*a*A*b - 5*a^2*B - 48*b^2*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*
x])^(3/2))/(96*b*d) + ((8*A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]
)^(5/2))/(24*b*d) + (B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(7/2))/(4*b*
```

d)

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{B\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{7/2}}{4bd} + \int \frac{(a+b\tan(c+dx))^{5/}}{}$$

$$= \frac{(8Ab-aB)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}}{24bd} + \frac{B\sqrt{\tan}}{}$$

$$= \frac{\left(40aAb-5a^2B-48b^2B\right)\sqrt{\tan(c+dx)}(a+b\tan(c+d}{96bd}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{\tan(c+dx)}\sqrt{a}}{64bd}$$

$$= \frac{\left(40a^3Ab-320aAb^3-5a^4B-240a^2b^2B+128b^4B\right)\tan}{64b^{3/2}d}$$

$$= -\frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\left(40a^3Ab\right.}{}$$

Mathematica [A] time = 4.3818, size = 411, normalized size = 1.04

$$\frac{-2\left(5a^2B-40aAb+48b^2B\right)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}-3\left(-40a^2Ab+5a^3B+112ab^2B+64Ab^3\right)\sqrt{\tan(c+}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (-192*(-1)^(3/4)*(-a - I*b)^(5/2)*b*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a -
 I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + 192*(-1)^(1/4)*(a - I
*b)^(5/2)*b*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]] - 3*(-40*a^2*A*b + 64*A*b^3 + 5*a^3*B + 112*a*b^
2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] - 2*(-40*a*A*b + 5*a^2*B +
 48*b^2*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2) + 8*(8*A*b - a*B)*
Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(5/2) + 48*B*Sqrt[Tan[c + d*x]]*(a
+ b*Tan[c + d*x])^(7/2) - (3*Sqrt[a]*(-40*a^3*A*b + 320*a*A*b^3 + 5*a^4*B +
 240*a^2*b^2*B - 128*b^4*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*S
qrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]]))/(192*b*d)
```

Maple [B] time = 0.893, size = 2656933, normalized size = 6692.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\tan(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*tan(d*x + c)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.443 $\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=316

$$\frac{\left(5a^2B+14aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8d}+\frac{\left(30a^2Ab+5a^3B-40ab^2B-16Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{8\sqrt{b}d}$$

```
[Out] -((((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + ((30*a^2*A*b - 16*A*b^3 + 5*a^3*B - 40*a*b^2*B)
*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(8*Sqrt[b]
*d) + ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]])/d + ((14*a*A*b + 5*a^2*B - 8*b^2*B)*Sqrt[Tan[c
+ d*x]]*Sqrt[a + b*Tan[c + d*x]])/(8*d) + ((2*A*b + 3*a*B)*Sqrt[Tan[c + d*x
]]*(a + b*Tan[c + d*x])^(3/2))/(4*d) + (b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c
 + d*x])^(3/2))/(3*d)
```

Rubi [A] time = 3.06664, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(5a^2B+14aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{8d}+\frac{\left(30a^2Ab+5a^3B-40ab^2B-16Ab^3\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{8\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + ((30*a^2*A*b - 16*A*b^3 + 5*a^3*B - 40*a*b^2*B)
*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(8*Sqrt[b]
*d) + ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]])/d + ((14*a*A*b + 5*a^2*B - 8*b^2*B)*Sqrt[Tan[c
+ d*x]]*Sqrt[a + b*Tan[c + d*x]])/(8*d) + ((2*A*b + 3*a*B)*Sqrt[Tan[c + d*x
]]*(a + b*Tan[c + d*x])^(3/2))/(4*d) + (b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c
 + d*x])^(3/2))/(3*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

<u>Rule 3647</u>

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

<u>Rule 3655</u>

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

<u>Rule 6725</u>

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

<u>Rule 63</u>

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{bB\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}{3d} + \frac{1}{3}\int \sqrt{\tan(c+$$

$$= \frac{(2Ab+3aB)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}{4d} + \frac{bB\,\mathrm{t}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}{8d}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}{8d}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}{8d}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}{8d}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}{8d}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}{8d}$$

$$= \frac{\left(30a^2Ab-16Ab^3+5a^3B-40ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+}}{\sqrt{a+b\tan(c}}\right.}{8\sqrt{b}d}$$

$$= -\frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\left(30a^2Ab\right.}{}$$

Mathematica [A] time = 4.50735, size = 345, normalized size = 1.09

$$3\left(5a^2B+14aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} + \frac{3\sqrt{a}\left(30a^2Ab+5a^3B-40ab^2B-16Ab^3\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (-24*(-1)^(1/4)*(-a - I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 24*(-1)^(1/4)*(a - I*b)^
(5/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]] + 3*(14*a*A*b + 5*a^2*B - 8*b^2*B)*Sqrt[Tan[c + d*x]]*
Sqrt[a + b*Tan[c + d*x]] + 6*(2*A*b + 3*a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[
c + d*x])^(3/2) + 8*b*B*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2) + (3*
Sqrt[a]*(30*a^2*A*b - 16*A*b^3 + 5*a^3*B - 40*a*b^2*B)*ArcSinh[(Sqrt[b]*Sqr
t[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b
*Tan[c + d*x]]))/(24*d)
```

Maple [B] time = 0.919, size = 2654491, normalized size = 8400.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*sqrt(tan(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.444 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=260

$$\frac{\sqrt{b}\left(15a^2B+20aAb-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4d}+\frac{(-b+ia)^{5/2}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{b(7aB+4Ab)\sqrt{}}{}$$

```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + (Sqrt[b]*(20*a*A*b + 15*a^2*B - 8*b^2*B)*ArcTanh[(
Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(4*d) + ((I*a + b)^(
5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]])/d + (b*(4*A*b + 7*a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]
])/(4*d) + (b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2))/(2*d)
```

Rubi [A] time = 2.33047, antiderivative size = 260, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\sqrt{b}\left(15a^2B+20aAb-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4d}+\frac{(-b+ia)^{5/2}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{b(7aB+4Ab)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + (Sqrt[b]*(20*a*A*b + 15*a^2*B - 8*b^2*B)*ArcTanh[(
Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(4*d) + ((I*a + b)^(
5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]])/d + (b*(4*A*b + 7*a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]
])/(4*d) + (b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2))/(2*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
```

```
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
```

```
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{bB\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}{2d} + \frac{1}{2}\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{1}{2}\right.}{}$$

$$= \frac{b(4Ab+7aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\sqrt{\tan(c+dx)}(a}{2}$$

$$= \frac{b(4Ab+7aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\sqrt{\tan(c+dx)}(a}{2}$$

$$= \frac{b(4Ab+7aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\sqrt{\tan(c+dx)}(a}{2}$$

$$= \frac{b(4Ab+7aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\sqrt{\tan(c+dx)}(a}{2}$$

$$= \frac{b(4Ab+7aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\sqrt{\tan(c+dx)}(a}{2}$$

$$= \frac{b(4Ab+7aB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{4d} + \frac{bB\sqrt{\tan(c+dx)}(a}{2}$$

$$= \frac{\sqrt{b}\left(20aAb+15a^2B-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4d} + \frac{b(4Ab+7aB}{}$$

$$= \frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{\sqrt{b}\left(20aAb+15a^2B-8\right.}{}$$

Mathematica [A] time = 2.59306, size = 291, normalized size = 1.12

$$\frac{\frac{\sqrt{a}\sqrt{b}\left(15a^2B+20aAb-8b^2B\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a+b\tan(c+dx)}} + b(7aB+4Ab)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} + 4(-1)^{3/4}(-a-ib}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*
x]],x]
```

```
[Out] (4*(-1)^(3/4)*(-a - I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 4*(-1)^(1/4)*(a - I*b)^(5/
```

```
2)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]] + b*(4*A*b + 7*a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c +
 d*x]] + 2*b*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2) + (Sqrt[a]*Sqr
t[b]*(20*a*A*b + 15*a^2*B - 8*b^2*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/S
qrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/Sqrt[a + b*Tan[c + d*x]])/(4*d)
```

Maple [B] time = 0.935, size = 2652267, normalized size = 10201.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)

[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="maxima")

[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)/sqrt(tan(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.445 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=241

$$\frac{b^{3/2}(5aB+2Ab)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(-b+ia)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a}}{d}$$

```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + (b^(3/2)*(2*A*b + 5*a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(5/2)*(A - I*B)*ArcTa
nh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + (b*(2*
a*A + b*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/d - (2*a*A*(a + b*T
an[c + d*x])^(3/2))/(d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 2.3508, antiderivative size = 241, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3605, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{b^{3/2}(5aB+2Ab)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(-b+ia)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```



```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + (b^(3/2)*(2*A*b + 5*a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(5/2)*(A - I*B)*ArcTa
nh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d + (b*(2*
a*A + b*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/d - (2*a*A*(a + b*T
an[c + d*x])^(3/2))/(d*Sqrt[Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
```

```
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^{3/2}}{d\sqrt{\tan(c+dx)}} + 2\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{1}{2}a(4Ab+aB\right.}{}$$

$$= \frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA(a+b\tan(c+d}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA(a+b\tan(c+d}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA(a+b\tan(c+d}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA(a+b\tan(c+d}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA(a+b\tan(c+d}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{b(2aA+bB)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA(a+b\tan(c+d}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{b^{3/2}(2Ab+5aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{b(2aA+bB)\sqrt{\tan(c+dx}}{d}$$

$$= \frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{b^{3/2}(2Ab+5aB)\tanh^{-}}{d}$$

Mathematica [C] time = 40.969, size = 209298, normalized size = 868.46

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3
/2),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.92, size = 2652458, normalized size = 11006.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.446 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=240

$$-\frac{(-b+ia)^{5/2}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2a(aB+2Ab)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{(b+ia)^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\dots}}{\sqrt{a+b\tan\dots}}\right.}{d}$$

```
[Out] -(((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + (2*b^(5/2)*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]
])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[
I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(2*A*b + a
*B)*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + b*Tan[c
+ d*x])^(3/2))/(3*d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 2.01643, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3605, 3645, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{(-b+ia)^{5/2}(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2a(aB+2Ab)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{(b+ia)^{5/2}(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\dots}}{\sqrt{a+b\dots}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5/2),x]
```

```
[Out] -(((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + (2*b^(5/2)*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]
])/Sqrt[a + b*Tan[c + d*x]]])/d - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[
I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(2*A*b + a
*B)*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + b*Tan[c
+ d*x])^(3/2))/(3*d*Tan[c + d*x]^(3/2))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
```

```
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{5}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{3}{2}a(2Ab+a\right.}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{4}{3}$$

$$= -\frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{4}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{4}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{S}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} - \frac{S}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{3}{2}}(c+dx)} + \frac{(2}{}$$

$$= \frac{2b^{5/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{2a(2Ab+aB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}} -$$

$$= -\frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{2b^{5/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan}}{\sqrt{a+b\tan}}\right.}{d}$$

Mathematica [C] time = 39.5828, size = 139636, normalized size = 581.82

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(5
/2),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.911, size = 2652764, normalized size = 11053.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}}{\tan(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)/tan(d*x + c)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(5/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.447 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx$

Optimal. Leaf size=247

$$\frac{2\left(15a^2A-35abB-23Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15d\sqrt{\tan(c+dx)}}-\frac{(-b+ia)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2a(5aB+8Ab)\sqrt{a+b}}{15d\tan^{\frac{3}{2}}(c+}$$

```
[Out] -(((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a +
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(8*A*b + 5*a*B)*
Sqrt[a + b*Tan[c + d*x]])/(15*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A - 23*A*b
^2 - 35*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(15*d*Sqrt[Tan[c + d*x]]) - (2*a*A
*(a + b*Tan[c + d*x])^(3/2))/(5*d*Tan[c + d*x]^(5/2))
```

Rubi [A] time = 1.17028, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A-35abB-23Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15d\sqrt{\tan(c+dx)}}-\frac{(-b+ia)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2a(5aB+8Ab)\sqrt{a+b}}{15d\tan^{\frac{3}{2}}(c+}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7/2),x]
```


```
[Out] -(((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) + ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a +
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(8*A*b + 5*a*B)*
Sqrt[a + b*Tan[c + d*x]])/(15*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A - 23*A*b
^2 - 35*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(15*d*Sqrt[Tan[c + d*x]]) - (2*a*A
*(a + b*Tan[c + d*x])^(3/2))/(5*d*Tan[c + d*x]^(5/2))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
```

```
Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{7}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^{3/2}}{5d\tan^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{1}{2}a(8Ab+5a\right.}{}$$

$$= -\frac{2a(8Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{5d\tan^{\frac{5}{2}}(c+dx)} +$$

$$= -\frac{2a(8Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-23Ab^2-35abB\right)}{15d\sqrt{\tan(c+}}$$

$$= -\frac{2a(8Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-23Ab^2-35abB\right)}{15d\sqrt{\tan(c+}}$$

$$= -\frac{2a(8Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-23Ab^2-35abB\right)}{15d\sqrt{\tan(c+}}$$

$$= -\frac{2a(8Ab+5aB)\sqrt{a+b\tan(c+dx)}}{15d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-23Ab^2-35abB\right)}{15d\sqrt{\tan(c+}}$$

$$= -\frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{(ia+b)^{5/2}(A-iB)\tan}{d}$$

Mathematica [A] time = 2.38991, size = 321, normalized size = 1.3

$$\frac{-3\left(8a^2A-15abB-10Ab^2\right)\sqrt{a+b\tan(c+dx)}-4\tan(c+dx)\left(-2\left(15a^2A-35abB-23Ab^2\right)\tan(c+dx)\sqrt{a+b\tan(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(7
/2),x]
```

```
[Out] (15*b*(-2*A*b + a*B)*Sqrt[a + b*Tan[c + d*x]] - 3*(8*a^2*A - 10*A*b^2 - 15*
a*b*B)*Sqrt[a + b*Tan[c + d*x]] - 60*b*B*(a + b*Tan[c + d*x])^(3/2) - 4*Tan
[c + d*x]*(15*(-1)^(1/4)*((-a - I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sq
rt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + (a - I*b)^(5/2
)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]])*Tan[c + d*x]^(3/2) + (22*a*A*b + 10*a^2*B - 15*b^2*B)*Sqr
```

```
t[a + b*Tan[c + d*x]] - 2*(15*a^2*A - 23*A*b^2 - 35*a*b*B)*Tan[c + d*x]*Sqr
t[a + b*Tan[c + d*x]]))/(60*d*Tan[c + d*x]^(5/2))
```

Maple [B] time = 0.939, size = 2653616, normalized size = 10743.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(7/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.448 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx$

Optimal. Leaf size=309

$$\frac{2\left(35a^2A-77abB-45Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(245a^2Ab+105a^3B-161ab^2B-15Ab^3\right)\sqrt{a+b\tan(c+dx)}}{105ad\sqrt{\tan(c+dx)}}+\frac{(-b}{}$$

```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(10*A*b + 7*a*B)*Sq
rt[a + b*Tan[c + d*x]])/(35*d*Tan[c + d*x]^(5/2)) + (2*(35*a^2*A - 45*A*b^2
 - 77*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(105*d*Tan[c + d*x]^(3/2)) + (2*(245
*a^2*A*b - 15*A*b^3 + 105*a^3*B - 161*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(1
05*a*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + b*Tan[c + d*x])^(3/2))/(7*d*Tan[c
+ d*x]^(7/2))
```

Rubi [A] time = 1.51909, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(35a^2A-77abB-45Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(245a^2Ab+105a^3B-161ab^2B-15Ab^3\right)\sqrt{a+b\tan(c+dx)}}{105ad\sqrt{\tan(c+dx)}}+\frac{(-b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9/2),x]
```



```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d + ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(10*A*b + 7*a*B)*Sq
rt[a + b*Tan[c + d*x]])/(35*d*Tan[c + d*x]^(5/2)) + (2*(35*a^2*A - 45*A*b^2
 - 77*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(105*d*Tan[c + d*x]^(3/2)) + (2*(245
*a^2*A*b - 15*A*b^3 + 105*a^3*B - 161*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(1
05*a*d*Sqrt[Tan[c + d*x]]) - (2*a*A*(a + b*Tan[c + d*x])^(3/2))/(7*d*Tan[c
+ d*x]^(7/2))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
```

```
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{9}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^{3/2}}{7d\tan^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{1}{2}a(10Ab+7\right.}{}$$

$$= -\frac{2a(10Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{7d\tan^{\frac{7}{2}}(c+dx)} +$$

$$= -\frac{2a(10Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A-45Ab^2-77abB\right)}{105d\tan^{\frac{3}{2}}(c}$$

$$= -\frac{2a(10Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A-45Ab^2-77abB\right)}{105d\tan^{\frac{3}{2}}(c}$$

$$= -\frac{2a(10Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A-45Ab^2-77abB\right)}{105d\tan^{\frac{3}{2}}(c}$$

$$= -\frac{2a(10Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A-45Ab^2-77abB\right)}{105d\tan^{\frac{3}{2}}(c}$$

$$= -\frac{2a(10Ab+7aB)\sqrt{a+b\tan(c+dx)}}{35d\tan^{\frac{5}{2}}(c+dx)} + \frac{2\left(35a^2A-45Ab^2-77abB\right)}{105d\tan^{\frac{3}{2}}(c}$$

$$= \frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{(ia+b)^{5/2}(iA+B)\tanh}{d}$$

Mathematica [A] time = 5.9971, size = 385, normalized size = 1.25

$$\frac{8\left(245a^2Ab+105a^3B-161ab^2B-15Ab^3\right)\tan^3(c+dx)\sqrt{a+b\tan(c+dx)}+8a\left(35a^2A-77abB-45Ab^2\right)\tan^2(c+dx}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(9
/2),x]
```

```
[Out] (420*(-1)^(1/4)*a*(I*(-a - I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a
 - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - (a - I*b)^(5/2)*(I*
```

```
A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]])*Tan[c + d*x]^(7/2) - 35*a*b*(4*A*b + a*B)*Sqrt[a + b*Tan[c + d
*x]] - 5*a*(24*a^2*A - 28*A*b^2 - 49*a*b*B)*Sqrt[a + b*Tan[c + d*x]] - 6*a*
(60*a*A*b + 28*a^2*B - 35*b^2*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]] + 8*
a*(35*a^2*A - 45*A*b^2 - 77*a*b*B)*Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]
+ 8*(245*a^2*A*b - 15*A*b^3 + 105*a^3*B - 161*a*b^2*B)*Tan[c + d*x]^3*Sqrt[
a + b*Tan[c + d*x]] - 210*a*b*B*(a + b*Tan[c + d*x])^(3/2))/(420*a*d*Tan[c
+ d*x]^(7/2))
```

Maple [B] time = 0.95, size = 2654465, normalized size = 8590.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(9/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.449 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx$

Optimal. Leaf size=378

$$\frac{2\left(231a^2Ab+105a^3B-135ab^2B-5Ab^3\right)\sqrt{a+b\tan(c+dx)}}{315ad\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(21a^2A-45abB-25Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105d\tan^{\frac{5}{2}}(c+dx)}-\frac{2\left(-4\right.}{}$$

```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d - ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(4*A*b + 3*a*B)*Sqr
t[a + b*Tan[c + d*x]])/(21*d*Tan[c + d*x]^(7/2)) + (2*(21*a^2*A - 25*A*b^2
- 45*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(105*d*Tan[c + d*x]^(5/2)) + (2*(231*
a^2*A*b - 5*A*b^3 + 105*a^3*B - 135*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(315
*a*d*Tan[c + d*x]^(3/2)) - (2*(315*a^4*A - 483*a^2*A*b^2 - 10*A*b^4 - 735*a
^3*b*B + 45*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(315*a^2*d*Sqrt[Tan[c + d*x]
]) - (2*a*A*(a + b*Tan[c + d*x])^(3/2))/(9*d*Tan[c + d*x]^(9/2))
```

Rubi [A] time = 1.91132, antiderivative size = 378, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(231a^2Ab+105a^3B-135ab^2B-5Ab^3\right)\sqrt{a+b\tan(c+dx)}}{315ad\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(21a^2A-45abB-25Ab^2\right)\sqrt{a+b\tan(c+dx)}}{105d\tan^{\frac{5}{2}}(c+dx)}-\frac{2\left(-4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(11/2),x
]
```


```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/d - ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(4*A*b + 3*a*B)*Sqr
t[a + b*Tan[c + d*x]])/(21*d*Tan[c + d*x]^(7/2)) + (2*(21*a^2*A - 25*A*b^2
- 45*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(105*d*Tan[c + d*x]^(5/2)) + (2*(231*
a^2*A*b - 5*A*b^3 + 105*a^3*B - 135*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(315
*a*d*Tan[c + d*x]^(3/2)) - (2*(315*a^4*A - 483*a^2*A*b^2 - 10*A*b^4 - 735*a
^3*b*B + 45*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(315*a^2*d*Sqrt[Tan[c + d*x]
]) - (2*a*A*(a + b*Tan[c + d*x])^(3/2))/(9*d*Tan[c + d*x]^(9/2))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
```

```
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{11}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^{3/2}}{9d\tan^{\frac{9}{2}}(c+dx)} + \frac{2}{9}\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{3}{2}a(4Ab+3a\right.}{}$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{9d\tan^{\frac{9}{2}}(c+dx)} +$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(21a^2A-25Ab^2-45abB\right)}{105d\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(21a^2A-25Ab^2-45abB\right)}{105d\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(21a^2A-25Ab^2-45abB\right)}{105d\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(21a^2A-25Ab^2-45abB\right)}{105d\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(21a^2A-25Ab^2-45abB\right)}{105d\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2a(4Ab+3aB)\sqrt{a+b\tan(c+dx)}}{21d\tan^{\frac{7}{2}}(c+dx)} + \frac{2\left(21a^2A-25Ab^2-45abB\right)}{105d\tan^{\frac{5}{2}}(c+}$$

$$= \frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{(ia+b)^{5/2}(A-iB)\tanh}{d}$$

Mathematica [A] time = 6.86106, size = 543, normalized size = 1.44

$$-\frac{bB(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{9}{2}}(c+dx)}+\frac{1}{3}\left(-\frac{3b(aB+2Ab)\sqrt{a+b\tan(c+dx)}}{8d\tan^{\frac{9}{2}}(c+dx)}+\frac{1}{4}\left(-\frac{\left(16a^2A-33abB-18Ab^2\right)\sqrt{a+b\tan(c+dx)}}{6d\tan^{\frac{9}{2}}(c+dx)}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(1
1/2),x]
```

```
[Out] -(b*B*(a + b*Tan[c + d*x])^(3/2))/(3*d*Tan[c + d*x]^(9/2)) + ((-3*b*(2*A*b
+ a*B)*Sqrt[a + b*Tan[c + d*x]])/(8*d*Tan[c + d*x]^(9/2)) + (-((16*a^2*A -
18*A*b^2 - 33*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(6*d*Tan[c + d*x]^(9/2)) - (
2*((6*a*(38*a*A*b + 18*a^2*B - 21*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(7*d*Tan
[c + d*x]^(7/2)) - (2*((18*a^2*(21*a^2*A - 25*A*b^2 - 45*a*b*B)*Sqrt[a + b*
Tan[c + d*x]])/(5*d*Tan[c + d*x]^(5/2)) - (2*((-3*a^2*(231*a^2*A*b - 5*A*b^
3 + 105*a^3*B - 135*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(d*Tan[c + d*x]^(3/2
)) - (2*((2835*a^4*((-1)^(1/4)*(-a - I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/
4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + (-1)^(1/4
)*(a - I*b)^(5/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]]))/(4*d) - (9*a^2*(315*a^4*A - 483*a^2*A*b^
2 - 10*A*b^4 - 735*a^3*b*B + 45*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(2*d*Sqr
t[Tan[c + d*x]])))/(3*a)))/(5*a)))/(7*a)))/(9*a))/4)/3
```

Maple [B] time = 0.967, size = 2656820, normalized size = 7028.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, algo
rithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, algo
rithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(11/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(11/2),x, algo
rithm="giac")
```

```
[Out] Timed out
```

3.450 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{13}{2}}(c+dx)}\,dx$

Optimal. Leaf size=460

$$-\frac{2\left(-1485a^2Ab^2+1155a^4A-2541a^3bB+55ab^3B-20Ab^4\right)\sqrt{a+b\tan(c+dx)}}{3465a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(495a^2Ab+231a^3B-275ab^2B-\right.}{1155ad\tan^{\frac{5}{2}}(c}$$

```
[Out] -(((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a +
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(14*A*b + 11*a*B
)*Sqrt[a + b*Tan[c + d*x]])/(99*d*Tan[c + d*x]^(9/2)) + (2*(99*a^2*A - 113*
A*b^2 - 209*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(693*d*Tan[c + d*x]^(7/2)) + (
2*(495*a^2*A*b - 5*A*b^3 + 231*a^3*B - 275*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]
])/(1155*a*d*Tan[c + d*x]^(5/2)) - (2*(1155*a^4*A - 1485*a^2*A*b^2 - 20*A*b
^4 - 2541*a^3*b*B + 55*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(3465*a^2*d*Tan[c
 + d*x]^(3/2)) - (2*(8085*a^4*A*b - 495*a^2*A*b^3 + 40*A*b^5 + 3465*a^5*B -
 5313*a^3*b^2*B - 110*a*b^4*B)*Sqrt[a + b*Tan[c + d*x]])/(3465*a^3*d*Sqrt[T
an[c + d*x]]) - (2*a*A*(a + b*Tan[c + d*x])^(3/2))/(11*d*Tan[c + d*x]^(11/2
))
```

Rubi [A] time = 2.31336, antiderivative size = 460, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2\left(-1485a^2Ab^2+1155a^4A-2541a^3bB+55ab^3B-20Ab^4\right)\sqrt{a+b\tan(c+dx)}}{3465a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{2\left(495a^2Ab+231a^3B-275ab^2B-\right.}{1155ad\tan^{\frac{5}{2}}(c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(13/2),x
]
```

```
[Out] -(((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/d) - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a +
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - (2*a*(14*A*b + 11*a*B
)*Sqrt[a + b*Tan[c + d*x]])/(99*d*Tan[c + d*x]^(9/2)) + (2*(99*a^2*A - 113*
A*b^2 - 209*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(693*d*Tan[c + d*x]^(7/2)) + (
2*(495*a^2*A*b - 5*A*b^3 + 231*a^3*B - 275*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]
```

```
])/(1155*a*d*Tan[c + d*x]^(5/2)) - (2*(1155*a^4*A - 1485*a^2*A*b^2 - 20*A*b
^4 - 2541*a^3*b*B + 55*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(3465*a^2*d*Tan[c
 + d*x]^(3/2)) - (2*(8085*a^4*A*b - 495*a^2*A*b^3 + 40*A*b^5 + 3465*a^5*B -
 5313*a^3*b^2*B - 110*a*b^4*B)*Sqrt[a + b*Tan[c + d*x]])/(3465*a^3*d*Sqrt[T
an[c + d*x]]) - (2*a*A*(a + b*Tan[c + d*x])^(3/2))/(11*d*Tan[c + d*x]^(11/2
))
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
```

```
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\tan^{\frac{13}{2}}(c+dx)}\,dx = -\frac{2aA(a+b\tan(c+dx))^{3/2}}{11d\tan^{\frac{11}{2}}(c+dx)} + \frac{2}{11}\int \frac{\sqrt{a+b\tan(c+dx)}\left(\frac{1}{2}a(14Ab+1\right.}{}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} - \frac{2aA(a+b\tan(c+dx))^{3/2}}{11d\tan^{\frac{11}{2}}(c+dx)} +$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{2a(14Ab+11aB)\sqrt{a+b\tan(c+dx)}}{99d\tan^{\frac{9}{2}}(c+dx)} + \frac{2\left(99a^2A-113Ab^2-209abl\right.}{693d\tan^{\frac{7}{2}}(c}$$

$$= -\frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{(ia+b)^{5/2}(iA+B)\tanh}{d}$$

Mathematica [A] time = 6.98556, size = 632, normalized size = 1.37

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(1
3/2),x]
```

```
[Out] -(b*B*(a + b*Tan[c + d*x])^(3/2))/(4*d*Tan[c + d*x]^(11/2)) + (-(b*(8*A*b +
 5*a*B)*Sqrt[a + b*Tan[c + d*x]])/(10*d*Tan[c + d*x]^(11/2)) + (-((80*a^2*A
 - 88*A*b^2 - 165*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(22*d*Tan[c + d*x]^(11/2
)) - (2*((5*a*(184*a*A*b + 88*a^2*B - 99*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(
18*d*Tan[c + d*x]^(9/2)) - (2*((10*a^2*(99*a^2*A - 113*A*b^2 - 209*a*b*B)*S
qrt[a + b*Tan[c + d*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*((-3*a^2*(495*a^2*A*
b - 5*A*b^3 + 231*a^3*B - 275*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(d*Tan[c +
 d*x]^(5/2)) - (2*((-5*a^2*(1155*a^4*A - 1485*a^2*A*b^2 - 20*A*b^4 - 2541*a
^3*b*B + 55*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(2*d*Tan[c + d*x]^(3/2)) - (
2*((51975*a^5*((-1)^(3/4)*(-a - I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sq
rt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - (-1)^(3/4)*(a
- I*b)^(5/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]]))/(8*d) + (15*a^2*(8085*a^4*A*b - 495*a^2*A*b^3
 + 40*A*b^5 + 3465*a^5*B - 5313*a^3*b^2*B - 110*a*b^4*B)*Sqrt[a + b*Tan[c +
 d*x]])/(4*d*Sqrt[Tan[c + d*x]])))/(3*a)))/(5*a)))/(7*a)))/(9*a)))/(11*a))/
5)/4
```

Maple [B] time = 0.959, size = 2660696, normalized size = 5784.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x, algo
rithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x, algo
rithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)**(13/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/tan(d*x+c)^(13/2),x, algo
rithm="giac")
```

```
[Out] Timed out
```

3.451 $\int \frac{(a+b\tan(c+dx))^{5/2}\left(\frac{3bB}{2a}+B\tan(c+dx)\right)}{\tan^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=253

$$-\frac{2B\left(a^2+3b^2\right)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}+\frac{2b^{5/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{B(2a-3ib)(-b+ia)^{5/2}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{2ad}-$$

```
[Out] ((I*a - b)^(5/2)*(2*a - (3*I)*b)*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]])/(2*a*d) + (2*b^(5/2)*B*ArcTanh[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((2*a + (3*I)*b)*(I*a + b)^(5/
2)*B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/
(2*a*d) - (2*(a^2 + 3*b^2)*B*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]
]) - (b*B*(a + b*Tan[c + d*x])^(3/2))/(d*Tan[c + d*x]^(3/2))
```

Rubi [A] time = 2.45648, antiderivative size = 253, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {3605, 3645, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{2B\left(a^2+3b^2\right)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}+\frac{2b^{5/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{B(2a-3ib)(-b+ia)^{5/2}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{2ad}-$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*((3*b*B)/(2*a) + B*Tan[c + d*x]))/Tan[c + d
*x]^(5/2),x]
```


```
[Out] ((I*a - b)^(5/2)*(2*a - (3*I)*b)*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]])/(2*a*d) + (2*b^(5/2)*B*ArcTanh[(Sqrt[b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/d - ((2*a + (3*I)*b)*(I*a + b)^(5/
2)*B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/
(2*a*d) - (2*(a^2 + 3*b^2)*B*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Tan[c + d*x]
]) - (b*B*(a + b*Tan[c + d*x])^(3/2))/(d*Tan[c + d*x]^(3/2))
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}\left(\frac{3bB}{2a}+B\tan(c+dx)\right)}{\tan^{\frac{5}{2}}(c+dx)}dx = -\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+\frac{2}{3}\int\frac{\sqrt{a+b\tan(c+dx)}\left(\frac{3}{2}\left(a^2+3b^2\right.\right.}{}$$

$$= -\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= -\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= -\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= -\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= -\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= -\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}-\frac{bB(a+b\tan(c+dx))^{3/2}}{d\tan^{\frac{3}{2}}(c+dx)}+$$

$$= \frac{2b^{5/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2\left(a^2+3b^2\right)B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\tan(c+dx)}}$$

$$= \frac{(ia-b)^{5/2}(2a-3ib)B\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{2ad}+\frac{2b^{5/2}B\tanh^{-1}\left(\right.}{d}$$

Mathematica [A] time = 4.19159, size = 355, normalized size = 1.4

$$\frac{B\cos(c+dx)(2a\tan(c+dx)+3b)\left(4\sqrt{a}b^{5/2}\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt{\frac{b\tan(c+dx)}{a}+1}\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*((3*b*B)/(2*a) + B*Tan[c + d*x]))/Tan
[c + d*x]^(5/2),x]
```

```
[Out] (B*Cos[c + d*x]*(3*b + 2*a*Tan[c + d*x])*(4*Sqrt[a]*b^(5/2)*ArcSinh[(Sqrt[b
]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]
+ Sqrt[1 + (b*Tan[c + d*x])/a]*((-1)^(1/4)*(-a - I*b)^(5/2)*(2*a - (3*I)*b)
*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
d*x]]]*Tan[c + d*x]^(3/2) + (-1)^(1/4)*(a - I*b)^(5/2)*(2*a + (3*I)*b)*ArcT
anh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
*Tan[c + d*x]^(3/2) - 2*a*Sqrt[a + b*Tan[c + d*x]]*(a*b + (2*a^2 + 7*b^2)*T
an[c + d*x]))))/(2*a*d*(3*b*Cos[c + d*x] + 2*a*Sin[c + d*x])*Tan[c + d*x]^(
3/2)*Sqrt[1 + (b*Tan[c + d*x])/a])
```

Maple [B] time = 0.658, size = 1490268, normalized size = 5890.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\int\frac{\left(2\,B\tan\left(dx+c\right)+\frac{3\,Bb}{a}\right)\left(b\tan\left(dx+c\right)+a\right)^{\frac{5}{2}}}{\tan\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2),
x, algorithm="maxima")
```

```
[Out] 1/2*integrate((2*B*tan(d*x + c) + 3*B*b/a)*(b*tan(d*x + c) + a)^(5/2)/tan(d
*x + c)^(5/2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2),
x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)**(5/2
),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(3/2*b*B/a+B*tan(d*x+c))/tan(d*x+c)^(5/2),
x, algorithm="giac")
```

```
[Out] Timed out
```

3.452 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=206

$$\frac{(2Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}+\frac{B\sqrt{\tan(c}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/(Sqrt[I*a - b]*d)) + ((2*A*b - a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])/(b^(3/2)*d) - ((A - I*B)*ArcTanh[(Sqrt[I*a
+ b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) + (B*
Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(b*d)
```

Rubi [A] time = 1.36837, antiderivative size = 206, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3607, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{(2Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}+\frac{B\sqrt{\tan(c}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/(Sqrt[I*a - b]*d)) + ((2*A*b - a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])/(b^(3/2)*d) - ((A - I*B)*ArcTanh[(Sqrt[I*a
+ b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) + (B*
Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(b*d)
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} + \frac{\int \frac{-\frac{aB}{2}-bB\tan(c+dx)+\frac{1}{2}(2Ab-aB)\tan^2(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx}{b}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} + \frac{\text{Subst}\left(\int \frac{-\frac{aB}{2}-bBx+\frac{1}{2}(2Ab-aB)x^2}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(\cdots}{bd}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} + \frac{\text{Subst}\left(\int \left(\frac{2Ab-aB}{2\sqrt{x}\sqrt{a+bx}} - \frac{Ab+bBx}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\right) dx \cdots}{bd}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} - \frac{\text{Subst}\left(\int \frac{Ab+bBx}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx \cdots}{bd}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} - \frac{\text{Subst}\left(\int \left(\frac{iAb-bB}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{iAb+bB}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right) \cdots}{bd}$$

$$= \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} - \frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan \cdots}{2d}$$

$$= \frac{(2Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d} + \frac{B\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}{bd} - \frac{(iA \cdots}{\cdots}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} + \frac{(2Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d} - \frac{(A \cdots}{\cdots}$$

Mathematica [A] time = 2.34423, size = 245, normalized size = 1.19

$$\frac{\frac{(-1)^{3/4}b(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}+\frac{\sqrt[4]{-1}b(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}+\frac{\sqrt{a}(2Ab-aB)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}}+B}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]
],x]
```

```
[Out] (((-1)^(3/4)*b*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + ((-1)^(1/4)*b*(I*A + B)*Ar
cTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]
]])/Sqrt[a - I*b] + B*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + (Sqrt[a
]*(2*A*b - a*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*T
an[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]]))/(b*d)
```

Maple [B] time = 0.885, size = 1888526, normalized size = 9167.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^{\frac{3}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^(3/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.453 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=168

$$\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/(Sqrt[I*a - b]*d) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/(Sqrt[b]*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan
[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.608069, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3614, 3616, 3615, 93, 203, 206, 3634, 63, 217}

$$\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/(Sqrt[I*a - b]*d) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/(Sqrt[b]*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan
[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rule 3614

```
Int[(Sqrt[(a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]]*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/Sqrt[(c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol] :> In
t[Simp[a*A - b*B + (A*b + a*B)*Tan[e + f*x], x]/(Sqrt[a + b*Tan[e + f*x]]*S
qrt[c + d*Tan[e + f*x]]), x] + Dist[b*B, Int[(1 + Tan[e + f*x]^2)/(Sqrt[a +
 b*Tan[e + f*x]]*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
 f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0
]
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = B\int \frac{1+\tan^2(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx + \int \frac{-B+A\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+}}$$

$$= \frac{1}{2}(-iA-B)\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(iA-B)\int \frac{1}{\sqrt{\tan(c}}$$

$$= \frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{(1+ix)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+bx^2}}\right.}{d}$$

$$= \frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{1-(-ia+b)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-bx^2}\,dx,\right.}{d}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-bd}} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{bd}} - \frac{(iA+B)\tan}{}$$

Mathematica [A] time = 1.35914, size = 208, normalized size = 1.24

$$\frac{\frac{\sqrt[4]{-1}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\sqrt[4]{-1}(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}} + \frac{2\sqrt{a}B\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]
],x]
```

```
[Out] (((-1)^(1/4)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]
])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((-1)^(1/4)*(A - I*B)*ArcTan
```

```
h[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/
Sqrt[a - I*b] + (2*Sqrt[a]*B*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*
Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]]))/d
```

Maple [B] time = 0.864, size = 1885958, normalized size = 11225.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\tan(dx+c)}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(tan(d*x + c))/sqrt(b*tan(d*x + c) + a),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{\tan(c + dx)}}{\sqrt{a + b\tan(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/sqrt(a + b*tan(c + d*x)),
x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.454 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=123

$$\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/(Sqrt[I*a - b]*d) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x
]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.369305, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3616, 3615, 93, 203, 206}

$$\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]),x]
```

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/(Sqrt[I*a - b]*d) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x
]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
```

```
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx &= \frac{1}{2}(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx+\frac{1}{2}(A+iB)\int \frac{1-}{\sqrt{\tan(c+}}\\ &= \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{(1-ix)\sqrt{x}\sqrt{a+bx}}\,dx,x,\tan(c+dx)\right)}{2d}+\frac{(A+iB)\,\mathrm{Subst}\left(\int \frac{}{(1+ix}\right.}{}\\ &= \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{1}{1-(ia+b)x^2}\,dx,x,\frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(A+iB)\,\mathrm{Subst}\left(\int \frac{1}{1-(-ia+}\right.}{d}\\ &= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}d}\end{aligned}$$

Mathematica [A] time = 0.223972, size = 137, normalized size = 1.11

$$\frac{\sqrt[4]{-1}\left(\frac{(B-iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]
),x]
```

```
[Out] ((-1)^(1/4)*((((-I)*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((I*A + B)*ArcTanh[((-1)
^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a
- I*b]))/d
```

Maple [B] time = 0.875, size = 1878820, normalized size = 15275.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{b\tan(dx+c)+a}\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*sqrt(tan(d*x + c))
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan{(c + dx)}}{\sqrt{a + b\tan{(c + dx)}}\sqrt{\tan{(c + dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(sqrt(a + b*tan(c + d*x))*sqrt(tan(c + d*x)))
, x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.455 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=159

$$-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}-\frac{2A\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}}$$

```
[Out] -((((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/(Sqrt[I*a - b]*d)) + ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[a + b*Tan[c
 + d*x]])/(a*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.534663, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {3609, 3616, 3615, 93, 203, 206}

$$-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}-\frac{2A\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]),x]
```


```
[Out] -((((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/(Sqrt[I*a - b]*d)) + ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[a + b*Tan[c
 + d*x]])/(a*d*Sqrt[Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
```

```
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{2\int \frac{-\frac{aB}{2}+\frac{1}{2}aA\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx}{a}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{1}{2}(-iA-B)\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{(1+ix)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{1-(-ia+b)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} +$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}\,d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}\,d} - \frac{2A\sqrt{a}}{ad}$$

Mathematica [A] time = 0.443979, size = 172, normalized size = 1.08

$$\frac{-\frac{\sqrt[4]{-1}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{\sqrt[4]{-1}(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}} - \frac{2A\sqrt{a+b\tan(c+dx)}}{a\sqrt{\tan(c+dx)}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]
),x]
```

```
[Out] (-(((-1)^(1/4)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b]) + ((-1)^(1/4)*(A - I*B)*Arc
Tanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]
])/Sqrt[a - I*b] - (2*A*Sqrt[a + b*Tan[c + d*x]])/(a*Sqrt[Tan[c + d*x]]))/d
```

Maple [B] time = 0.862, size = 1886236, normalized size = 11863.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{b\tan(dx+c)+a}\tan(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^(3/2)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A+B\tan(c+dx)}{\sqrt{a+b\tan(c+dx)}\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2)/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(sqrt(a + b*tan(c + d*x))*tan(c + d*x)**(3/2)
), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(3/2),x, algor
ithm="giac")

[Out] Exception raised: TypeError
```

3.456 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=203

$$\frac{2(2Ab-3aB)\sqrt{a+b\tan(c+dx)}}{3a^2d\sqrt{\tan(c+dx)}}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}-\frac{2A\sqrt{a+b}}{3ad\tan}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/(Sqrt[I*a - b]*d)) - ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[a + b*Tan[c
 + d*x]])/(3*a*d*Tan[c + d*x]^(3/2)) + (2*(2*A*b - 3*a*B)*Sqrt[a + b*Tan[c
+ d*x]])/(3*a^2*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.741704, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2(2Ab-3aB)\sqrt{a+b\tan(c+dx)}}{3a^2d\sqrt{\tan(c+dx)}}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}-\frac{2A\sqrt{a+b}}{3ad\tan}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]]),x]
```

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/(Sqrt[I*a - b]*d)) - ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[a + b*Tan[c
 + d*x]])/(3*a*d*Tan[c + d*x]^(3/2)) + (2*(2*A*b - 3*a*B)*Sqrt[a + b*Tan[c
+ d*x]])/(3*a^2*d*Sqrt[Tan[c + d*x]])
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
```

```
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} - \frac{2\int \frac{\frac{1}{2}(2Ab-3aB)+\frac{3}{2}aA\tan(c+dx)+Ab\tan^2(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx}{3a}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(2Ab-3aB)\sqrt{a+b\tan(c+dx)}}{3a^2d\sqrt{\tan(c+dx)}} + \frac{4\int \frac{-\frac{3a^2A}{4}-\frac{3}{4}a}{\sqrt{\tan(c+dx)}}}{3}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(2Ab-3aB)\sqrt{a+b\tan(c+dx)}}{3a^2d\sqrt{\tan(c+dx)}} + \frac{1}{2}(-A-iB)\int$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(2Ab-3aB)\sqrt{a+b\tan(c+dx)}}{3a^2d\sqrt{\tan(c+dx)}} - \frac{(A-iB)\,\mathrm{Subs}}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{3ad\tan^{\frac{3}{2}}(c+dx)} + \frac{2(2Ab-3aB)\sqrt{a+b\tan(c+dx)}}{3a^2d\sqrt{\tan(c+dx)}} - \frac{(A-iB)\,\mathrm{Subs}}{}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}\,d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}\,d} - \frac{2A\sqrt{}}{3a}$$

Mathematica [A] time = 1.74448, size = 195, normalized size = 0.96

$$\frac{-\frac{2\sqrt{a+b\tan(c+dx)}((3aB-2Ab)\tan(c+dx)+aA)}{a^2\tan^{\frac{3}{2}}(c+dx)}+\frac{3(-1)^{3/4}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}+\frac{3\sqrt[4]{-1}(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]]
),x]
```

```
[Out] ((3*(-1)^(3/4)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + (3*(-1)^(1/4)*(I*A + B)*Ar
cTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]
]])/Sqrt[a - I*b] - (2*Sqrt[a + b*Tan[c + d*x]]*(a*A + (-2*A*b + 3*a*B)*Tan
[c + d*x]))/(a^2*Tan[c + d*x]^(3/2)))/(3*d)
```

Maple [B] time = 0.882, size = 1888895, normalized size = 9304.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(dx+c\right)+A}{\sqrt{b\tan\left(dx+c\right)+a}\tan\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^(5/2)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2)/tan(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(5/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.457 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=256

$$\frac{2\left(15a^2A+10abB-8Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15a^3d\sqrt{\tan(c+dx)}}+\frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/(Sqrt[I*a - b]*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x
]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[a + b*Tan[c +
d*x]])/(5*a*d*Tan[c + d*x]^(5/2)) + (2*(4*A*b - 5*a*B)*Sqrt[a + b*Tan[c + d
*x]])/(15*a^2*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A - 8*A*b^2 + 10*a*b*B)*Sq
rt[a + b*Tan[c + d*x]])/(15*a^3*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 1.06206, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A+10abB-8Ab^2\right)\sqrt{a+b\tan(c+dx)}}{15a^3d\sqrt{\tan(c+dx)}}+\frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)}+\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]]),x]
```

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/(Sqrt[I*a - b]*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x
]])/Sqrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[a + b*Tan[c +
d*x]])/(5*a*d*Tan[c + d*x]^(5/2)) + (2*(4*A*b - 5*a*B)*Sqrt[a + b*Tan[c + d
*x]])/(15*a^2*d*Tan[c + d*x]^(3/2)) + (2*(15*a^2*A - 8*A*b^2 + 10*a*b*B)*Sq
rt[a + b*Tan[c + d*x]])/(15*a^3*d*Sqrt[Tan[c + d*x]])
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
```

```
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx = -\frac{2A\sqrt{a+b\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} - \frac{2\int \frac{\frac{1}{2}(4Ab-5aB)+\frac{5}{2}aA\tan(c+dx)+2Ab\tan^2(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx}{5a}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{4\int \frac{1}{4}\left(-15a^2A+8A\right.}{}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-8Ab\right.}{15}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-8Ab\right.}{15}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-8Ab\right.}{15}$$

$$= -\frac{2A\sqrt{a+b\tan(c+dx)}}{5ad\tan^{\frac{5}{2}}(c+dx)} + \frac{2(4Ab-5aB)\sqrt{a+b\tan(c+dx)}}{15a^2d\tan^{\frac{3}{2}}(c+dx)} + \frac{2\left(15a^2A-8Ab\right.}{15}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}\,d} - \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}\,d} - \frac{2A\sqrt{a}}{5ad\,\mathrm{t}}$$

Mathematica [A] time = 5.44007, size = 227, normalized size = 0.89

$$\frac{\frac{2\sqrt{a+b\tan(c+dx)}\left(\left(15a^2A+10abB-8Ab^2\right)\tan^2(c+dx)-3a^2A-a(5aB-4Ab)\tan(c+dx)\right)}{a^3\tan^{\frac{5}{2}}(c+dx)}+\frac{15\sqrt[4]{-1}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}-\frac{15\sqrt[4]{-1}(A-iB)\,\text{ta}}{}}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]]
),x]
```

```
[Out] ((15*(-1)^(1/4)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - (15*(-1)^(1/4)*(A - I*B)*
ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]])/Sqrt[a - I*b] + (2*Sqrt[a + b*Tan[c + d*x]]*(-3*a^2*A - a*(-4*A*b + 5
*a*B)*Tan[c + d*x] + (15*a^2*A - 8*A*b^2 + 10*a*b*B)*Tan[c + d*x]^2))/(a^3*
Tan[c + d*x]^(5/2)))/(15*d)
```

Maple [B] time = 0.853, size = 1890924, normalized size = 7386.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2)/tan(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2)/tan(d*x+c)^(7/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.458 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=219

$$\frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{bd\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}+\frac{2B\tanh^{-1}}{}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(3/2)*d)) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqr
t[a + b*Tan[c + d*x]]])/(b^(3/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) + (2*a*(A*b
 - a*B)*Sqrt[Tan[c + d*x]])/(b*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.76962, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {3605, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{bd\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}+\frac{2B\tanh^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(3/2)*d)) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqr
t[a + b*Tan[c + d*x]]])/(b^(3/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) + (2*a*(A*b
 - a*B)*Sqrt[Tan[c + d*x]])/(b*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
```

```
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
```

```
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\int \frac{-\frac{1}{2}a(Ab-aB)+\frac{1}{2}b(Ab-aB)\tan(c+dx)+\frac{1}{2}\left(a^2+b^2\right)B\tan}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}}{b\left(a^2+b^2\right)}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int \frac{-\frac{1}{2}a(Ab-aB)+\frac{1}{2}b(Ab-aB)x+\frac{1}{2}\left(a^2+b^2\right)Bx}{\sqrt{x}\sqrt{a+bx}\left(1+x^2\right)}\right.}{b\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\,\mathrm{Subst}\left(\int \left(\frac{\left(a^2+b^2\right)B}{2\sqrt{x}\sqrt{a+bx}} - \frac{b(aA+bB)-b(Ab-aB)x}{2\sqrt{x}\sqrt{a+bx}\left(1+x^2\right)}\right)\right.}{b\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{\mathrm{Subst}\left(\int \frac{b(aA+bB)-b(Ab-aB)x}{\sqrt{x}\sqrt{a+bx}\left(1+x^2\right)}\,dx, x, \tan(c+d\right.}{b\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{\mathrm{Subst}\left(\int \left(\frac{b(Ab-aB)+ib(aA+bB)}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{-b(Ab-aB)+ib(a}{2\sqrt{x}(i+x)\sqrt{a}}\right.\right.}{b\left(a^2+b^2\right)d}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{((ia+b)(A+iB))\,\mathrm{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx,\right.}{2\left(a^2+b^2\right)d}$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d} + \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{b\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} - \frac{((ia+b)(A+}{}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{3/2}d} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d} - \frac{(iA+B)\tan}{(}$$

Mathematica [C] time = 39.9383, size = 177751, normalized size = 811.65

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3
/2),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 1.622, size = 1561442, normalized size = 7129.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.459 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=170

$$-\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(3/2)*d)) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) - (2*(A*b - a*B)*Sq
rt[Tan[c + d*x]])/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.604569, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {3608, 3616, 3615, 93, 203, 206}

$$-\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(3/2)*d)) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) - (2*(A*b - a*B)*Sq
rt[Tan[c + d*x]])/((a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
```

```
[2*m, 2*n])
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} - \frac{2\int \frac{-\frac{1}{2}b(Ab-aB)-\frac{1}{2}b(aA+bB)\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx}{b\left(a^2+b^2\right)}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{((ia+b)(A+iB))\int \frac{1-i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}}{2\left(a^2+b^2\right)}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{((ia+b)(A+iB))\,\mathrm{Subst}\left(\int \frac{1}{(1+ix)\sqrt{x}\sqrt{a+bx}}\right.}{2\left(a^2+b^2\right)d}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{(a^2+b^2)\,d\sqrt{a+b\tan(c+dx)}} + \frac{((ia+b)(A+iB))\,\mathrm{Subst}\left(\int \frac{1}{1-(-ia+b)x^2}\,dx\right.}{\left(a^2+b^2\right)d}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{3/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{3/2}d} - \frac{2}{(a^2}$$

Mathematica [A] time = 1.49406, size = 239, normalized size = 1.41

$$\frac{\frac{2b(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{a+b\tan(c+dx)}} + 2(aB-Ab)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} + \frac{\sqrt[4]{-1}a(a-ib)(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\sqrt[4]{-1}a(a+ib)}{}}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3
/2),x]
```

```
[Out] (((-1)^(1/4)*a*(a - I*b)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((-1)^(1/4)*a*(a
 + I*b)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqr
t[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (2*b*(A*b - a*B)*Tan[c + d*x]^(3/2)
)/Sqrt[a + b*Tan[c + d*x]] + 2*(-(A*b) + a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b
*Tan[c + d*x]])/(a*(a^2 + b^2)*d)
```

Maple [B] time = 1.724, size = 1559497, normalized size = 9173.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\tan(dx+c)}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(tan(d*x + c))/(b*tan(d*x + c) + a)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))\sqrt{\tan(c+dx)}}{(a+b\tan(c+dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(tan(c + d*x))/(a + b*tan(c + d*x))**(3/2
), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.460 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=175

$$\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(3/2)*d) + ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) + (2*b*(A*b - a*B)*Sqr
t[Tan[c + d*x]])/(a*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.577696, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {3609, 3616, 3615, 93, 203, 206}

$$\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{ad\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)),x]
```

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(3/2)*d) + ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) + (2*b*(A*b - a*B)*Sqr
t[Tan[c + d*x]])/(a*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
```

```
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx = \frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{2\int \frac{\frac{1}{2}a(aA+bB)-\frac{1}{2}a(Ab-aB)\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}dx}{a\left(a^2+b^2\right)}$$

$$= \frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}dx}{2(a-ib)} + \text{—}$$

$$= \frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\,\text{Subst}\left(\int \frac{1}{(1-ix)\sqrt{x}\sqrt{a+bx}}dx, x, \tan\right.}{2(a-ib)d}$$

$$= \frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{a\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}} + \frac{(A-iB)\,\text{Subst}\left(\int \frac{1}{1-(ia+b)x^2}dx, x, \frac{\sqrt{\tan(c}}{\sqrt{a+b\tan}}\right.}{(a-ib)d}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{3/2}d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{3/2}d} + \frac{2b}{a\left(a^2\right.}$$

Mathematica [A] time = 0.762893, size = 202, normalized size = 1.15

$$\frac{\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{a\sqrt{a+b\tan(c+dx)}} + \frac{\sqrt[4]{-1}(a-ib)(B-iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{\sqrt[4]{-1}(b-ia)(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/
2)),x]
```

```
[Out] (((-1)^(1/4)*(a - I*b)*((-I)*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt
[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + ((-1)^(1/4)*((-
I)*a + b)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/S
qrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (2*b*(A*b - a*B)*Sqrt[Tan[c + d*x
]])/(a*Sqrt[a + b*Tan[c + d*x]]))/((a^2 + b^2)*d)
```

Maple [B] time = 1.633, size = 1559531, normalized size = 8911.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(3/2)*sqrt(tan(d*x + c
))), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{\frac{3}{2}}\sqrt{\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/((a + b*tan(c + d*x))**(3/2)*sqrt(tan(c + d*x
))), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.461 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{2b\left(a^2A-abB+2Ab^2\right)\sqrt{\tan(c+dx)}}{a^2d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}-\frac{}{ad\sqrt{}}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(3/2)*d) - ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) - (2*A)/(a*d*Sqrt[Tan[
c + d*x]]*Sqrt[a + b*Tan[c + d*x]]) - (2*b*(a^2*A + 2*A*b^2 - a*b*B)*Sqrt[T
an[c + d*x]])/(a^2*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.847469, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2b\left(a^2A-abB+2Ab^2\right)\sqrt{\tan(c+dx)}}{a^2d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(b+ia)^{3/2}}-\frac{}{ad\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)),x]
```


```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(3/2)*d) - ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) - (2*A)/(a*d*Sqrt[Tan[
c + d*x]]*Sqrt[a + b*Tan[c + d*x]]) - (2*b*(a^2*A + 2*A*b^2 - a*b*B)*Sqrt[T
an[c + d*x]])/(a^2*(a^2 + b^2)*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
```

```
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{2A}{ad\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2\int \frac{\frac{1}{2}(2Ab-aB)+\frac{1}{2}aA\tan(c+dx)+Ab\tan^2(c+}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}}{a}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2b\left(a^2A+2Ab^2-abB\right)\sqrt{\tan(c+d}}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2b\left(a^2A+2Ab^2-abB\right)\sqrt{\tan(c+d}}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2b\left(a^2A+2Ab^2-abB\right)\sqrt{\tan(c+d}}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2b\left(a^2A+2Ab^2-abB\right)\sqrt{\tan(c+d}}{a^2\left(a^2+b^2\right)d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{3/2}d} - \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{3/2}d} - \frac{}{ad\sqrt{}}$$

Mathematica [A] time = 2.70287, size = 249, normalized size = 1.15

$$-\frac{\frac{2b\left(a^2A-abB+2Ab^2\right)\sqrt{\tan(c+dx)}}{a^2\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} + \frac{\sqrt[4]{-1}\left(\frac{(a-ib)(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{(a+ib)(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{a^2+b^2} + \frac{2A}{a\sqrt{\tan(c+dx)}\sqrt{a+b\tan}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/
2)),x]
```

```
[Out] -((((-1)^(1/4)*(((a - I*b)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((a + I*b)*(A
- I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]])/Sqrt[a - I*b]))/(a^2 + b^2) + (2*A)/(a*Sqrt[Tan[c + d*x]]*Sqrt
[a + b*Tan[c + d*x]]) + (2*b*(a^2*A + 2*A*b^2 - a*b*B)*Sqrt[Tan[c + d*x]])/
(a^2*(a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]]))/d)
```

Maple [B] time = 1.599, size = 1560429, normalized size = 7224.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.462 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=276

$$\frac{2b\left(5a^2Ab-3a^3B-6ab^2B+8Ab^3\right)\sqrt{\tan(c+dx)}}{3a^3d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan}}{\sqrt{a+b\tan}}\right.}{d(-b+ia)^{3/2}}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(3/2)*d)) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) - (2*A)/(3*a*d*Tan[
c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]) + (2*(4*A*b - 3*a*B))/(3*a^2*d*Sqr
t[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]) + (2*b*(5*a^2*A*b + 8*A*b^3 - 3*a
^3*B - 6*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a^3*(a^2 + b^2)*d*Sqrt[a + b*Tan[c
 + d*x]])
```

Rubi [A] time = 1.15973, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2b\left(5a^2Ab-3a^3B-6ab^2B+8Ab^3\right)\sqrt{\tan(c+dx)}}{3a^3d\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan}}{\sqrt{a+b\tan}}\right.}{d(-b+ia)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(3/2)),x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(3/2)*d)) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(3/2)*d) - (2*A)/(3*a*d*Tan[
c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]) + (2*(4*A*b - 3*a*B))/(3*a^2*d*Sqr
t[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]) + (2*b*(5*a^2*A*b + 8*A*b^3 - 3*a
^3*B - 6*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a^3*(a^2 + b^2)*d*Sqrt[a + b*Tan[c
 + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
```

```
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx = -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}} - \frac{2\int \frac{\frac{1}{2}(4Ab-3aB)+\frac{3}{2}aA\tan(c+dx)+2Ab\tan^2(}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}}{3a}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)}{3a^2d\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+d}}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{3/2}d} - \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{3/2}d} - \frac{}{3ad}$$

Mathematica [A] time = 2.76339, size = 299, normalized size = 1.08

$$\frac{\frac{2b\left(5a^2Ab-3a^3B-6ab^2B+8Ab^3\right)\sqrt{\tan(c+dx)}}{a^2\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{3\sqrt[4]{-1}a\left(\frac{(b+ia)(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}+\frac{(a+ib)(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{a^2+b^2}+\frac{8}{a\sqrt{\tan(c+}}}{3ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(3/
2)),x]
```

```
[Out] ((3*(-1)^(1/4)*a*(((I*a + b)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + ((a + I*b)*(
I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*T
an[c + d*x]]])/Sqrt[a - I*b]))/(a^2 + b^2) - (2*A)/(Tan[c + d*x]^(3/2)*Sqrt
[a + b*Tan[c + d*x]]) + (8*A*b - 6*a*B)/(a*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Ta
n[c + d*x]]) + (2*b*(5*a^2*A*b + 8*A*b^3 - 3*a^3*B - 6*a*b^2*B)*Sqrt[Tan[c
+ d*x]])/(a^2*(a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]]))/(3*a*d)
```

Maple [B] time = 1.656, size = 1562498, normalized size = 5661.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.463 $\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=282

$$\frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)\sqrt{\tan(c+dx)}}{b^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{5/2}}-$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/(b^(5/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) + (2*a*(A*b -
a*B)*Tan[c + d*x]^(3/2))/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (
2*a*(2*A*b^3 - a*(a^2 + 3*b^2)*B)*Sqrt[Tan[c + d*x]])/(b^2*(a^2 + b^2)^2*d*
Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 2.47811, antiderivative size = 282, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3605, 3645, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)\sqrt{\tan(c+dx)}}{b^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{5/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/(b^(5/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) + (2*a*(A*b -
a*B)*Tan[c + d*x]^(3/2))/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (
2*a*(2*A*b^3 - a*(a^2 + 3*b^2)*B)*Sqrt[Tan[c + d*x]])/(b^2*(a^2 + b^2)^2*d*
Sqrt[a + b*Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\int \frac{\sqrt{\tan(c+dx)}\left(-\frac{3}{2}a(Ab-aB)+\frac{3}{2}b(Ab-aB)\tan(c+}{(a+b\tan(c+dx))^{3/2}}}{3b\left(a^2+b^2\right)}$$

$$= \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\sqrt{\tan(c+dx}}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\sqrt{\tan(c+dx}}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\sqrt{\tan(c+dx}}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\sqrt{\tan(c+dx}}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\sqrt{\tan(c+dx}}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\left(a^2+3b^2\right)B\right)\sqrt{\tan(c+dx}}{b^2\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{5/2}d} + \frac{2a(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-\right.}{b^2\left(a^2\right.}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}(a+ib)^2 d} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{5/2}d} - \frac{(iA+B)\tan}{(}$$

Mathematica [C] time = 41.4532, size = 265550, normalized size = 941.67

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Tan[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5
/2),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 2.164, size = 2978162, normalized size = 10560.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^{\frac{5}{2}}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^(5/2)/(b*tan(d*x + c) + a)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.464 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=244

$$\frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2\left(2a^2Ab+a^3B+7ab^2B-4Ab^3\right)\sqrt{\tan(c+dx)}}{3bd\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+d}}{\sqrt{a+b\tan(c+dx}}\right.}{d(-b+ia)^{5/2}}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) + (2*a*(A*b - a*B)*Sqr
t[Tan[c + d*x]])/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*(2*a^2
*A*b - 4*A*b^3 + a^3*B + 7*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*b*(a^2 + b^2)^2*
d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.989244, antiderivative size = 244, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3bd\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2\left(2a^2Ab+a^3B+7ab^2B-4Ab^3\right)\sqrt{\tan(c+dx)}}{3bd\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+d}}{\sqrt{a+b\tan(c+dx}}\right.}{d(-b+ia)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) + (2*a*(A*b - a*B)*Sqr
t[Tan[c + d*x]])/(3*b*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*(2*a^2
*A*b - 4*A*b^3 + a^3*B + 7*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*b*(a^2 + b^2)^2*
d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
```

```
Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\int \frac{-\frac{1}{2}a(Ab-aB)+\frac{3}{2}b(Ab-aB)\tan(c+dx)+\frac{1}{2}\left(2aA\right.}{\sqrt{\tan(c+dx)}(a+b\tan(c+d}}{3b\left(a^2+b^2\right)}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3+a^3B+7ab^2B\right)\sqrt{\mathrm{ta}}}{3b\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+d}}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3+a^3B+7ab^2B\right)\sqrt{\mathrm{ta}}}{3b\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+d}}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3+a^3B+7ab^2B\right)\sqrt{\mathrm{ta}}}{3b\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+d}}$$

$$= \frac{2a(Ab-aB)\sqrt{\tan(c+dx)}}{3b\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3+a^3B+7ab^2B\right)\sqrt{\mathrm{ta}}}{3b\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+d}}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{5/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{5/2}d} + \frac{2}{3b\left(a\right.}$$

Mathematica [A] time = 2.84999, size = 308, normalized size = 1.26

$$\frac{\frac{\left(a^2B+2aAb+3b^2B\right)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{\frac{2\left(2a^2Ab+a^3B+7ab^2B-4Ab^3\right)\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}+3\sqrt[4]{-1}b\left(\frac{i(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}+\frac{(a+ib)^2(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\mathrm{t}\cdots}}{\sqrt{a+b\tan\cdots}}\right)}{\sqrt{a-ib}}\cdots\right.}{\left(a^2+b^2\right)^2}\cdots}{3bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5
/2),x]
```

```
[Out] ((-3*B*Sqrt[Tan[c + d*x]])/(a + b*Tan[c + d*x])^(3/2) + ((2*a*A*b + a^2*B +
 3*b^2*B)*Sqrt[Tan[c + d*x]])/((a^2 + b^2)*(a + b*Tan[c + d*x])^(3/2)) + (3
*(-1)^(1/4)*b*((I*(a - I*b)^2*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + ((a + I*b)^
2*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]])/Sqrt[a - I*b]) + (2*(2*a^2*A*b - 4*A*b^3 + a^3*B + 7*a*b^
2*B)*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]])/(a^2 + b^2)^2)/(3*b*d)
```

Maple [B] time = 2.301, size = 2976654, normalized size = 12199.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.465 $\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=244

$$-\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{2\left(5a^2Ab-2a^3B+4ab^2B-Ab^3\right)\sqrt{\tan(c+dx)}}{3ad\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+d}}{\sqrt{a+b\tan(c+dx)}}\right.}{d(-b+ia)^{5/2}}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(5/2)*d)) + ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) - (2*(A*b - a*B)*Sq
rt[Tan[c + d*x]])/(3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) - (2*(5*a^2*
A*b - A*b^3 - 2*a^3*B + 4*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a*(a^2 + b^2)^2*d
*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.00876, antiderivative size = 244, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3608, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}-\frac{2\left(5a^2Ab-2a^3B+4ab^2B-Ab^3\right)\sqrt{\tan(c+dx)}}{3ad\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+d}}{\sqrt{a+b\tan(c+dx)}}\right.}{d(-b+ia)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(5/2)*d)) + ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) - (2*(A*b - a*B)*Sq
rt[Tan[c + d*x]])/(3*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) - (2*(5*a^2*
A*b - A*b^3 - 2*a^3*B + 4*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a*(a^2 + b^2)^2*d
*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
```

```
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\int \frac{-\frac{1}{2}b(Ab-aB)-\frac{3}{2}b(aA+bB)\tan(c+dx)+b(Ab-a}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}}{3b\left(a^2+b^2\right)}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3-2a^3B+4ab^2B\right)\sqrt{\tan}}{3a\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx}}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3-2a^3B+4ab^2B\right)\sqrt{\tan}}{3a\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx}}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3-2a^3B+4ab^2B\right)\sqrt{\tan}}{3a\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx}}$$

$$= -\frac{2(Ab-aB)\sqrt{\tan(c+dx)}}{3\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3-2a^3B+4ab^2B\right)\sqrt{\tan}}{3a\left(a^2+b^2\right)^2 d\sqrt{a+b\tan(c+dx}}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}(a+ib)^2 d} + \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{5/2}d} - \frac{2}{3\left(a^2\right.}$$

Mathematica [A] time = 3.25869, size = 320, normalized size = 1.31

$$\frac{\frac{6b\left(a^2(-B)+2aAb+b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} + \frac{3\left(2\left(a^2B-2aAb-b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} + \frac{\sqrt[4]{-1}a(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\sqrt[4]{-1}a(a+ib)^2(A-iB)}{}\right.}{a^2+b^2}}{3ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5
/2),x]
```

```
[Out] ((2*b*(A*b - a*B)*Tan[c + d*x]^(3/2))/(a + b*Tan[c + d*x])^(3/2) + (6*b*(2*
a*A*b - a^2*B + b^2*B)*Tan[c + d*x]^(3/2))/((a^2 + b^2)*Sqrt[a + b*Tan[c +
d*x]]) + (3*(((-1)^(1/4)*a*(a - I*b)^2*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-
a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((
-1)^(1/4)*a*(a + I*b)^2*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + 2*(-2*a*A*b + a^2*B
 - b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]))/(a^2 + b^2))/(3*a*(
a^2 + b^2)*d)
```

Maple [B] time = 2.2, size = 2976700, normalized size = 12199.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\tan(dx+c)}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(tan(d*x + c))/(b*tan(d*x + c) + a)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.466 $\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=247

$$\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab-5a^3B+ab^2B+2Ab^3\right)\sqrt{\tan(c+dx)}}{3a^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+}}{\sqrt{a+b\tan(c+d}}\right.}{d(-b+ia)^{5/2}}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(5/2)*d)) - ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) + (2*b*(A*b - a*B)*
Sqrt[Tan[c + d*x]])/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(
8*a^2*A*b + 2*A*b^3 - 5*a^3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a^2*(a^2 +
b^2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.927366, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3ad\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab-5a^3B+ab^2B+2Ab^3\right)\sqrt{\tan(c+dx)}}{3a^2d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+}}{\sqrt{a+b\tan(c+d}}\right.}{d(-b+ia)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(5/2)),x]
```



```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/((I*a - b)^(5/2)*d)) - ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c
+ d*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) + (2*b*(A*b - a*B)*
Sqrt[Tan[c + d*x]])/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(
8*a^2*A*b + 2*A*b^3 - 5*a^3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a^2*(a^2 +
b^2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
```

```
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
&& LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}}\,dx = \frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}}+\frac{2\int\frac{\frac{1}{2}\left(3a^2A+2Ab^2+abB\right)-\frac{3}{2}a(Ab-aB)\tan(c+d}{\sqrt{\tan(c+dx)}(a+b\tan(c+}}{3a\left(a^2+b^2\right)}$$

$$=\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab+2Ab^3-5a^3B+ab^2B\right)\sqrt{}}{3a^2\left(a^2+b^2\right)^2d\sqrt{a+b\tan(c}}$$

$$=\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab+2Ab^3-5a^3B+ab^2B\right)\sqrt{}}{3a^2\left(a^2+b^2\right)^2d\sqrt{a+b\tan(c}}$$

$$=\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab+2Ab^3-5a^3B+ab^2B\right)\sqrt{}}{3a^2\left(a^2+b^2\right)^2d\sqrt{a+b\tan(c}}$$

$$=\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab+2Ab^3-5a^3B+ab^2B\right)\sqrt{}}{3a^2\left(a^2+b^2\right)^2d\sqrt{a+b\tan(c}}$$

$$=-\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{5/2}d}-\frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{5/2}d}+\frac{}{3}$$

Mathematica [A] time = 2.46293, size = 273, normalized size = 1.11

$$\frac{\frac{2b(a^2+b^2)(Ab-aB)\sqrt{\tan(c+dx)}}{a(a+b\tan(c+dx))^{3/2}} + \frac{2b(8a^2Ab-5a^3B+ab^2B+2Ab^3)\sqrt{\tan(c+dx)}}{a^2\sqrt{a+b\tan(c+dx)}} - 3\sqrt[4]{-1}\left(\frac{i(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{(a+ib)^2(B+iA)\,\mathrm{ta}\cdots}{\cdots}\right.}{3d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(5/
2)),x]
```

```
[Out] (-3*(-1)^(1/4)*((I*(a - I*b)^2*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + ((a + I*b)
^2*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/Sqrt[a - I*b]) + (2*b*(a^2 + b^2)*(A*b - a*B)*Sqrt[Tan[c
 + d*x]])/(a*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(8*a^2*A*b + 2*A*b^3 - 5*a^
3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(a^2*Sqrt[a + b*Tan[c + d*x]]))/(3*(a^2
+ b^2)^2*d)
```

Maple [B] time = 2.143, size = 2975233, normalized size = 12045.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*sqrt(tan(d*x + c
))), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.467 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=301

$$-\frac{2b\left(17a^2Ab^2+3a^4A-8a^3bB-2ab^3B+8Ab^4\right)\sqrt{\tan(c+dx)}}{3a^3d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2b\left(3a^2A-abB+4Ab^2\right)\sqrt{\tan(c+dx)}}{3a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{(-B+iA)\tan}{d(}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) - (2*A)/(a*d*Sqrt[Tan[
c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) - (2*b*(3*a^2*A + 4*A*b^2 - a*b*B)*Sq
rt[Tan[c + d*x]])/(3*a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) - (2*b*(
3*a^4*A + 17*a^2*A*b^2 + 8*A*b^4 - 8*a^3*b*B - 2*a*b^3*B)*Sqrt[Tan[c + d*x]
])/(3*a^3*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.19036, antiderivative size = 301, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2b\left(17a^2Ab^2+3a^4A-8a^3bB-2ab^3B+8Ab^4\right)\sqrt{\tan(c+dx)}}{3a^3d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}-\frac{2b\left(3a^2A-abB+4Ab^2\right)\sqrt{\tan(c+dx)}}{3a^2d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{(-B+iA)\tan}{d(}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/2)),x]
```



```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) - (2*A)/(a*d*Sqrt[Tan[
c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) - (2*b*(3*a^2*A + 4*A*b^2 - a*b*B)*Sq
rt[Tan[c + d*x]])/(3*a^2*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^(3/2)) - (2*b*(
3*a^4*A + 17*a^2*A*b^2 + 8*A*b^4 - 8*a^3*b*B - 2*a*b^3*B)*Sqrt[Tan[c + d*x]
])/(3*a^3*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
```

```
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{2A}{ad\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2\int \frac{\frac{1}{2}(4Ab-aB)+\frac{1}{2}aA\tan(c+dx)+2Ab\tan^2(}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}}}{a}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2b\left(3a^2A+4Ab^2-abB\right)\sqrt{\tan(c+}}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2b\left(3a^2A+4Ab^2-abB\right)\sqrt{\tan(c+}}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2b\left(3a^2A+4Ab^2-abB\right)\sqrt{\tan(c+}}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2b\left(3a^2A+4Ab^2-abB\right)\sqrt{\tan(c+}}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))}$$

$$= -\frac{2A}{ad\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2b\left(3a^2A+4Ab^2-abB\right)\sqrt{\tan(c+}}{3a^2\left(a^2+b^2\right)d(a+b\tan(c+dx))}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}(a+ib)^2d} - \frac{(iA+B)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{5/2}d} - \frac{}{ad\sqrt{}}$$

Mathematica [A] time = 4.71109, size = 326, normalized size = 1.08

$$-\frac{\frac{2b\left(3a^2A-abB+4Ab^2\right)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{\frac{2b\left(17a^2Ab^2+3a^4A-8a^3bB-2ab^3B+8Ab^4\right)\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}+3\sqrt[4]{-1}a^3\left(\frac{(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}-\frac{(a+ib)^2(A-iB)\,\text{ta}\cdots}{\cdots}\right.}{a\left(a^2+b^2\right)^2}}{3a^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/
2)),x]
```

```
[Out] -((6*a*A)/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(3*a^2*A +
 4*A*b^2 - a*b*B)*Sqrt[Tan[c + d*x]])/((a^2 + b^2)*(a + b*Tan[c + d*x])^(3/
2)) + (3*(-1)^(1/4)*a^3*(((a - I*b)^2*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a
 - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((a
 + I*b)^2*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/S
qrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]) + (2*b*(3*a^4*A + 17*a^2*A*b^2 + 8
*A*b^4 - 8*a^3*b*B - 2*a*b^3*B)*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]
])/(a*(a^2 + b^2)^2))/(3*a^2*d)
```

Maple [B] time = 3.099, size = 2978232, normalized size = 9894.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.468 $\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=359

$$\frac{2b\left(30a^2Ab^3+8a^4Ab-17a^3b^2B-3a^5B-8ab^4B+16Ab^5\right)\sqrt{\tan(c+dx)}}{3a^4d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{2b\left(7a^2Ab-3a^3B-4ab^2B+8Ab^3\right)\sqrt{\tan(}}{3a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) - (2*A)/(3*a*d*Tan[c +
 d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)) + (2*(2*A*b - a*B))/(a^2*d*Sqrt[Tan
[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(7*a^2*A*b + 8*A*b^3 - 3*a^3*
B - 4*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x]
)^(3/2)) + (2*b*(8*a^4*A*b + 30*a^2*A*b^3 + 16*A*b^5 - 3*a^5*B - 17*a^3*b^2
*B - 8*a*b^4*B)*Sqrt[Tan[c + d*x]])/(3*a^4*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c
 + d*x]])
```

Rubi [A] time = 1.64235, antiderivative size = 359, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2b\left(30a^2Ab^3+8a^4Ab-17a^3b^2B-3a^5B-8ab^4B+16Ab^5\right)\sqrt{\tan(c+dx)}}{3a^4d\left(a^2+b^2\right)^2\sqrt{a+b\tan(c+dx)}}+\frac{2b\left(7a^2Ab-3a^3B-4ab^2B+8Ab^3\right)\sqrt{\tan(}}{3a^3d\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(5/2)),x]
```

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]])/((I*a - b)^(5/2)*d) + ((A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d
*x]])/Sqrt[a + b*Tan[c + d*x]]])/((I*a + b)^(5/2)*d) - (2*A)/(3*a*d*Tan[c +
 d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)) + (2*(2*A*b - a*B))/(a^2*d*Sqrt[Tan
[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*b*(7*a^2*A*b + 8*A*b^3 - 3*a^3*
B - 4*a*b^2*B)*Sqrt[Tan[c + d*x]])/(3*a^3*(a^2 + b^2)*d*(a + b*Tan[c + d*x]
)^(3/2)) + (2*b*(8*a^4*A*b + 30*a^2*A*b^3 + 16*A*b^5 - 3*a^5*B - 17*a^3*b^2
*B - 8*a*b^4*B)*Sqrt[Tan[c + d*x]])/(3*a^4*(a^2 + b^2)^2*d*Sqrt[a + b*Tan[c
 + d*x]])
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx = -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} - \frac{2\int \frac{\frac{3}{2}(2Ab-aB)+\frac{3}{2}aA\tan(c+dx)+3Ab\tan^{2}}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}}{3a}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)}{a^2d\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)}{a^2d\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)}{a^2d\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)}{a^2d\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)}{a^2d\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}$$

$$= -\frac{2A}{3ad\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)}{a^2d\sqrt{\tan(c+dx)}(a+b\tan(c+dx)}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia-b)^{5/2}d} + \frac{(A-iB)\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{(ia+b)^{5/2}d} - \frac{}{3ad\,\mathrm{t}}$$

Mathematica [A] time = 3.42227, size = 383, normalized size = 1.07

$$\frac{\frac{6b(7a^2Ab-3a^3B-4ab^2B+8Ab^3)\sqrt{\tan(c+dx)}}{a^2(a^2+b^2)(a+b\tan(c+dx))^{3/2}} + \frac{\frac{6b(30a^2Ab^3+8a^4Ab-17a^3b^2B-3a^5B-8ab^4B+16Ab^5)\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}} + 9(-1)^{3/4}a^4\left(\frac{(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}\right.}{a^3(a^2+b^2)^2}}{9ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(5/
2)),x]
```

```
[Out] ((-6*A)/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)) + (6*(6*A*b - 3*a*B
))/(a*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (6*b*(7*a^2*A*b + 8*
A*b^3 - 3*a^3*B - 4*a*b^2*B)*Sqrt[Tan[c + d*x]])/(a^2*(a^2 + b^2)*(a + b*Ta
n[c + d*x])^(3/2)) + (9*(-1)^(3/4)*a^4*(((a - I*b)^2*(A + I*B)*ArcTanh[((-1
)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[
-a - I*b] + ((a + I*b)^2*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]) + (6*b*(8*a^4*A*b +
 30*a^2*A*b^3 + 16*A*b^5 - 3*a^5*B - 17*a^3*b^2*B - 8*a*b^4*B)*Sqrt[Tan[c +
 d*x]])/Sqrt[a + b*Tan[c + d*x]])/(a^3*(a^2 + b^2)^2))/(9*a*d)
```

Maple [B] time = 2.284, size = 2979563, normalized size = 8299.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)**(5/2)/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/tan(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.469 $\int \frac{\tan^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{B\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}-\frac{B\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] -((B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(
Sqrt[I*a - b]*d)) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Ta
n[c + d*x]]])/(Sqrt[b]*d) - (B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/S
qrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.200226, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {21, 3575, 910, 63, 217, 206, 912, 93, 205, 208}

$$-\frac{B\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}-\frac{B\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2
),x]
```

```
[Out] -((B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(
Sqrt[I*a - b]*d)) + (2*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Ta
n[c + d*x]]])/(Sqrt[b]*d) - (B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/S
qrt[a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 910

```
Int[((d_.) + (e_.)*(x_))^(m_)/(Sqrt[(f_.) + (g_.)*(x_)]*((a_.) + (c_.)*(x_)
^2)), x_Symbol] :> Int[ExpandIntegrand[1/(Sqrt[d + e*x]*Sqrt[f + g*x]), (d
+ e*x)^(m + 1/2)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ
[c*d^2 + a*e^2, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 912

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_))/((a_) + (c_.)*(x_
)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n, 1/(a + c*x^
2), x], x] /; FreeQ[{a, c, d, e, f, g, m, n}, x] && NeQ[c*d^2 + a*e^2, 0] &
&  !IntegerQ[m] &&  !IntegerQ[n]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
```

```
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\tan^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{\tan^{\frac{3}{2}}(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{B\,\text{Subst}\left(\int \frac{x^{3/2}}{\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{B\,\text{Subst}\left(\int \left(\frac{1}{\sqrt{x}\sqrt{a+bx}} - \frac{1}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\right)dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{d} - \frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\,dx, x, \text{t}\right.}{d}$$

$$= -\frac{B\,\text{Subst}\left(\int \left(\frac{i}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{i}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right)dx, x, \tan(c+dx)\right)}{d} + \frac{(2B)\,\text{Su}}{}$$

$$= -\frac{(iB)\,\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} - \frac{(iB)\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(i+x)\sqrt{a+b}}\right.}{2d}$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d} - \frac{(iB)\,\text{Subst}\left(\int \frac{1}{i-(-a+ib)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

$$= -\frac{B\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d} - \frac{B\tanh^{-1}\left(\frac{\sqrt{ia+b}}{\sqrt{a+}}\right.}{\sqrt{ia+}}$$

Mathematica [A] time = 0.902044, size = 193, normalized size = 1.25

$$\frac{B\left(\frac{(-1)^{3/4}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}+\frac{(-1)^{3/4}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}+\frac{2\sqrt{a}\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
)^(3/2),x]
```

```
[Out] (B*(((-1)^(3/4)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] + ((-1)^(3/4)*ArcTanh[((-1)^(1/4)*Sqr
t[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (
2*Sqrt[a]*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c +
 d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]])))/d
```

Maple [B] time = 0.572, size = 943902, normalized size = 6089.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan(dx+c)+Ba)\tan(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*tan(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^
(3/2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\frac{\tan^{\frac{3}{2}}(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(tan(c + d*x)**(3/2)/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

3.470 $\int \frac{\sqrt{\tan(c+dx)}(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=117

$$\frac{iB\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{iB\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] (I*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(
Sqrt[I*a - b]*d) - (I*B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.143209, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {21, 3575, 910, 93, 205, 208}

$$\frac{iB\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{iB\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Tan[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2
),x]
```

```
[Out] (I*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(
Sqrt[I*a - b]*d) - (I*B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
```

```
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 910

```
Int[((d_.) + (e_.)*(x_))^(m_)/(Sqrt[(f_.) + (g_.)*(x_)]*((a_.) + (c_.)*(x_)
^2)), x_Symbol] :> Int[ExpandIntegrand[1/(Sqrt[d + e*x]*Sqrt[f + g*x]), (d
+ e*x)^(m + 1/2)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ
[c*d^2 + a*e^2, 0] && IGtQ[m + 1/2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\tan(c+dx)}(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$
$$= \frac{B\,\mathrm{Subst}\left(\int \frac{\sqrt{x}}{\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{B\,\mathrm{Subst}\left(\int \left(-\frac{1}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{1}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right) dx, x, \tan(c+dx)\right)}{d}$$
$$= -\frac{B\,\mathrm{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}(i+x)\sqrt{a+bx}}\,dx, \ldots\right.}{2d}$$
$$= \frac{B\,\mathrm{Subst}\left(\int \frac{1}{i-(-a+ib)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{i-(a+ib)x^2}\,dx, x, \frac{\sqrt{\mathrm{t}}}{\sqrt{a+}}\right.}{d}$$
$$= \frac{iB\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} - \frac{iB\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}d}$$

Mathematica [A] time = 0.0951657, size = 124, normalized size = 1.06

$$\frac{\sqrt[4]{-1}B\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Tan[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
)^(3/2),x]
```

```
[Out] ((-1)^(1/4)*B*(ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]/Sqrt[-a - I*b] - ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]/Sqrt[a - I*b]))/d
```

Maple [B] time = 0.786, size = 940031, normalized size = 8034.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan(dx+c)+Ba)\sqrt{\tan(dx+c)}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*sqrt(tan(d*x + c))/(b*tan(d*x + c) + a)^
(3/2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(sqrt(tan(c + d*x))/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

3.471 $\int \frac{aB+bB\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=111

$$\frac{B\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] (B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sq
rt[I*a - b]*d) + (B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*T
an[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.136693, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {21, 3575, 912, 93, 205, 208}

$$\frac{B\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)
),x]
```

```
[Out] (B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/(Sq
rt[I*a - b]*d) + (B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*T
an[c + d*x]]])/(Sqrt[I*a + b]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
```

```
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 912

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_))/((a_) + (c_.)*(x_
)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n, 1/(a + c*x^
2), x], x] /; FreeQ[{a, c, d, e, f, g, m, n}, x] && NeQ[c*d^2 + a*e^2, 0] &
&  !IntegerQ[m] &&  !IntegerQ[n]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{aB + bB\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{1}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{B\,\text{Subst}\left(\int \left(\frac{i}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{i}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right)dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{(iB)\,\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(iB)\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(i+x)\sqrt{a+bx}}\right.}{2d}$$

$$= \frac{(iB)\,\text{Subst}\left(\int \frac{1}{i-(-a+ib)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{(iB)\,\text{Subst}\left(\int \frac{1}{i-(a+ib)x^2}\,dx,\right.}{d}$$

$$= \frac{B\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}d} + \frac{B\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}d}$$

Mathematica [A] time = 0.105005, size = 125, normalized size = 1.13

$$\frac{(-1)^{3/4}B\left(-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])
^(3/2)),x]
```

```
[Out] ((-1)^(3/4)*B*(-(ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqr
t[a + b*Tan[c + d*x]]]/Sqrt[-a - I*b]) - ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]/Sqrt[a - I*b]))/d
```

Maple [B] time = 0.574, size = 939328, normalized size = 8462.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan(dx+c) + Ba}{(b\tan(dx+c) + a)^{\frac{3}{2}}\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)^(3/2)*sqrt(tan(d*x
 + c))), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{\sqrt{a + b\tan(c+dx)}\sqrt{\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(1/(sqrt(a + b*tan(c + d*x))*sqrt(tan(c + d*x))), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.472 $\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=150

$$-\frac{iB\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}}+\frac{iB\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] ((-I)*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
)/(Sqrt[I*a - b]*d) + (I*B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*B*Sqrt[a + b*Tan[c + d*x]])/(a
*d*Sqrt[Tan[c + d*x]])
```

Rubi [A] time = 0.221501, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {21, 3569, 12, 3575, 910, 93, 205, 208}

$$-\frac{iB\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}}+\frac{iB\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)
),x]
```


```
[Out] ((-I)*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
)/(Sqrt[I*a - b]*d) + (I*B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]])/(Sqrt[I*a + b]*d) - (2*B*Sqrt[a + b*Tan[c + d*x]])/(a
*d*Sqrt[Tan[c + d*x]])
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3569

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> Simp[(b^2*(a + b*Tan[e + f*x])^(m + 1)*(c
```

```
+ d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(a^2 + b^2)*(b*c - a*d)), x] + Dist[1
/((m + 1)*(a^2 + b^2)*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d
*Tan[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2) - b*(b*c -
a*d)*(m + 1)*Tan[e + f*x] - b^2*d*(m + n + 2)*Tan[e + f*x]^2, x], x], x] /;
 FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0]
&& NeQ[c^2 + d^2, 0] && IntegerQ[2*m] && LtQ[m, -1] && (LtQ[n, 0] || Intege
rQ[m]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 12

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

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 910

```
Int[((d_.) + (e_.)*(x_))^(m_)/(Sqrt[(f_.) + (g_.)*(x_)]*((a_.) + (c_.)*(x_)
^2)), x_Symbol] :> Int[ExpandIntegrand[1/(Sqrt[d + e*x]*Sqrt[f + g*x]), (d
+ e*x)^(m + 1/2)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ
[c*d^2 + a*e^2, 0] && IGtQ[m + 1/2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{1}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{(2B)\int \frac{a\sqrt{\tan(c+dx)}}{2\sqrt{a+b\tan(c+dx)}}\,dx}{a}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - B\int \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \frac{\sqrt{x}}{\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \left(-\frac{1}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{1}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right)dx, x,\right.}{d}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} - \frac{B\,\mathrm{Su}}{}$$

$$= -\frac{2B\sqrt{a+b\tan(c+dx)}}{ad\sqrt{\tan(c+dx)}} - \frac{B\,\mathrm{Subst}\left(\int \frac{1}{i-(-a+ib)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} + \frac{B\,\mathrm{Su}}{}$$

$$= -\frac{iB\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia-b}\,d} + \frac{iB\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{ia+b}\,d} - \frac{2B\sqrt{a+b\tan(c}}{ad\sqrt{\tan(c+}}$$

Mathematica [A] time = 0.361803, size = 158, normalized size = 1.05

$$\frac{B\left(-\frac{2\sqrt{a+b\tan(c+dx)}}{a\sqrt{\tan(c+dx)}} - \frac{\sqrt[4]{-1}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{\sqrt[4]{-1}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])
^(3/2)),x]
```

```
[Out] (B*(-(((-1)^(1/4)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sq
rt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b]) + ((-1)^(1/4)*ArcTanh[((-1)^(1/4)*
```

```
Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]
- (2*Sqrt[a + b*Tan[c + d*x]])/(a*Sqrt[Tan[c + d*x]])))/d
```

Maple [B] time = 0.636, size = 943929, normalized size = 6292.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{\sqrt{a+b\tan\left(c+dx\right)}\tan^{\frac{3}{2}}\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(1/(sqrt(a + b*tan(c + d*x))*tan(c + d*x)**(3/2)), x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/tan(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.473 $\int (a+b\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=379

$$\frac{\sqrt{3}(a-ib)^{2/3}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d}-\frac{\sqrt{3}(a+ib)^{2/3}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d}+\frac{3(a-ib)^{2/3}(B+iA)\,\mathrm{l}}{}$$

```
[Out] -((a - I*b)^(2/3)*(A - I*B)*x)/4 - ((a + I*b)^(2/3)*(A + I*B)*x)/4 + (Sqrt[
3]*(a - I*b)^(2/3)*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a
- I*b)^(1/3))/Sqrt[3]])/(2*d) - (Sqrt[3]*(a + I*b)^(2/3)*(I*A - B)*ArcTan[(
1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*d) - ((a +
 I*b)^(2/3)*(I*A - B)*Log[Cos[c + d*x]])/(4*d) + ((a - I*b)^(2/3)*(I*A + B)
*Log[Cos[c + d*x]])/(4*d) + (3*(a - I*b)^(2/3)*(I*A + B)*Log[(a - I*b)^(1/3
) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) - (3*(a + I*b)^(2/3)*(I*A - B)*Log[(
a + I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) + (3*B*(a + b*Tan[c + d
*x])^(2/3))/(2*d)
```

Rubi [A] time = 0.440236, antiderivative size = 379, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.28, Rules used = {3528, 3539, 3537, 55, 617, 204, 31}

$$\frac{\sqrt{3}(a-ib)^{2/3}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d}-\frac{\sqrt{3}(a+ib)^{2/3}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d}+\frac{3(a-ib)^{2/3}(B+iA)\,\mathrm{l}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a - I*b)^(2/3)*(A - I*B)*x)/4 - ((a + I*b)^(2/3)*(A + I*B)*x)/4 + (Sqrt[
3]*(a - I*b)^(2/3)*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a
- I*b)^(1/3))/Sqrt[3]])/(2*d) - (Sqrt[3]*(a + I*b)^(2/3)*(I*A - B)*ArcTan[(
1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*d) - ((a +
 I*b)^(2/3)*(I*A - B)*Log[Cos[c + d*x]])/(4*d) + ((a - I*b)^(2/3)*(I*A + B)
*Log[Cos[c + d*x]])/(4*d) + (3*(a - I*b)^(2/3)*(I*A + B)*Log[(a - I*b)^(1/3
) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) - (3*(a + I*b)^(2/3)*(I*A - B)*Log[(
a + I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) + (3*B*(a + b*Tan[c + d
*x])^(2/3))/(2*d)
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int (a+b\tan(c+dx))^{2/3}(A+B\tan(c+dx))\,dx = \frac{3B(a+b\tan(c+dx))^{2/3}}{2d} + \int \frac{aA-bB+(Ab+aB)\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}\,dx$$

$$= \frac{3B(a+b\tan(c+dx))^{2/3}}{2d} + \frac{1}{2}((a-ib)(A-iB)) \int \frac{1+i\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}$$

$$= \frac{3B(a+b\tan(c+dx))^{2/3}}{2d} + \frac{(i(a-ib)(A-iB))\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt[3]{a-ibx}}\,d\right.}{2d}$$

$$= -\frac{1}{4}(a-ib)^{2/3}(A-iB)x - \frac{1}{4}(a+ib)^{2/3}(A+iB)x - \frac{(a+ib)^{2/3}(iA-B)\,\mathrm{lo}}{4d}$$

$$= -\frac{1}{4}(a-ib)^{2/3}(A-iB)x - \frac{1}{4}(a+ib)^{2/3}(A+iB)x - \frac{(a+ib)^{2/3}(iA-B)\,\mathrm{lo}}{4d}$$

$$= -\frac{1}{4}(a-ib)^{2/3}(A-iB)x - \frac{1}{4}(a+ib)^{2/3}(A+iB)x + \frac{\sqrt{3}(a-ib)^{2/3}(iA+\ldots}{}$$

Mathematica [A] time = 0.873852, size = 263, normalized size = 0.69

$$\frac{i\left((A-iB)\left(3(a+b\tan(c+dx))^{2/3}+(a-ib)^{2/3}\left(2\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)+3\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\sqrt[3]{a-ib}\right)\ldots\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^(2/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((I/4)*((A - I*B)*((a - I*b)^(2/3)*(2*Sqrt[3]*ArcTan[(1 + (2*(a + b*Tan[c +
 d*x])^(1/3))/(a - I*b)^(1/3))/Sqrt[3]] - Log[I + Tan[c + d*x]] + 3*Log[(a
- I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)]) + 3*(a + b*Tan[c + d*x])^(2/3))
 - (A + I*B)*((a + I*b)^(2/3)*(2*Sqrt[3]*ArcTan[(1 + (2*(a + b*Tan[c + d*x]
)^(1/3))/(a + I*b)^(1/3))/Sqrt[3]] - Log[I - Tan[c + d*x]] + 3*Log[(a + I*b
)^(1/3) - (a + b*Tan[c + d*x])^(1/3)]) + 3*(a + b*Tan[c + d*x])^(2/3))))/d
```

Maple [C] time = 0.194, size = 101, normalized size = 0.3

$$\frac{3B}{2d}(a+b\tan(dx+c))^{\frac{2}{3}}+\frac{1}{2d}\sum_{\_R=\mathrm{RootOf}\left(\_Z^6-2\_Z^3a+a^2+b^2\right)}\frac{(Ab+aB)\_R^4+B\left(-a^2-b^2\right)\_R}{\_R^5-\_R^2a}\ln\left(\sqrt[3]{a+b\tan(dx+c)}-\_R\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] 3/2*B*(a+b*tan(d*x+c))^(2/3)/d+1/2/d*sum(((A*b+B*a)*_R^4+B*(-a^2-b^2)*_R)/(
_R^5-_R^2*a)*ln((a+b*tan(d*x+c))^(1/3)-_R),_R=RootOf(_Z^6-2*_Z^3*a+a^2+b^2)
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(2/3), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))^{\frac{2}{3}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(2/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(2/3), x)
```

Giac [B] time = 15.4942, size = 1397, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(-I*sqrt(3) + 1)*((8*I*A^3*a^2 - 24*A^2*B*a^2 - 24*I*A*B^2*a^2 + 8*B^3
*a^2 - 16*A^3*a*b - 48*I*A^2*B*a*b + 48*A*B^2*a*b + 16*I*B^3*a*b - 8*I*A^3*
b^2 + 24*A^2*B*b^2 + 24*I*A*B^2*b^2 - 8*B^3*b^2)/d^3)^(1/3)*log(b*d^2*(sqrt
(3) + I) + a*d^2*(-I*sqrt(3) + 1) + (I*a^2 - 2*a*b - I*b^2)^(1/3)*(b*tan(d*
x + c) + a)^(1/3)*d^2*(sqrt(3) - I)) - 1/8*(-I*sqrt(3) + 1)*((-8*I*A^3*a^2
- 24*A^2*B*a^2 + 24*I*A*B^2*a^2 + 8*B^3*a^2 - 16*A^3*a*b + 48*I*A^2*B*a*b +
 48*A*B^2*a*b - 16*I*B^3*a*b + 8*I*A^3*b^2 + 24*A^2*B*b^2 - 24*I*A*B^2*b^2
- 8*B^3*b^2)/d^3)^(1/3)*log(-b*d^2*(sqrt(3) + I) + a*d^2*(-I*sqrt(3) + 1) -
 (-I*a^2 - 2*a*b + I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)*d^2*(sqrt(3) - I
)) - 1/8*(I*sqrt(3) + 1)*((-8*I*A^3*a^2 - 24*A^2*B*a^2 + 24*I*A*B^2*a^2 + 8
*B^3*a^2 - 16*A^3*a*b + 48*I*A^2*B*a*b + 48*A*B^2*a*b - 16*I*B^3*a*b + 8*I*
A^3*b^2 + 24*A^2*B*b^2 - 24*I*A*B^2*b^2 - 8*B^3*b^2)/d^3)^(1/3)*log(b*d^2*(
sqrt(3) - I) + a*d^2*(I*sqrt(3) + 1) + (-I*a^2 - 2*a*b + I*b^2)^(1/3)*(b*ta
n(d*x + c) + a)^(1/3)*d^2*(sqrt(3) + I)) - 1/8*(I*sqrt(3) + 1)*((8*I*A^3*a^
2 - 24*A^2*B*a^2 - 24*I*A*B^2*a^2 + 8*B^3*a^2 - 16*A^3*a*b - 48*I*A^2*B*a*b
 + 48*A*B^2*a*b + 16*I*B^3*a*b - 8*I*A^3*b^2 + 24*A^2*B*b^2 + 24*I*A*B^2*b^
2 - 8*B^3*b^2)/d^3)^(1/3)*log(-b*d^2*(sqrt(3) - I) + a*d^2*(I*sqrt(3) + 1)
- (I*a^2 - 2*a*b - I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)*d^2*(sqrt(3) + I
)) + 1/4*((8*I*A^3*a^2 - 24*A^2*B*a^2 - 24*I*A*B^2*a^2 + 8*B^3*a^2 - 16*A^3
*a*b - 48*I*A^2*B*a*b + 48*A*B^2*a*b + 16*I*B^3*a*b - 8*I*A^3*b^2 + 24*A^2*
B*b^2 + 24*I*A*B^2*b^2 - 8*B^3*b^2)/d^3)^(1/3)*log(I*a*d^2 - b*d^2 + (I*a^2
 - 2*a*b - I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)*d^2) + 1/4*((-8*I*A^3*a^
2 - 24*A^2*B*a^2 + 24*I*A*B^2*a^2 + 8*B^3*a^2 - 16*A^3*a*b + 48*I*A^2*B*a*b
```

```
 + 48*A*B^2*a*b - 16*I*B^3*a*b + 8*I*A^3*b^2 + 24*A^2*B*b^2 - 24*I*A*B^2*b^
2 - 8*B^3*b^2)/d^3)^(1/3)*log(-I*a*d^2 - b*d^2 + (-I*a^2 - 2*a*b + I*b^2)^(
1/3)*(b*tan(d*x + c) + a)^(1/3)*d^2) + 3/2*(b*tan(d*x + c) + a)^(2/3)*B/d
```

3.474 $\int \sqrt[3]{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=377

$$-\frac{\sqrt{3}\sqrt[3]{a-ib}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d}+\frac{\sqrt{3}\sqrt[3]{a+ib}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d}+\frac{3\sqrt[3]{a-ib}(B+iA)\log\left(-\right.}{}$$

```
[Out] -((a - I*b)^(1/3)*(A - I*B)*x)/4 - ((a + I*b)^(1/3)*(A + I*B)*x)/4 - (Sqrt[
3]*(a - I*b)^(1/3)*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a
- I*b)^(1/3))/Sqrt[3]])/(2*d) + (Sqrt[3]*(a + I*b)^(1/3)*(I*A - B)*ArcTan[(
1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*d) - ((a +
 I*b)^(1/3)*(I*A - B)*Log[Cos[c + d*x]])/(4*d) + ((a - I*b)^(1/3)*(I*A + B)
*Log[Cos[c + d*x]])/(4*d) + (3*(a - I*b)^(1/3)*(I*A + B)*Log[(a - I*b)^(1/3
) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) - (3*(a + I*b)^(1/3)*(I*A - B)*Log[(
a + I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) + (3*B*(a + b*Tan[c + d
*x])^(1/3))/d
```

Rubi [A] time = 0.406038, antiderivative size = 377, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.28, Rules used = {3528, 3539, 3537, 57, 617, 204, 31}

$$-\frac{\sqrt{3}\sqrt[3]{a-ib}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d}+\frac{\sqrt{3}\sqrt[3]{a+ib}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d}+\frac{3\sqrt[3]{a-ib}(B+iA)\log\left(-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^(1/3)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((a - I*b)^(1/3)*(A - I*B)*x)/4 - ((a + I*b)^(1/3)*(A + I*B)*x)/4 - (Sqrt[
3]*(a - I*b)^(1/3)*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a
- I*b)^(1/3))/Sqrt[3]])/(2*d) + (Sqrt[3]*(a + I*b)^(1/3)*(I*A - B)*ArcTan[(
1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*d) - ((a +
 I*b)^(1/3)*(I*A - B)*Log[Cos[c + d*x]])/(4*d) + ((a - I*b)^(1/3)*(I*A + B)
*Log[Cos[c + d*x]])/(4*d) + (3*(a - I*b)^(1/3)*(I*A + B)*Log[(a - I*b)^(1/3
) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) - (3*(a + I*b)^(1/3)*(I*A - B)*Log[(
a + I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)])/(4*d) + (3*B*(a + b*Tan[c + d
*x])^(1/3))/d
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 57

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(2/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q^2),
 x] + (-Dist[3/(2*b*q), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/
3)], x] - Dist[3/(2*b*q^2), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x
])] /; FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \sqrt[3]{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{3B\sqrt[3]{a+b\tan(c+dx)}}{d} + \int \frac{aA-bB+(Ab+aB)\tan(c+dx)}{(a+b\tan(c+dx))^{2/3}}\,dx$$

$$= \frac{3B\sqrt[3]{a+b\tan(c+dx)}}{d} + \frac{1}{2}((a-ib)(A-iB))\int \frac{1+i\tan(c+dx)}{(a+b\tan(c+dx))^{2/3}}\,d$$

$$= \frac{3B\sqrt[3]{a+b\tan(c+dx)}}{d} + \frac{(i(a-ib)(A-iB))\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)(a-ibx)^{2/3}}\,dx,\right.}{2d}$$

$$= -\frac{1}{4}\sqrt[3]{a-ib}(A-iB)x - \frac{1}{4}\sqrt[3]{a+ib}(A+iB)x - \frac{\sqrt[3]{a+ib}(iA-B)\log(\cos(c}{4d}$$

$$= -\frac{1}{4}\sqrt[3]{a-ib}(A-iB)x - \frac{1}{4}\sqrt[3]{a+ib}(A+iB)x - \frac{\sqrt[3]{a+ib}(iA-B)\log(\cos(c}{4d}$$

$$= -\frac{1}{4}\sqrt[3]{a-ib}(A-iB)x - \frac{1}{4}\sqrt[3]{a+ib}(A+iB)x - \frac{\sqrt{3}\sqrt[3]{a-ib}(iA+B)\tan^{-1}}{2d}$$

Mathematica [A] time = 0.875988, size = 347, normalized size = 0.92

$$\frac{i\left((A-iB)\left(3\sqrt[3]{a+b\tan(c+dx)}-\frac{1}{2}\sqrt[3]{a-ib}\left(2\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)-2\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\sqrt[3]{a-ib}\right)+\mathrm{lo}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^(1/3)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((I/2)*((A - I*B)*(-((a - I*b)^(1/3)*(2*Sqrt[3]*ArcTan[(1 + (2*(a + b*Tan[c
 + d*x])^(1/3))/(a - I*b)^(1/3))/Sqrt[3]] - 2*Log[(a - I*b)^(1/3) - (a + b*
Tan[c + d*x])^(1/3)] + Log[(a - I*b)^(2/3) + (a - I*b)^(1/3)*(a + b*Tan[c +
 d*x])^(1/3) + (a + b*Tan[c + d*x])^(2/3)]))/2 + 3*(a + b*Tan[c + d*x])^(1/
3)) - (A + I*B)*(-((a + I*b)^(1/3)*(2*Sqrt[3]*ArcTan[(1 + (2*(a + b*Tan[c +
 d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]] - 2*Log[(a + I*b)^(1/3) - (a + b*Ta
n[c + d*x])^(1/3)] + Log[(a + I*b)^(2/3) + (a + I*b)^(1/3)*(a + b*Tan[c + d
```

```
*x])^(1/3) + (a + b*Tan[c + d*x])^(2/3)]))/2 + 3*(a + b*Tan[c + d*x])^(1/3)
)))/d
```

Maple [C] time = 0.079, size = 99, normalized size = 0.3

$$3\,{\frac {B\sqrt [3]{a+b\tan \left(dx+c \right) }}{d}}+{\frac {1}{2\,d}}\sum _{\_R={\it RootOf} \left({\_Z}^{6}-2\,{\_Z}^{3}a+{a}^{2}+{b}^{2} \right) }{\frac { \left(Ab+aB \right) {\_R}^{3}-{a}^{2}B-{b}^{2}B}{{\_R}^{5}-{\_R}^{2}a}\ln \left(\sqrt [3]{a+b\tan \left(dx+c \right) }-\_R \right) }$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] 3*B*(a+b*tan(d*x+c))^(1/3)/d+1/2/d*sum(((A*b+B*a)*_R^3-a^2*B-b^2*B)/(_R^5-_
R^2*a)*ln((a+b*tan(d*x+c))^(1/3)-_R),_R=RootOf(_Z^6-2*_Z^3*a+a^2+b^2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(b\tan (dx+c)+a)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(1/3), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A+B\tan(c+dx))\sqrt[3]{a+b\tan(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/3)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**(1/3), x)
```

Giac [A] time = 13.5897, size = 666, normalized size = 1.77

$$-\frac{1}{8}\left(i\sqrt{3}+1\right)\left(\frac{8i\,A^3a-24\,A^2Ba-24i\,AB^2a+8\,B^3a-8\,A^3b-24i\,A^2Bb+24\,AB^2b+8i\,B^3b}{d^3}\right)^{\frac{1}{3}}\log\left(d^2\right)-\frac{1}{8}\left(-i\sqrt{3}+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/3)*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/8*(I*sqrt(3) + 1)*((8*I*A^3*a - 24*A^2*B*a - 24*I*A*B^2*a + 8*B^3*a - 8*
A^3*b - 24*I*A^2*B*b + 24*A*B^2*b + 8*I*B^3*b)/d^3)^(1/3)*log(d^2) - 1/8*(-
I*sqrt(3) + 1)*((8*I*A^3*a - 24*A^2*B*a - 24*I*A*B^2*a + 8*B^3*a - 8*A^3*b
- 24*I*A^2*B*b + 24*A*B^2*b + 8*I*B^3*b)/d^3)^(1/3)*log(d^2) - 1/8*(I*sqrt(
3) + 1)*((-8*I*A^3*a - 24*A^2*B*a + 24*I*A*B^2*a + 8*B^3*a - 8*A^3*b + 24*I
*A^2*B*b + 24*A*B^2*b - 8*I*B^3*b)/d^3)^(1/3)*log(d^2) - 1/8*(-I*sqrt(3) +
1)*((-8*I*A^3*a - 24*A^2*B*a + 24*I*A*B^2*a + 8*B^3*a - 8*A^3*b + 24*I*A^2*
B*b + 24*A*B^2*b - 8*I*B^3*b)/d^3)^(1/3)*log(d^2) + 1/4*((8*I*A^3*a - 24*A^
2*B*a - 24*I*A*B^2*a + 8*B^3*a - 8*A^3*b - 24*I*A^2*B*b + 24*A*B^2*b + 8*I*
B^3*b)/d^3)^(1/3)*log(I*(b*tan(d*x + c) + a)^(1/3)*d^2 + (I*a - b)^(1/3)*d^
2) + 1/4*((-8*I*A^3*a - 24*A^2*B*a + 24*I*A*B^2*a + 8*B^3*a - 8*A^3*b + 24*
I*A^2*B*b + 24*A*B^2*b - 8*I*B^3*b)/d^3)^(1/3)*log(-I*(b*tan(d*x + c) + a)^
(1/3)*d^2 + (-I*a - b)^(1/3)*d^2) + 3*(b*tan(d*x + c) + a)^(1/3)*B/d
```

3.475 $\int \frac{A+B\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=357

$$\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d\sqrt[3]{a-ib}}-\frac{\sqrt{3}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d\sqrt[3]{a+ib}}+\frac{3(B+iA)\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\sqrt[3]{a}\right.}{4d\sqrt[3]{a-ib}}$$

```
[Out] -((A - I*B)*x)/(4*(a - I*b)^(1/3)) - ((A + I*B)*x)/(4*(a + I*b)^(1/3)) + (S
qrt[3]*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a - I*b)^(1/3)
)/Sqrt[3]])/(2*(a - I*b)^(1/3)*d) - (Sqrt[3]*(I*A - B)*ArcTan[(1 + (2*(a +
b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*(a + I*b)^(1/3)*d) - (
(I*A - B)*Log[Cos[c + d*x]])/(4*(a + I*b)^(1/3)*d) + ((I*A + B)*Log[Cos[c +
 d*x]])/(4*(a - I*b)^(1/3)*d) + (3*(I*A + B)*Log[(a - I*b)^(1/3) - (a + b*T
an[c + d*x])^(1/3)])/(4*(a - I*b)^(1/3)*d) - (3*(I*A - B)*Log[(a + I*b)^(1/
3) - (a + b*Tan[c + d*x])^(1/3)])/(4*(a + I*b)^(1/3)*d)
```

Rubi [A] time = 0.278317, antiderivative size = 357, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.24, Rules used = {3539, 3537, 55, 617, 204, 31}

$$\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d\sqrt[3]{a-ib}}-\frac{\sqrt{3}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d\sqrt[3]{a+ib}}+\frac{3(B+iA)\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\sqrt[3]{a}\right.}{4d\sqrt[3]{a-ib}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(1/3),x]
```


```
[Out] -((A - I*B)*x)/(4*(a - I*b)^(1/3)) - ((A + I*B)*x)/(4*(a + I*b)^(1/3)) + (S
qrt[3]*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a - I*b)^(1/3)
)/Sqrt[3]])/(2*(a - I*b)^(1/3)*d) - (Sqrt[3]*(I*A - B)*ArcTan[(1 + (2*(a +
b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*(a + I*b)^(1/3)*d) - (
(I*A - B)*Log[Cos[c + d*x]])/(4*(a + I*b)^(1/3)*d) + ((I*A + B)*Log[Cos[c +
 d*x]])/(4*(a - I*b)^(1/3)*d) + (3*(I*A + B)*Log[(a - I*b)^(1/3) - (a + b*T
an[c + d*x])^(1/3)])/(4*(a - I*b)^(1/3)*d) - (3*(I*A - B)*Log[(a + I*b)^(1/
3) - (a + b*Tan[c + d*x])^(1/3)])/(4*(a + I*b)^(1/3)*d)
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}\,dx = \frac{1}{2}(A-iB)\int \frac{1+i\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(A+iB)\int \frac{1-i\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{(iA-B)\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt[3]{a+ibx}}\,dx, x, -i\tan(c+dx)\right)}{2d} + \frac{(iA+B)\,\text{Subst}\left(\int \frac{1}{(-1+x)\sqrt[3]{a-ibx}}\,dx,\right.}{2d}$$

$$= -\frac{(A-iB)x}{4\sqrt[3]{a-ib}} - \frac{(A+iB)x}{4\sqrt[3]{a+ib}} - \frac{(iA-B)\log(\cos(c+dx))}{4\sqrt[3]{a+ib}d} + \frac{(iA+B)\log(\cos(c+dx))}{4\sqrt[3]{a-ib}d} - \frac{(3(iA-}{}$$

$$= -\frac{(A-iB)x}{4\sqrt[3]{a-ib}} - \frac{(A+iB)x}{4\sqrt[3]{a+ib}} - \frac{(iA-B)\log(\cos(c+dx))}{4\sqrt[3]{a+ib}d} + \frac{(iA+B)\log(\cos(c+dx))}{4\sqrt[3]{a-ib}d} + \frac{3(iA+}{}$$

$$= -\frac{(A-iB)x}{4\sqrt[3]{a-ib}} - \frac{(A+iB)x}{4\sqrt[3]{a+ib}} + \frac{\sqrt{3}(iA+B)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2\sqrt[3]{a-ib}d} - \frac{\sqrt{3}(iA-B)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b}}{}}{}\right.}{2\sqrt[3]{a+ib}d}$$

Mathematica [A] time = 0.433142, size = 227, normalized size = 0.64

$$\frac{i\left(\frac{(A-iB)\left(2\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)+3\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\sqrt[3]{a-ib}\right)-\log(\tan(c+dx)+i)\right)}{\sqrt[3]{a-ib}} - \frac{(A+iB)\left(2\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)+3\log\left(-\sqrt[3]{a+b\tan\right.\right.}{\sqrt[3]{a+ib}}\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(1/3),x]
```

```
[Out] ((I/4)*(((A - I*B)*(2*Sqrt[3]*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a
 - I*b)^(1/3))/Sqrt[3]] - Log[I + Tan[c + d*x]] + 3*Log[(a - I*b)^(1/3) - (
a + b*Tan[c + d*x])^(1/3)]))/(a - I*b)^(1/3) - ((A + I*B)*(2*Sqrt[3]*ArcTan
[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]] - Log[I - Ta
n[c + d*x]] + 3*Log[(a + I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)]))/(a + I*
b)^(1/3)))/d
```

Maple [C] time = 0.075, size = 72, normalized size = 0.2

$$\frac{1}{2d}\sum_{\_R=\mathrm{RootOf}\left(\_Z^6-2\_Z^3a+a^2+b^2\right)}\frac{B\_R^4+(Ab-aB)\_R}{\_R^5-\_R^2a}\ln\left(\sqrt[3]{a+b\tan(dx+c)}-\_R\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/3),x)
```

```
[Out] 1/2/d*sum((B*_R^4+(A*b-B*a)*_R)/(_R^5-_R^2*a)*ln((a+b*tan(d*x+c))^(1/3)-_R)
,_R=RootOf(_Z^6-2*_Z^3*a+a^2+b^2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(b*tan(d*x + c) + a)^(1/3), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/3),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{A+B\tan(c+dx)}{\sqrt[3]{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/3),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(a + b*tan(c + d*x))**(1/3), x)
```

Giac [B] time = 10.1553, size = 752, normalized size = 2.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/3),x, algorithm="giac")
```

```
[Out] -1/4*(I*sqrt(3) + 1)*(-(I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)/(a*d^3 - I*b*d^3
))^(1/3)*log(-a*(sqrt(3) + I) + b*(I*sqrt(3) - 1) + 2*(I*a^2 + 2*a*b - I*b^
2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)) - 1/4*(I*sqrt(3) + 1)*((I*A^3 - 3*A^2*
B - 3*I*A*B^2 + B^3)/(a*d^3 + I*b*d^3))^(1/3)*log(-a*(sqrt(3) + I) + b*(-I*
sqrt(3) + 1) + 2*(I*a^2 - 2*a*b - I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3))
 - 1/4*(-I*sqrt(3) + 1)*((I*A^3 - 3*A^2*B - 3*I*A*B^2 + B^3)/(a*d^3 + I*b*d^
3))^(1/3)*log(a*(sqrt(3) - I) + b*(I*sqrt(3) + 1) + 2*(I*a^2 - 2*a*b - I*b^
2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)) - 1/4*(-I*sqrt(3) + 1)*(-(I*A^3 + 3*A^
2*B - 3*I*A*B^2 - B^3)/(a*d^3 - I*b*d^3))^(1/3)*log(a*(sqrt(3) - I) + b*(-I
*sqrt(3) - 1) + 2*(I*a^2 + 2*a*b - I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3))
 + 1/2*(-(I*A^3 + 3*A^2*B - 3*I*A*B^2 - B^3)/(a*d^3 - I*b*d^3))^(1/3)*log(I
*a*d + b*d + (I*a^2 + 2*a*b - I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)*d) +
1/2*((I*A^3 - 3*A^2*B - 3*I*A*B^2 + B^3)/(a*d^3 + I*b*d^3))^(1/3)*log(I*a*d
 - b*d + (I*a^2 - 2*a*b - I*b^2)^(1/3)*(b*tan(d*x + c) + a)^(1/3)*d)
```

3.476 $\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{2/3}}\,dx$

Optimal. Leaf size=357

$$-\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d(a-ib)^{2/3}}+\frac{\sqrt{3}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d(a+ib)^{2/3}}+\frac{3(B+iA)\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\right.}{4d(a-ib)^{2/3}}$$

```
[Out] -((A - I*B)*x)/(4*(a - I*b)^(2/3)) - ((A + I*B)*x)/(4*(a + I*b)^(2/3)) - (S
qrt[3]*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a - I*b)^(1/3)
)/Sqrt[3]])/(2*(a - I*b)^(2/3)*d) + (Sqrt[3]*(I*A - B)*ArcTan[(1 + (2*(a +
b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*(a + I*b)^(2/3)*d) - (
(I*A - B)*Log[Cos[c + d*x]])/(4*(a + I*b)^(2/3)*d) + ((I*A + B)*Log[Cos[c +
 d*x]])/(4*(a - I*b)^(2/3)*d) + (3*(I*A + B)*Log[(a - I*b)^(1/3) - (a + b*T
an[c + d*x])^(1/3)])/(4*(a - I*b)^(2/3)*d) - (3*(I*A - B)*Log[(a + I*b)^(1/
3) - (a + b*Tan[c + d*x])^(1/3)])/(4*(a + I*b)^(2/3)*d)
```

Rubi [A] time = 0.283826, antiderivative size = 357, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.24, Rules used = {3539, 3537, 57, 617, 204, 31}

$$-\frac{\sqrt{3}(B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2d(a-ib)^{2/3}}+\frac{\sqrt{3}(-B+iA)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)}{2d(a+ib)^{2/3}}+\frac{3(B+iA)\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\right.}{4d(a-ib)^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(2/3),x]
```


```
[Out] -((A - I*B)*x)/(4*(a - I*b)^(2/3)) - ((A + I*B)*x)/(4*(a + I*b)^(2/3)) - (S
qrt[3]*(I*A + B)*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a - I*b)^(1/3)
)/Sqrt[3]])/(2*(a - I*b)^(2/3)*d) + (Sqrt[3]*(I*A - B)*ArcTan[(1 + (2*(a +
b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]])/(2*(a + I*b)^(2/3)*d) - (
(I*A - B)*Log[Cos[c + d*x]])/(4*(a + I*b)^(2/3)*d) + ((I*A + B)*Log[Cos[c +
 d*x]])/(4*(a - I*b)^(2/3)*d) + (3*(I*A + B)*Log[(a - I*b)^(1/3) - (a + b*T
an[c + d*x])^(1/3)])/(4*(a - I*b)^(2/3)*d) - (3*(I*A - B)*Log[(a + I*b)^(1/
3) - (a + b*Tan[c + d*x])^(1/3)])/(4*(a + I*b)^(2/3)*d)
```


Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 57

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(2/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q^2),
 x] + (-Dist[3/(2*b*q), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/
3)], x] - Dist[3/(2*b*q^2), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x
])] /; FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^{2/3}}\,dx = \frac{1}{2}(A-iB)\int \frac{1+i\tan(c+dx)}{(a+b\tan(c+dx))^{2/3}}\,dx + \frac{1}{2}(A+iB)\int \frac{1-i\tan(c+dx)}{(a+b\tan(c+dx))^{2/3}}\,dx$$

$$= -\frac{(iA-B)\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)(a+ibx)^{2/3}}\,dx, x, -i\tan(c+dx)\right)}{2d} + \frac{(iA+B)\,\mathrm{Subst}\left(\int \frac{1}{(-1+x)(a-ibx}\right.}{2d}$$

$$= -\frac{(A-iB)x}{4(a-ib)^{2/3}} - \frac{(A+iB)x}{4(a+ib)^{2/3}} - \frac{(iA-B)\log(\cos(c+dx))}{4(a+ib)^{2/3}d} + \frac{(iA+B)\log(\cos(c+dx))}{4(a-ib)^{2/3}d} + $$

$$= -\frac{(A-iB)x}{4(a-ib)^{2/3}} - \frac{(A+iB)x}{4(a+ib)^{2/3}} - \frac{(iA-B)\log(\cos(c+dx))}{4(a+ib)^{2/3}d} + \frac{(iA+B)\log(\cos(c+dx))}{4(a-ib)^{2/3}d} + \frac{3}{}$$

$$= -\frac{(A-iB)x}{4(a-ib)^{2/3}} - \frac{(A+iB)x}{4(a+ib)^{2/3}} - \frac{\sqrt{3}(iA+B)\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a-ib}}}{\sqrt{3}}\right)}{2(a-ib)^{2/3}d} + \frac{\sqrt{3}(iA-B)\tan^{-1}\left(\right.}{2(a+ib)}$$

Mathematica [A] time = 0.241855, size = 305, normalized size = 0.85

$$\frac{i\left(\frac{(A+iB)\left(2\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{a+b\tan(c+dx)}}{\sqrt[3]{a+ib}}}{\sqrt{3}}\right)-2\log\left(-\sqrt[3]{a+b\tan(c+dx)}+\sqrt[3]{a+ib}\right)+\log\left(\sqrt[3]{a+ib}\sqrt[3]{a+b\tan(c+dx)}+(a+b\tan(c+dx))^{2/3}+(a+ib)^{2/3}\right)\right)}{(a+ib)^{2/3}} - \frac{(A-iB)\left(2\sqrt{3}\right.}{}\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(a + b*Tan[c + d*x])^(2/3),x]
```

```
[Out] ((I/4)*(-(((A - I*B)*(2*Sqrt[3]*ArcTan[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/
(a - I*b)^(1/3))/Sqrt[3]] - 2*Log[(a - I*b)^(1/3) - (a + b*Tan[c + d*x])^(1
/3)] + Log[(a - I*b)^(2/3) + (a - I*b)^(1/3)*(a + b*Tan[c + d*x])^(1/3) + (
a + b*Tan[c + d*x])^(2/3)]))/(a - I*b)^(2/3)) + ((A + I*B)*(2*Sqrt[3]*ArcTa
n[(1 + (2*(a + b*Tan[c + d*x])^(1/3))/(a + I*b)^(1/3))/Sqrt[3]] - 2*Log[(a
+ I*b)^(1/3) - (a + b*Tan[c + d*x])^(1/3)] + Log[(a + I*b)^(2/3) + (a + I*b
)^(1/3)*(a + b*Tan[c + d*x])^(1/3) + (a + b*Tan[c + d*x])^(2/3)]))/(a + I*b
)^(2/3)))/d
```

Maple [C] time = 0.083, size = 69, normalized size = 0.2

$$\frac{1}{2d}\sum_{\_R=\mathrm{RootOf}\left(\_Z^6-2\_Z^3a+a^2+b^2\right)}\frac{B\_R^3+Ab-aB}{\_R^5-\_R^2a}\ln\left(\sqrt[3]{a+b\tan\left(dx+c\right)}-\_R\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(2/3),x)
```

```
[Out] 1/2/d*sum((B*_R^3+A*b-B*a)/(_R^5-_R^2*a)*ln((a+b*tan(d*x+c))^(1/3)-_R),_R=R
ootOf(_Z^6-2*_Z^3*a+a^2+b^2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{B\tan\left(dx+c\right)+A}{\left(b\tan\left(dx+c\right)+a\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*tan(d*x + c) + A)/(b*tan(d*x + c) + a)^(2/3), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{A+B\tan\left(c+dx\right)}{\left(a+b\tan\left(c+dx\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(2/3),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(a + b*tan(c + d*x))**(2/3), x)
```

Giac [A] time = 21.3712, size = 215, normalized size = 0.6

$$\left(\frac{i A^3 - 3 A^2 B - 3i AB^2 + B^3}{8 a^2 d^3 + 16i abd^3 - 8 b^2 d^3}\right)^{\frac{1}{3}} \log\left((b \tan(dx + c) + a)^{\frac{1}{3}} d - i (i a - b)^{\frac{1}{3}} d\right) + \left(\frac{-i A^3 - 3 A^2 B + 3i AB^2 + B^3}{8 a^2 d^3 - 16i abd^3 - 8 b^2 d^3}\right)^{\frac{1}{3}} \log\left((b \tan\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((I*A^3 - 3*A^2*B - 3*I*A*B^2 + B^3)/(8*a^2*d^3 + 16*I*a*b*d^3 - 8*b^2*d^3)
)^(1/3)*log((b*tan(d*x + c) + a)^(1/3)*d - I*(I*a - b)^(1/3)*d) + ((-I*A^3
- 3*A^2*B + 3*I*A*B^2 + B^3)/(8*a^2*d^3 - 16*I*a*b*d^3 - 8*b^2*d^3))^(1/3)*
log((b*tan(d*x + c) + a)^(1/3)*d + I*(-I*a - b)^(1/3)*d)
```

3.477 $\int \frac{i-\tan(e+fx)}{\sqrt[3]{c+d\tan(e+fx)}}\,dx$

Optimal. Leaf size=148

$$-\frac{\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right)}{f\sqrt[3]{c-id}}-\frac{3\log\left(-\sqrt[3]{c+d\tan(e+fx)}+\sqrt[3]{c-id}\right)}{2f\sqrt[3]{c-id}}-\frac{\log(\cos(e+fx))}{2f\sqrt[3]{c-id}}-\frac{ix}{2\sqrt[3]{c-id}}$$

```
[Out] ((-I/2)*x)/(c - I*d)^(1/3) - (Sqrt[3]*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(
1/3))/(c - I*d)^(1/3))/Sqrt[3]])/((c - I*d)^(1/3)*f) - Log[Cos[e + f*x]]/(2
*(c - I*d)^(1/3)*f) - (3*Log[(c - I*d)^(1/3) - (c + d*Tan[e + f*x])^(1/3)])
/(2*(c - I*d)^(1/3)*f)
```

Rubi [A] time = 0.125532, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3537, 55, 617, 204, 31}

$$-\frac{\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right)}{f\sqrt[3]{c-id}}-\frac{3\log\left(-\sqrt[3]{c+d\tan(e+fx)}+\sqrt[3]{c-id}\right)}{2f\sqrt[3]{c-id}}-\frac{\log(\cos(e+fx))}{2f\sqrt[3]{c-id}}-\frac{ix}{2\sqrt[3]{c-id}}$$

Antiderivative was successfully verified.

```
[In] Int[(I - Tan[e + f*x])/(c + d*Tan[e + f*x])^(1/3),x]
```


```
[Out] ((-I/2)*x)/(c - I*d)^(1/3) - (Sqrt[3]*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(
1/3))/(c - I*d)^(1/3))/Sqrt[3]])/((c - I*d)^(1/3)*f) - Log[Cos[e + f*x]]/(2
*(c - I*d)^(1/3)*f) - (3*Log[(c - I*d)^(1/3) - (c + d*Tan[e + f*x])^(1/3)])
/(2*(c - I*d)^(1/3)*f)
```


Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 55

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(1/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q), x
] + (Dist[3/(2*b), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/3)],
x] - Dist[3/(2*b*q), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x])] /;
FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \frac{i-\tan(e+fx)}{\sqrt[3]{c+d\tan(e+fx)}}\,dx = -\frac{i\,\text{Subst}\left(\int \frac{1}{(1+ix)\sqrt[3]{c-dx}}\,dx, x, -\tan(e+fx)\right)}{f}$$

$$= -\frac{ix}{2\sqrt[3]{c-id}} - \frac{\log(\cos(e+fx))}{2\sqrt[3]{c-id}f} - \frac{3\,\text{Subst}\left(\int \frac{1}{(c-id)^{2/3}+\sqrt[3]{c-id}x+x^2}\,dx, x, \sqrt[3]{c+d\tan(e+fx)}\right)}{2f} +$$

$$= -\frac{ix}{2\sqrt[3]{c-id}} - \frac{\log(\cos(e+fx))}{2\sqrt[3]{c-id}f} - \frac{3\log\left(\sqrt[3]{c-id}-\sqrt[3]{c+d\tan(e+fx)}\right)}{2\sqrt[3]{c-id}f} + \frac{3\,\text{Subst}\left(\int \frac{1}{-3-x^2}\right.}{}$$

$$= -\frac{ix}{2\sqrt[3]{c-id}} - \frac{\sqrt{3}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right)}{\sqrt[3]{c-id}f} - \frac{\log(\cos(e+fx))}{2\sqrt[3]{c-id}f} - \frac{3\log\left(\sqrt[3]{c-id}-\sqrt[3]{c+d\tan\right.}{2\sqrt[3]{c-id}f}$$

Mathematica [C] time = 1.72742, size = 109, normalized size = 0.74

$$\frac{3\left(c-\frac{id\left(-1+e^{2i(e+fx)}\right)}{1+e^{2i(e+fx)}}\right)^{2/3}\text{Hypergeometric2F1}\left(\frac{2}{3},1,\frac{5}{3},\frac{ic+\frac{d\left(-1+e^{2i(e+fx)}\right)}{1+e^{2i(e+fx)}}}{d+ic}\right)}{2f(c-id)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(I - Tan[e + f*x])/(c + d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (3*(c - (I*d*(-1 + E^((2*I)*(e + f*x))))/(1 + E^((2*I)*(e + f*x))))^(2/3)*H
ypergeometric2F1[2/3, 1, 5/3, (I*c + (d*(-1 + E^((2*I)*(e + f*x))))/(1 + E^
((2*I)*(e + f*x))))/(I*c + d)])/(2*(c - I*d)*f)
```

Maple [C] time = 0.086, size = 42, normalized size = 0.3

$$-\frac{1}{f}\sum_{\_R=\text{RootOf}\left(\_Z^3+id-c\right)}\frac{1}{\_R}\ln\left(\sqrt[3]{c+d\tan\left(fx+e\right)}-\_R\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-tan(f*x+e)+I)/(c+d*tan(f*x+e))^(1/3),x)
```

```
[Out] -1/f*sum(1/_R*ln((c+d*tan(f*x+e))^(1/3)-_R),_R=RootOf(_Z^3+I*d-c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{\tan\left(fx+e\right)-i}{\left(d\tan\left(fx+e\right)+c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-tan(f*x+e)+I)/(c+d*tan(f*x+e))^(1/3),x, algorithm="maxima")
```

```
[Out] -integrate((tan(f*x + e) - I)/(d*tan(f*x + e) + c)^(1/3), x)
```

Fricas [B] time = 2.18713, size = 757, normalized size = 5.11

$$\frac{1}{2}\left(i\sqrt{3}-1\right)\left(-\frac{i}{(ic+d)f^3}\right)^{\frac{1}{3}}\log\left(\frac{1}{2}\left(\sqrt{3}(ic+d)f^2+(c-id)f^2\right)\left(-\frac{i}{(ic+d)f^3}\right)^{\frac{2}{3}}+\left(\frac{(c-id)e^{(2ifx+2ie)}+c+id}{e^{(2ifx+2ie)}+1}\right)^{\frac{1}{3}}\right)+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-tan(f*x+e)+I)/(c+d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] 1/2*(I*sqrt(3) - 1)*(-I/((I*c + d)*f^3))^(1/3)*log(1/2*(sqrt(3)*(I*c + d)*f
^2 + (c - I*d)*f^2)*(-I/((I*c + d)*f^3))^(2/3) + (((c - I*d)*e^(2*I*f*x + 2
*I*e) + c + I*d)/(e^(2*I*f*x + 2*I*e) + 1))^(1/3)) + 1/2*(-I*sqrt(3) - 1)*(
-I/((I*c + d)*f^3))^(1/3)*log(1/2*(sqrt(3)*(-I*c - d)*f^2 + (c - I*d)*f^2)*
(-I/((I*c + d)*f^3))^(2/3) + (((c - I*d)*e^(2*I*f*x + 2*I*e) + c + I*d)/(e^
(2*I*f*x + 2*I*e) + 1))^(1/3)) + (-I/((I*c + d)*f^3))^(1/3)*log(-(c - I*d)*
f^2*(-I/((I*c + d)*f^3))^(2/3) + (((c - I*d)*e^(2*I*f*x + 2*I*e) + c + I*d)
/(e^(2*I*f*x + 2*I*e) + 1))^(1/3))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{-\tan\left(e+fx\right)+i}{\sqrt[3]{c+d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((I-tan(f*x+e))/(c+d*tan(f*x+e))**(1/3),x)
```

```
[Out] Integral((-tan(e + f*x) + I)/(c + d*tan(e + f*x))**(1/3), x)
```

Giac [B] time = 1.57748, size = 1229, normalized size = 8.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-tan(f*x+e)+I)/(c+d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] -(c - I*d)^(2/3)*log((d*tan(f*x + e) + c)^(1/3) - (c - I*d)^(1/3))/(c*f - I
*d*f) - (sqrt(3)*(c^2 + d^2)^(1/3)*c*cos(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(
d) - 1/3*arctan(d/c))^2 - sqrt(3)*(c^2 + d^2)^(1/3)*c*sin(1/6*pi*sgn(c)*sgn
(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2 + 2*(c^2 + d^2)^(1/3)*c*cos(1/6*pi
*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))*sin(1/6*pi*sgn(c)*sgn(d)
- 1/6*pi*sgn(d) - 1/3*arctan(d/c)))*arctan(1/3*sqrt(3)*(2*(d*tan(f*x + e) +
 c)^(1/3) + (c - I*d)^(1/3))/(c - I*d)^(1/3))/((c^2 + d^2)*f) - I*(sqrt(3)*
(c^2 + d^2)^(1/3)*d*cos(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d
/c))^2 - sqrt(3)*(c^2 + d^2)^(1/3)*d*sin(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(
d) - 1/3*arctan(d/c))^2 + 2*(c^2 + d^2)^(1/3)*d*cos(1/6*pi*sgn(c)*sgn(d) -
1/6*pi*sgn(d) - 1/3*arctan(d/c))*sin(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) -
 1/3*arctan(d/c)))*arctan(1/3*sqrt(3)*(2*(d*tan(f*x + e) + c)^(1/3) + (c -
I*d)^(1/3))/(c - I*d)^(1/3))/((c^2 + d^2)*f) - 1/2*(2*sqrt(3)*(c^2 + d^2)^(
1/3)*c*cos(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))*sin(1/6*
pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c)) - (c^2 + d^2)^(1/3)*c*c
os(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2 + (c^2 + d^2)^
(1/3)*c*sin(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2)*log(
(c^2 + d^2)^(1/3)*cos(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c
))^2 + (c^2 + d^2)^(1/3)*sin(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arc
tan(d/c))^2 + (d*tan(f*x + e) + c)^(2/3) + (d*tan(f*x + e) + c)^(1/3)*(c -
I*d)^(1/3))/((c^2 + d^2)*f) - 1/2*I*(2*sqrt(3)*(c^2 + d^2)^(1/3)*d*cos(1/6*
pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))*sin(1/6*pi*sgn(c)*sgn(d
) - 1/6*pi*sgn(d) - 1/3*arctan(d/c)) - (c^2 + d^2)^(1/3)*d*cos(1/6*pi*sgn(c
)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2 + (c^2 + d^2)^(1/3)*d*sin(1/6
*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2)*log((c^2 + d^2)^(1/
3)*cos(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2 + (c^2 + d
^2)^(1/3)*sin(1/6*pi*sgn(c)*sgn(d) - 1/6*pi*sgn(d) - 1/3*arctan(d/c))^2 + (
d*tan(f*x + e) + c)^(2/3) + (d*tan(f*x + e) + c)^(1/3)*(c - I*d)^(1/3))/((c
^2 + d^2)*f)
```

3.478 $\int \frac{d-c\tan(e+fx)}{(c+d\tan(e+fx))^{2/3}}\,dx$

Optimal. Leaf size=299

$$\frac{\sqrt{3}\sqrt[3]{c-id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right)}{2f}+\frac{\sqrt{3}\sqrt[3]{c+id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c+id}}}{\sqrt{3}}\right)}{2f}-\frac{3\sqrt[3]{c-id}\log\left(-\sqrt[3]{c+d\tan(e+fx)}+\sqrt[3]{c-i\right.}}{4f}$$

```
[Out] (-I/4)*(c - I*d)^(1/3)*x + (I/4)*(c + I*d)^(1/3)*x + (Sqrt[3]*(c - I*d)^(1/
3)*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(1/3))/(c - I*d)^(1/3))/Sqrt[3]])/(2
*f) + (Sqrt[3]*(c + I*d)^(1/3)*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(1/3))/(
c + I*d)^(1/3))/Sqrt[3]])/(2*f) - ((c - I*d)^(1/3)*Log[Cos[e + f*x]])/(4*f)
 - ((c + I*d)^(1/3)*Log[Cos[e + f*x]])/(4*f) - (3*(c - I*d)^(1/3)*Log[(c -
I*d)^(1/3) - (c + d*Tan[e + f*x])^(1/3)])/(4*f) - (3*(c + I*d)^(1/3)*Log[(c
 + I*d)^(1/3) - (c + d*Tan[e + f*x])^(1/3)])/(4*f)
```

Rubi [A] time = 0.344992, antiderivative size = 299, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {3539, 3537, 57, 617, 204, 31}

$$\frac{\sqrt{3}\sqrt[3]{c-id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right)}{2f}+\frac{\sqrt{3}\sqrt[3]{c+id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c+id}}}{\sqrt{3}}\right)}{2f}-\frac{3\sqrt[3]{c-id}\log\left(-\sqrt[3]{c+d\tan(e+fx)}+\sqrt[3]{c-i\right.}}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c*Tan[e + f*x])/(c + d*Tan[e + f*x])^(2/3),x]
```


```
[Out] (-I/4)*(c - I*d)^(1/3)*x + (I/4)*(c + I*d)^(1/3)*x + (Sqrt[3]*(c - I*d)^(1/
3)*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(1/3))/(c - I*d)^(1/3))/Sqrt[3]])/(2
*f) + (Sqrt[3]*(c + I*d)^(1/3)*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(1/3))/(
c + I*d)^(1/3))/Sqrt[3]])/(2*f) - ((c - I*d)^(1/3)*Log[Cos[e + f*x]])/(4*f)
 - ((c + I*d)^(1/3)*Log[Cos[e + f*x]])/(4*f) - (3*(c - I*d)^(1/3)*Log[(c -
I*d)^(1/3) - (c + d*Tan[e + f*x])^(1/3)])/(4*f) - (3*(c + I*d)^(1/3)*Log[(c
 + I*d)^(1/3) - (c + d*Tan[e + f*x])^(1/3)])/(4*f)
```


Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 57

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(2/3)), x_Symbol] :> With[
{q = Rt[(b*c - a*d)/b, 3]}, -Simp[Log[RemoveContent[a + b*x, x]]/(2*b*q^2),
 x] + (-Dist[3/(2*b*q), Subst[Int[1/(q^2 + q*x + x^2), x], x, (c + d*x)^(1/
3)], x] - Dist[3/(2*b*q^2), Subst[Int[1/(q - x), x], x, (c + d*x)^(1/3)], x
])] /; FreeQ[{a, b, c, d}, x] && PosQ[(b*c - a*d)/b]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 31

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

Rubi steps

$$\int \frac{d-c\tan(e+fx)}{(c+d\tan(e+fx))^{2/3}}\,dx = \frac{1}{2}(-ic+d)\int \frac{1-i\tan(e+fx)}{(c+d\tan(e+fx))^{2/3}}\,dx + \frac{1}{2}(ic+d)\int \frac{1+i\tan(e+fx)}{(c+d\tan(e+fx))^{2/3}}\,dx$$

$$= -\frac{(c-id)\,\text{Subst}\left(\int \frac{1}{(-1+x)(c-idx)^{2/3}}\,dx, x, i\tan(e+fx)\right)}{2f} - \frac{(c+id)\,\text{Subst}\left(\int \frac{1}{(-1+x)(c+idx)^{2/3}}\,d\right.}{2f}$$

$$= -\frac{1}{4}i\sqrt[3]{c-id}x + \frac{1}{4}i\sqrt[3]{c+id}x - \frac{\sqrt[3]{c-id}\log(\cos(e+fx))}{4f} - \frac{\sqrt[3]{c+id}\log(\cos(e+fx))}{4f} + \frac{(3}{}$$

$$= -\frac{1}{4}i\sqrt[3]{c-id}x + \frac{1}{4}i\sqrt[3]{c+id}x - \frac{\sqrt[3]{c-id}\log(\cos(e+fx))}{4f} - \frac{\sqrt[3]{c+id}\log(\cos(e+fx))}{4f} - \frac{3\sqrt[3]{}}{}$$

$$= -\frac{1}{4}i\sqrt[3]{c-id}x + \frac{1}{4}i\sqrt[3]{c+id}x + \frac{\sqrt{3}\sqrt[3]{c-id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right)}{2f} + \frac{\sqrt{3}\sqrt[3]{c+id}\tan^{-1}\left(\frac{1+}{}\right.}{2f}$$

Mathematica [A] time = 0.432997, size = 330, normalized size = 1.1

$$\frac{2\sqrt{3}\sqrt[3]{c-id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c-id}}}{\sqrt{3}}\right) + 2\sqrt{3}\sqrt[3]{c+id}\tan^{-1}\left(\frac{1+\frac{2\sqrt[3]{c+d\tan(e+fx)}}{\sqrt[3]{c+id}}}{\sqrt{3}}\right) - 2\sqrt[3]{c-id}\log\left(-\sqrt[3]{c+d\tan(e+fx)} + \sqrt[3]{c-}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c*Tan[e + f*x])/(c + d*Tan[e + f*x])^(2/3),x]
```

```
[Out] (2*Sqrt[3]*(c - I*d)^(1/3)*ArcTan[(1 + (2*(c + d*Tan[e + f*x])^(1/3))/(c -
I*d)^(1/3))/Sqrt[3]] + 2*Sqrt[3]*(c + I*d)^(1/3)*ArcTan[(1 + (2*(c + d*Tan[
e + f*x])^(1/3))/(c + I*d)^(1/3))/Sqrt[3]] - 2*(c - I*d)^(1/3)*Log[(c - I*d
)^(1/3) - (c + d*Tan[e + f*x])^(1/3)] - 2*(c + I*d)^(1/3)*Log[(c + I*d)^(1/
3) - (c + d*Tan[e + f*x])^(1/3)] + (c - I*d)^(1/3)*Log[(c - I*d)^(2/3) + (c
 - I*d)^(1/3)*(c + d*Tan[e + f*x])^(1/3) + (c + d*Tan[e + f*x])^(2/3)] + (c
 + I*d)^(1/3)*Log[(c + I*d)^(2/3) + (c + I*d)^(1/3)*(c + d*Tan[e + f*x])^(1
/3) + (c + d*Tan[e + f*x])^(2/3)])/(4*f)
```

Maple [C] time = 0.081, size = 72, normalized size = 0.2

$$-\frac{1}{2f}\sum_{\_R=\mathrm{RootOf}\left(\_Z^6-2\_Z^3c+c^2+d^2\right)}\frac{\_R^3c-c^2-d^2}{\_R^5-\_R^2c}\ln\left(\sqrt[3]{c+d\tan\left(fx+e\right)}-\_R\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d-c*tan(f*x+e))/(c+d*tan(f*x+e))^(2/3),x)
```

```
[Out] -1/2/f*sum((_R^3*c-c^2-d^2)/(_R^5-_R^2*c)*ln((c+d*tan(f*x+e))^(1/3)-_R),_R=
RootOf(_Z^6-2*_Z^3*c+c^2+d^2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int\frac{c\tan\left(fx+e\right)-d}{\left(d\tan\left(fx+e\right)+c\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d-c*tan(f*x+e))/(c+d*tan(f*x+e))^(2/3),x, algorithm="maxima")
```

```
[Out] -integrate((c*tan(f*x + e) - d)/(d*tan(f*x + e) + c)^(2/3), x)
```

Fricas [B] time = 2.7421, size = 6688, normalized size = 22.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d-c*tan(f*x+e))/(c+d*tan(f*x+e))^(2/3),x, algorithm="fricas")
```

```
[Out] 1/2*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f
^3)*sqrt(d^2/f^6)/d^2))*log(2*f*((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x
+ e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^
6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + f^2*((c^2 + d^2)/f^6)^(1/3) + ((c*cos(f*x
 + e) + d*sin(f*x + e))/cos(f*x + e))^(2/3)) - 2*((c^2 + d^2)/f^6)^(1/6)*ar
ctan((sqrt(2*f*((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2
```

```
 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(
d^2/f^6)/d^2)) + f^2*((c^2 + d^2)/f^6)^(1/3) + ((c*cos(f*x + e) + d*sin(f*x
 + e))/cos(f*x + e))^(2/3))*f^5*((c^2 + d^2)/f^6)^(5/6) - f^5*((c*cos(f*x +
 e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(5/6) - (c^2 +
d^2)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2))
)/((c^2 + d^2)*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/
f^6)/d^2))))*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^
6)/d^2)) - (sqrt(3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((c^2 +
 d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - ((c^2 + d^2)/f^6)^(1/6)*sin(2/3*a
rctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)))*arctan(-(2*s
qrt(3)*f^5*((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d
^2)/f^6)^(5/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/
f^6)/d^2)) + 2*(f^5*((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*
((c^2 + d^2)/f^6)^(5/6) - 2*(c^2 + d^2)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2
)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)))*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f
^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - 2*(sqrt(3)*f^5*((c^2 + d^2)/f^6)^(5/6)*c
os(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + f^5
*((c^2 + d^2)/f^6)^(5/6)*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)
*sqrt(d^2/f^6)/d^2)))*sqrt(-sqrt(3)*f*((c*cos(f*x + e) + d*sin(f*x + e))/co
s(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*sin(2/3*arctan((f^6*sqrt((c^2 + d
^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - f*((c*cos(f*x + e) + d*sin(f*x + e)
)/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((c^2
 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + f^2*((c^2 + d^2)/f^6)^(1/3) + (
(c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(2/3)) - sqrt(3)*(c^2 + d^2
))/(4*(c^2 + d^2)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d
^2/f^6)/d^2))^2 - c^2 - d^2)) + (sqrt(3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*ar
ctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + ((c^2 + d^2)
/f^6)^(1/6)*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6
)/d^2)))*arctan((2*sqrt(3)*f^5*((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x +
 e))^(1/3)*((c^2 + d^2)/f^6)^(5/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6
) + c*f^3)*sqrt(d^2/f^6)/d^2)) - 2*(f^5*((c*cos(f*x + e) + d*sin(f*x + e))/
cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(5/6) - 2*(c^2 + d^2)*cos(2/3*arctan(
(f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)))*sin(2/3*arctan((f^
6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - 2*(sqrt(3)*f^5*((c^2
 + d^2)/f^6)^(5/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(
d^2/f^6)/d^2)) - f^5*((c^2 + d^2)/f^6)^(5/6)*sin(2/3*arctan((f^6*sqrt((c^2
+ d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)))*sqrt(sqrt(3)*f*((c*cos(f*x + e) +
 d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*sin(2/3*arctan
((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - f*((c*cos(f*x +
e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*ar
ctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + f^2*((c^2 +
d^2)/f^6)^(1/3) + ((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(2/3)) -
 sqrt(3)*(c^2 + d^2))/(4*(c^2 + d^2)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f
^6) + c*f^3)*sqrt(d^2/f^6)/d^2))^2 - c^2 - d^2)) + 1/4*(sqrt(3)*((c^2 + d^2
)/f^6)^(1/6)*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^
```

```
6)/d^2)) - ((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6
) + c*f^3)*sqrt(d^2/f^6)/d^2)))*log(sqrt(3)*f*((c*cos(f*x + e) + d*sin(f*x
+ e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*sin(2/3*arctan((f^6*sqrt(
(c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - f*((c*cos(f*x + e) + d*sin(
f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*s
qrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + f^2*((c^2 + d^2)/f^6)^(
1/3) + ((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(2/3)) - 1/4*(sqrt(
3)*((c^2 + d^2)/f^6)^(1/6)*sin(2/3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^
3)*sqrt(d^2/f^6)/d^2)) + ((c^2 + d^2)/f^6)^(1/6)*cos(2/3*arctan((f^6*sqrt((
c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)))*log(-sqrt(3)*f*((c*cos(f*x +
e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*sin(2/3*ar
ctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) - f*((c*cos(f*
x + e) + d*sin(f*x + e))/cos(f*x + e))^(1/3)*((c^2 + d^2)/f^6)^(1/6)*cos(2/
3*arctan((f^6*sqrt((c^2 + d^2)/f^6) + c*f^3)*sqrt(d^2/f^6)/d^2)) + f^2*((c^
2 + d^2)/f^6)^(1/3) + ((c*cos(f*x + e) + d*sin(f*x + e))/cos(f*x + e))^(2/3
))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int -\frac{d}{\left(c+d\tan\left(e+fx\right)\right)^{\frac{2}{3}}}\,dx-\int \frac{c\tan\left(e+fx\right)}{\left(c+d\tan\left(e+fx\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d-c*tan(f*x+e))/(c+d*tan(f*x+e))**(2/3),x)
```

```
[Out] -Integral(-d/(c + d*tan(e + f*x))**(2/3), x) - Integral(c*tan(e + f*x)/(c +
 d*tan(e + f*x))**(2/3), x)
```

Giac [A] time = 2.59867, size = 390, normalized size = 1.3

$$\frac{1}{4}\left(i\sqrt{3}+1\right)\left(\frac{c-id}{f^3}\right)^{\frac{1}{3}}\log\left(-\left(d\tan\left(fx+e\right)+c\right)^{\frac{1}{3}}\left(\sqrt{3}+i\right)+2\left(ic+d\right)^{\frac{1}{3}}\right)+\frac{1}{4}\left(i\sqrt{3}+1\right)\left(\frac{c+id}{f^3}\right)^{\frac{1}{3}}\log\left(-\left(d\tan\left(fx+e\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d-c*tan(f*x+e))/(c+d*tan(f*x+e))^(2/3),x, algorithm="giac")
```

```
[Out] 1/4*(I*sqrt(3) + 1)*((c - I*d)/f^3)^(1/3)*log(-(d*tan(f*x + e) + c)^(1/3)*(
sqrt(3) + I) + 2*(I*c + d)^(1/3)) + 1/4*(I*sqrt(3) + 1)*((c + I*d)/f^3)^(1/
3)*log(-(d*tan(f*x + e) + c)^(1/3)*(sqrt(3) + I) + 2*(I*c - d)^(1/3)) + 1/4
*(-I*sqrt(3) + 1)*((c - I*d)/f^3)^(1/3)*log((d*tan(f*x + e) + c)^(1/3)*(sqr
t(3) - I) + 2*(I*c + d)^(1/3)) + 1/4*(-I*sqrt(3) + 1)*((c + I*d)/f^3)^(1/3)
*log((d*tan(f*x + e) + c)^(1/3)*(sqrt(3) - I) + 2*(I*c - d)^(1/3)) - 1/2*((
c - I*d)/f^3)^(1/3)*log(I*(d*tan(f*x + e) + c)^(1/3)*f + (I*c + d)^(1/3)*f)
 - 1/2*((c + I*d)/f^3)^(1/3)*log(I*(d*tan(f*x + e) + c)^(1/3)*f + (I*c - d)
^(1/3)*f)
```

3.479 $\int \tan^m(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=403

$$\frac{\left(-6a^2Ab^2+a^4A-4a^3bB+4ab^3B+Ab^4\right)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{d(m+1)}+\frac{\left(4a^3Ab\right.}{}$$

```
[Out] -((b*(A*b^3*(12 + 7*m + m^2) + 4*a*b^2*B*(12 + 7*m + m^2) - 2*a^3*B*(19 + 8
*m + m^2) - a^2*A*b*(68 + 37*m + 5*m^2))*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(
3 + m)*(4 + m))) + ((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*H
ypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1
+ m))/(d*(1 + m)) + (b^2*(2*a*A*b*(4 + m)^2 - b^2*B*(12 + 7*m + m^2) + a^2*
B*(26 + 9*m + m^2))*Tan[c + d*x]^(2 + m))/(d*(2 + m)*(3 + m)*(4 + m)) + ((4
*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Hypergeometric2F1[1, (2
 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(d*(2 + m)) + (b
*(A*b*(4 + m) + a*B*(7 + m))*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^2)/(
d*(3 + m)*(4 + m)) + (b*B*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^3)/(d*(
4 + m))
```

Rubi [A] time = 1.32834, antiderivative size = 403, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3607, 3647, 3637, 3630, 3538, 3476, 364}

$$\frac{\left(-6a^2Ab^2+a^4A-4a^3bB+4ab^3B+Ab^4\right)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{d(m+1)}+\frac{\left(4a^3Ab-6a^2b^2B+a^4B-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((b*(A*b^3*(12 + 7*m + m^2) + 4*a*b^2*B*(12 + 7*m + m^2) - 2*a^3*B*(19 + 8
*m + m^2) - a^2*A*b*(68 + 37*m + 5*m^2))*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(
3 + m)*(4 + m))) + ((a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*H
ypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1
+ m))/(d*(1 + m)) + (b^2*(2*a*A*b*(4 + m)^2 - b^2*B*(12 + 7*m + m^2) + a^2*
B*(26 + 9*m + m^2))*Tan[c + d*x]^(2 + m))/(d*(2 + m)*(3 + m)*(4 + m)) + ((4
*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*Hypergeometric2F1[1, (2
 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(d*(2 + m)) + (b
*(A*b*(4 + m) + a*B*(7 + m))*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^2)/(
```

```
d*(3 + m)*(4 + m)) + (b*B*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^3)/(d*(
4 + m))
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
```

```
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && !LeQ[m, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] && !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^4(A+B\tan(c+dx))\,dx = \frac{bB\tan^{1+m}(c+dx)(a+b\tan(c+dx))^3}{d(4+m)} + \frac{\int \tan^m(c+dx)}{}$$

$$= \frac{b(Ab(4+m)+aB(7+m))\tan^{1+m}(c+dx)(a+b\tan(c+}{d(3+m)(4+m)}$$

$$= \frac{b^2\left(2aAb(4+m)^2-b^2B\left(12+7m+m^2\right)+a^2B\left(26+9m\right.\right.}{d(2+m)\left(12+7m+m^2\right)}$$

$$= -\frac{b\left(Ab^3\left(12+7m+m^2\right)+4ab^2B\left(12+7m+m^2\right)-2a^3B\right.}{d(1+m)\left(\right.}$$

$$= -\frac{b\left(Ab^3\left(12+7m+m^2\right)+4ab^2B\left(12+7m+m^2\right)-2a^3B\right.}{d(1+m)\left(\right.}$$

$$= -\frac{b\left(Ab^3\left(12+7m+m^2\right)+4ab^2B\left(12+7m+m^2\right)-2a^3B\right.}{d(1+m)\left(\right.}$$

$$= -\frac{b\left(Ab^3\left(12+7m+m^2\right)+4ab^2B\left(12+7m+m^2\right)-2a^3B\right.}{d(1+m)\left(\right.}$$

Mathematica [A] time = 5.47464, size = 355, normalized size = 0.88

$$\frac{\tan^{m+1}(c+dx)\left((m+2)(m+3)(m+4)\left(-6a^2Ab^2+a^4A-4a^3bB+4ab^3B+Ab^4\right)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^4*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Tan[c + d*x]^(1 + m)*(-(b*(2 + m)*(A*b^3*(12 + 7*m + m^2) + 4*a*b^2*B*(12
+ 7*m + m^2) - 2*a^3*B*(19 + 8*m + m^2) - a^2*A*b*(68 + 37*m + 5*m^2))) + (
a^4*A - 6*a^2*A*b^2 + A*b^4 - 4*a^3*b*B + 4*a*b^3*B)*(2 + m)*(3 + m)*(4 + m
)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2] + b^2*(1 + m)
*(2*a*A*b*(4 + m)^2 - b^2*B*(12 + 7*m + m^2) + a^2*B*(26 + 9*m + m^2))*Tan[
c + d*x] + (4*a^3*A*b - 4*a*A*b^3 + a^4*B - 6*a^2*b^2*B + b^4*B)*(1 + m)*(3
 + m)*(4 + m)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*T
an[c + d*x] + b*(1 + m)*(2 + m)*(A*b*(4 + m) + a*B*(7 + m))*(a + b*Tan[c +
d*x])^2 + b*B*(1 + m)*(2 + m)*(3 + m)*(a + b*Tan[c + d*x])^3))/(d*(1 + m)*(
2 + m)*(3 + m)*(4 + m))
```

Maple [F] time = 0.598, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+b\tan(dx+c))^4 (A+B\tan(dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(Bb^4\tan(dx+c)^5 + Aa^4 + \left(4\,Bab^3 + Ab^4\right)\tan(dx+c)^4 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)\tan(dx+c)^3 + 2\left(2\,Ba^3b + 3\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*b^4*tan(d*x + c)^5 + A*a^4 + (4*B*a*b^3 + A*b^4)*tan(d*x + c)^4
 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*tan(d*x + c)^3 + 2*(2*B*a^3*b + 3*A*a^2*b^2)
*tan(d*x + c)^2 + (B*a^4 + 4*A*a^3*b)*tan(d*x + c))*tan(d*x + c)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan (c + dx)) (a + b\tan (c + dx))^4 \tan^m (c + dx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**4*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**4*tan(c + d*x)**m, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx + c) + A)(b\tan (dx + c) + a)^4 \tan (dx + c)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^4*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^4*tan(d*x + c)^m, x)
```

3.480 $\int \tan^m(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=267

$$\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{d(m+1)}+\frac{\left(3a^2Ab+a^3B-3a\right.}{}$$

```
[Out] (b*(3*a*A*b*(3 + m) - b^2*B*(3 + m) + 2*a^2*B*(4 + m))*Tan[c + d*x]^(1 + m)
)/(d*(1 + m)*(3 + m)) + ((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Hypergeome
tric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*
(1 + m)) + (b^2*(A*b*(3 + m) + a*B*(5 + m))*Tan[c + d*x]^(2 + m))/(d*(2 + m
)*(3 + m)) + ((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Hypergeometric2F1[1,
(2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(d*(2 + m)) +
(b*B*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^2)/(d*(3 + m))
```

Rubi [A] time = 0.690549, antiderivative size = 267, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3607, 3637, 3630, 3538, 3476, 364}

$$\frac{\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{d(m+1)}+\frac{\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\tan^{m+2}}{d(}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (b*(3*a*A*b*(3 + m) - b^2*B*(3 + m) + 2*a^2*B*(4 + m))*Tan[c + d*x]^(1 + m)
)/(d*(1 + m)*(3 + m)) + ((a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*Hypergeome
tric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*
(1 + m)) + (b^2*(A*b*(3 + m) + a*B*(5 + m))*Tan[c + d*x]^(2 + m))/(d*(2 + m
)*(3 + m)) + ((3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Hypergeometric2F1[1,
(2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(d*(2 + m)) +
(b*B*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^2)/(d*(3 + m))
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
```

```
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
```

```
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \frac{bB\tan^{1+m}(c+dx)(a+b\tan(c+dx))^2}{d(3+m)} + \frac{\int \tan^m(c+dx)(a \ldots}{}$$
$$= \frac{b^2(Ab(3+m)+aB(5+m))\tan^{2+m}(c+dx)}{d(2+m)(3+m)} + \frac{bB\tan^{1+m}(c \ldots}{}$$
$$= \frac{b\left(3aAb(3+m)-b^2B(3+m)+2a^2B(4+m)\right)\tan^{1+m}(c+ \ldots}{d(1+m)(3+m)}$$
$$= \frac{b\left(3aAb(3+m)-b^2B(3+m)+2a^2B(4+m)\right)\tan^{1+m}(c+ \ldots}{d(1+m)(3+m)}$$
$$= \frac{b\left(3aAb(3+m)-b^2B(3+m)+2a^2B(4+m)\right)\tan^{1+m}(c+ \ldots}{d(1+m)(3+m)}$$
$$= \frac{b\left(3aAb(3+m)-b^2B(3+m)+2a^2B(4+m)\right)\tan^{1+m}(c+ \ldots}{d(1+m)(3+m)}$$

Mathematica [A] time = 2.52333, size = 232, normalized size = 0.87

$$\frac{\tan^{m+1}(c+dx)\left((m+2)(m+3)\left(a^3A-3a^2bB-3aAb^2+b^3B\right)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)+(m \ldots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Tan[c + d*x]^(1 + m)*(b*(2 + m)*(3*a*A*b*(3 + m) - b^2*B*(3 + m) + 2*a^2*B
*(4 + m)) + (a^3*A - 3*a*A*b^2 - 3*a^2*b*B + b^3*B)*(2 + m)*(3 + m)*Hyperge
ometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2] + b^2*(1 + m)*(A*b*(3
+ m) + a*B*(5 + m))*Tan[c + d*x] + (3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*
(1 + m)*(3 + m)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]
*Tan[c + d*x] + b*B*(1 + m)*(2 + m)*(a + b*Tan[c + d*x])^2))/(d*(1 + m)*(2
+ m)*(3 + m))
```

Maple [F] time = 0.416, size = 0, normalized size = 0.

$$\int (\tan (dx + c))^m (a + b\tan (dx + c))^3 (A + B\tan (dx + c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx + c) + A)(b\tan (dx + c) + a)^3 \tan (dx + c)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(Bb^3 \tan (dx + c)^4 + Aa^3 + \left(3\,Bab^2 + Ab^3\right)\tan (dx + c)^3 + 3\left(Ba^2b + Aab^2\right)\tan (dx + c)^2 + \left(Ba^3 + 3\,Aa^2b\right)\mathrm{t}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*b^3*tan(d*x + c)^4 + A*a^3 + (3*B*a*b^2 + A*b^3)*tan(d*x + c)^3
 + 3*(B*a^2*b + A*a*b^2)*tan(d*x + c)^2 + (B*a^3 + 3*A*a^2*b)*tan(d*x + c))
*tan(d*x + c)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan (c + dx)) (a + b\tan (c + dx))^3 \tan^m (c + dx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3*tan(c + d*x)**m, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^3\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*tan(d*x + c)^m, x)
```

3.481 $\int \tan^m(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=194

$$\frac{(a^2A-2abB-Ab^2)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{d(m+1)}+\frac{(a^2B+2aAb-b^2B)\tan^{m+2}}{}$$

```
[Out] (b*(A*b*(2 + m) + a*B*(3 + m))*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(2 + m)) +
((a^2*A - A*b^2 - 2*a*b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[
c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + ((2*a*A*b + a^2*B - b^2*B)*
Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2
 + m))/(d*(2 + m)) + (b*B*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x]))/(d*(2
+ m))
```

Rubi [A] time = 0.332491, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3607, 3630, 3538, 3476, 364}

$$\frac{(a^2A-2abB-Ab^2)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{d(m+1)}+\frac{(a^2B+2aAb-b^2B)\tan^{m+2}(c+dx)\,{}_2F_1\left(1,\frac{m+}{2}\right.}{d(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (b*(A*b*(2 + m) + a*B*(3 + m))*Tan[c + d*x]^(1 + m))/(d*(1 + m)*(2 + m)) +
((a^2*A - A*b^2 - 2*a*b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[
c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + ((2*a*A*b + a^2*B - b^2*B)*
Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2
 + m))/(d*(2 + m)) + (b*B*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x]))/(d*(2
+ m))
```


Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
```

```
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \frac{bB\tan^{1+m}(c+dx)(a+b\tan(c+dx))}{d(2+m)} + \int \tan^m(c+dx)\,(\ldots$$

$$= \frac{b(Ab(2+m)+aB(3+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{bB\tan^{1+m}(\ldots}{\ldots}$$

$$= \frac{b(Ab(2+m)+aB(3+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{bB\tan^{1+m}(\ldots}{\ldots}$$

$$= \frac{b(Ab(2+m)+aB(3+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{bB\tan^{1+m}(\ldots}{\ldots}$$

$$= \frac{b(Ab(2+m)+aB(3+m))\tan^{1+m}(c+dx)}{d(1+m)(2+m)} + \frac{\left(a^2A-Ab^2\ldots\right.}{\ldots}$$

Mathematica [A] time = 0.671962, size = 155, normalized size = 0.8

$$\frac{\tan^{m+1}(c+dx)\left(\frac{(m+2)\left(a^2A-2abB-Ab^2\right)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{m+1}+\left(a^2B+2aAb-b^2B\right)\tan(c+dx)\text{Hypergeo}\ldots\right.}{d(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Tan[c + d*x]^(1 + m)*((b*(A*b*(2 + m) + a*B*(3 + m)))/(1 + m) + ((a^2*A -
A*b^2 - 2*a*b*B)*(2 + m)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c
+ d*x]^2])/(1 + m) + (2*a*A*b + a^2*B - b^2*B)*Hypergeometric2F1[1, (2 + m)
/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x] + b*B*(a + b*Tan[c + d*x])))/(
d*(2 + m))
```

Maple [F] time = 0.354, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+b\tan(dx+c))^2 (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^2\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(Bb^2\tan(dx+c)^3+Aa^2+\left(2\,Bab+Ab^2\right)\tan(dx+c)^2+\left(Ba^2+2\,Aab\right)\tan(dx+c)\right)\tan(dx+c)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*b^2*tan(d*x + c)^3 + A*a^2 + (2*B*a*b + A*b^2)*tan(d*x + c)^2 +
 (B*a^2 + 2*A*a*b)*tan(d*x + c))*tan(d*x + c)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A+B\tan(c+dx))\,(a+b\tan(c+dx))^2\tan^m(c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2*tan(c + d*x)**m, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^2\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2*tan(d*x + c)^m, x)
```

3.482 $\int \tan^m(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=127

$$\frac{(aA-bB)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{d(m+1)}+\frac{(aB+Ab)\tan^{m+2}(c+dx)\text{Hypergeom}}{d(m}$$

```
[Out] (b*B*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + ((a*A - b*B)*Hypergeometric2F1[1,
(1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) +
((A*b + a*B)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Ta
n[c + d*x]^(2 + m))/(d*(2 + m))
```

Rubi [A] time = 0.139204, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3592, 3538, 3476, 364}

$$\frac{(aA-bB)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{d(m+1)}+\frac{(aB+Ab)\tan^{m+2}(c+dx)\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};-\tan^2(c+dx)\right.}{d(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (b*B*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + ((a*A - b*B)*Hypergeometric2F1[1,
(1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) +
((A*b + a*B)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Ta
n[c + d*x]^(2 + m))/(d*(2 + m))
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \frac{bB\tan^{1+m}(c+dx)}{d(1+m)} + \int \tan^m(c+dx)(aA-bB+(Ab+a$$

$$= \frac{bB\tan^{1+m}(c+dx)}{d(1+m)} + (Ab+aB)\int \tan^{1+m}(c+dx)\,dx + (a$$

$$= \frac{bB\tan^{1+m}(c+dx)}{d(1+m)} + \frac{(Ab+aB)\,\text{Subst}\left(\int \frac{x^{1+m}}{1+x^2}\,dx, x, \tan(\right.}{d}$$

$$= \frac{bB\tan^{1+m}(c+dx)}{d(1+m)} + \frac{(aA-bB)\,{}_2F_1\left(1, \frac{1+m}{2}; \frac{3+m}{2}; -\tan^2(c\right.}{d(1+m)}$$

Mathematica [A] time = 0.433015, size = 108, normalized size = 0.85

$$\frac{\tan^{m+1}(c+dx)\left(\frac{(aA-bB)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{m+1} + \frac{(aB+Ab)\tan(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+2}{2},\frac{m+4}{2},-\tan^2(c+dx)\right)}{m+2} + \right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Tan[c + d*x]^(1 + m)*((b*B)/(1 + m) + ((a*A - b*B)*Hypergeometric2F1[1, (1
 + m)/2, (3 + m)/2, -Tan[c + d*x]^2])/(1 + m) + ((A*b + a*B)*Hypergeometric
2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x])/(2 + m)))/d
```

Maple [F] time = 0.797, size = 0, normalized size = 0.

$$\int (\tan (dx + c))^m (a + b \tan (dx + c)) (A + B \tan (dx + c)) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(b \tan (dx + c) + a) \tan (dx + c)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(Bb \tan (dx + c)^2 + Aa + (Ba + Ab) \tan (dx + c)\right) \tan (dx + c)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] integral((B*b*tan(d*x + c)^2 + A*a + (B*a + A*b)*tan(d*x + c))*tan(d*x + c)
^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))\tan^m(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))*tan(c + d*x)**m, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx + c) + A)(b\tan(dx + c) + a)\tan(dx + c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)*tan(d*x + c)^m, x)
```

3.483 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=185

$$\frac{(aA+bB)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{d(m+1)\left(a^2+b^2\right)}+\frac{b(Ab-aB)\tan^{m+1}(c+dx)\text{Hypergeom}}{ad(m+1}$$

```
[Out] ((a*A + b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Ta
n[c + d*x]^(1 + m))/((a^2 + b^2)*d*(1 + m)) + (b*(A*b - a*B)*Hypergeometric
2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 + m))/(a*(a^2 +
 b^2)*d*(1 + m)) - ((A*b - a*B)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2,
-Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/((a^2 + b^2)*d*(2 + m))
```

Rubi [A] time = 0.312891, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3613, 3538, 3476, 364, 3634, 64}

$$\frac{(aA+bB)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{d(m+1)\left(a^2+b^2\right)}+\frac{b(Ab-aB)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,m+1;m+2;-\frac{b\tan(c+dx}{a}\right.}{ad(m+1)\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] ((a*A + b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Ta
n[c + d*x]^(1 + m))/((a^2 + b^2)*d*(1 + m)) + (b*(A*b - a*B)*Hypergeometric
2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 + m))/(a*(a^2 +
 b^2)*d*(1 + m)) - ((A*b - a*B)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2,
-Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/((a^2 + b^2)*d*(2 + m))
```

Rule 3613

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)])^(n_))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[
1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n*Simp[a*A + b*B - (A*b - a*B)*Tan[
e + f*x], x], x], x] + Dist[(b*(A*b - a*B))/(a^2 + b^2), Int[((c + d*Tan[e
+ f*x])^n*(1 + Tan[e + f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ
[c^2 + d^2, 0]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \frac{\int \tan^m(c+dx)(aA+bB-(Ab-aB)\tan(c+dx))\,dx}{a^2+b^2} + \frac{(b(Ab-aB))\int \frac{\tan^m(c\cdot}{a}}{a^2+}$$

$$= -\frac{(Ab-aB)\int \tan^{1+m}(c+dx)\,dx}{a^2+b^2} + \frac{(aA+bB)\int \tan^m(c+dx)\,dx}{a^2+b^2} + \frac{(b(Ab-a}{}$$

$$= \frac{b(Ab-aB)\,{}_2F_1\left(1,1+m;2+m;-\frac{b\tan(c+dx)}{a}\right)\tan^{1+m}(c+dx)}{a\left(a^2+b^2\right)d(1+m)} - \frac{(Ab-aB)\,\mathrm{Sub}}{}$$

$$= \frac{(aA+bB)\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c+dx)\right)\tan^{1+m}(c+dx)}{\left(a^2+b^2\right)d(1+m)} + \frac{b(Ab-aB)\,{}_2F_1}{}$$

Mathematica [A] time = 0.864652, size = 144, normalized size = 0.78

$$\frac{\tan^{m+1}(c+dx)\left((aA+bB)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)+\frac{(Ab-aB)\left(b(m+2)\text{Hypergeometric2F1}\left(1,m+1,m+\right.\right.}{}\right.}{d(m+1)\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (Tan[c + d*x]^(1 + m)*((a*A + b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/
2, -Tan[c + d*x]^2] + ((A*b - a*B)*(b*(2 + m)*Hypergeometric2F1[1, 1 + m, 2
 + m, -((b*Tan[c + d*x])/a)] - a*(1 + m)*Hypergeometric2F1[1, (2 + m)/2, (4
 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]))/(a*(2 + m))))/((a^2 + b^2)*d*(1 +
m))
```

Maple [F] time = 0.323, size = 0, normalized size = 0.

$$\int \frac{(\tan(dx+c))^m(A+B\tan(dx+c))}{a+b\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{b\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{b\tan(dx+c)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] integral((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))\tan^m(c+dx)}{a+b\tan(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**m/(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{b\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a), x)
```

3.484 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=282

$$\frac{\left(a^2A+2abB-Ab^2\right)\tan^{m+1}(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{d(m+1)\left(a^2+b^2\right)^2}+\frac{b\left(a^2Ab(2-m)+a^3(-(B-\right.}{}$$

```
[Out] ((a^2*A - A*b^2 + 2*a*b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[
c + d*x]^2]*Tan[c + d*x]^(1 + m))/((a^2 + b^2)^2*d*(1 + m)) + (b*(a^2*A*b*(
2 - m) - A*b^3*m + a*b^2*B*(1 + m) - a^3*(B - B*m))*Hypergeometric2F1[1, 1
+ m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 + m))/(a^2*(a^2 + b^2)^2
*d*(1 + m)) - ((2*a*A*b - a^2*B + b^2*B)*Hypergeometric2F1[1, (2 + m)/2, (4
 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/((a^2 + b^2)^2*d*(2 + m)) +
 (b*(A*b - a*B)*Tan[c + d*x]^(1 + m))/(a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
)
```

Rubi [A] time = 0.703814, antiderivative size = 282, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3609, 3653, 3538, 3476, 364, 3634, 64}

$$\frac{\left(a^2A+2abB-Ab^2\right)\tan^{m+1}(c+dx)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\tan^2(c+dx)\right)}{d(m+1)\left(a^2+b^2\right)^2}+\frac{b\left(a^2Ab(2-m)+a^3(-(B-Bm))+ab^2B(m+\right.}{a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] ((a^2*A - A*b^2 + 2*a*b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[
c + d*x]^2]*Tan[c + d*x]^(1 + m))/((a^2 + b^2)^2*d*(1 + m)) + (b*(a^2*A*b*(
2 - m) - A*b^3*m + a*b^2*B*(1 + m) - a^3*(B - B*m))*Hypergeometric2F1[1, 1
+ m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 + m))/(a^2*(a^2 + b^2)^2
*d*(1 + m)) - ((2*a*A*b - a^2*B + b^2*B)*Hypergeometric2F1[1, (2 + m)/2, (4
 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/((a^2 + b^2)^2*d*(2 + m)) +
 (b*(A*b - a*B)*Tan[c + d*x]^(1 + m))/(a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])
)
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
```

```
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \frac{\tan^m(c+dx)\left(a^2A-Ab^2m+abB(1+m)-a(Ab-aB)\tan(}{a+b\tan(c+dx)}}{a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\int \tan^m(c+dx)\left(a\left(a^2A-Ab^2+2abB\right)-\right.}{a\left(a^2+\right.}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{a\left(a^2+b^2\right)d(a+b\tan(c+dx))} + \frac{\left(a^2A-Ab^2+2abB\right)\int \tan^m(c+dx)\,dx}{\left(a^2+b^2\right)^2} -$$

$$= -\frac{b\left(a^3B(1-m)-a^2Ab(2-m)+Ab^3m-ab^2B(1+m)\right)\ {}_2F_1\left(1,1+m;2+m;\right.}{a^2\left(a^2+b^2\right)^2 d(1+m)}$$

$$= \frac{\left(a^2A-Ab^2+2abB\right)\ {}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c+dx)\right)\tan^{1+m}(c+dx)}{\left(a^2+b^2\right)^2 d(1+m)} - \frac{b\left(a\right.}{}$$

Mathematica [A] time = 2.75554, size = 239, normalized size = 0.85

$$\frac{\tan^{m+1}(c+dx)\left(\frac{a\left(\frac{\left(a^2A+2abB-Ab^2\right)\text{Hypergeometric2F1}\left(1,\frac{m+1}{2},\frac{m+3}{2},-\tan^2(c+dx)\right)}{m+1}+\frac{\left(a^2B-2aAb-b^2B\right)\tan(c+dx)\text{Hypergeometric2F1}\left(1,\frac{m+2}{2},\frac{m+4}{2},-\tan^2(c+dx)\right)}{m+2}\right)}{a^2+b^2}+\right.}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] (Tan[c + d*x]^(1 + m)*((b*(-(a^2*A*b*(-2 + m)) + a^3*B*(-1 + m) - A*b^3*m +
 a*b^2*B*(1 + m))*Hypergeometric2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]
)/(a*(a^2 + b^2)*(1 + m)) + (b*(A*b - a*B))/(a + b*Tan[c + d*x]) + (a*(((a^
2*A - A*b^2 + 2*a*b*B)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -Tan[c +
d*x]^2])/(1 + m) + ((-2*a*A*b + a^2*B - b^2*B)*Hypergeometric2F1[1, (2 + m)
/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x])/(2 + m)))/(a^2 + b^2)))/(a*(a
^2 + b^2)*d)
```

Maple [F] time = 0.433, size = 0, normalized size = 0.

$$\int \frac{(\tan(dx+c))^m (A+B\tan(dx+c))}{(a+b\tan(dx+c))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(b\tan(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{b^2\tan(dx+c)^2+2\,ab\tan(dx+c)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b^2*tan(d*x + c)^2 + 2*a*b*ta
n(d*x + c) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^m(c + dx)}{(a + b\tan(c + dx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**m/(a + b*tan(c + d*x))**2, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^m}{(b\tan(dx + c) + a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^2, x)
```

3.485 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=438

$$-\frac{b\left(2a^2Ab^3\left(-m^2+3m+1\right)-a^4Ab\left(m^2-5m+6\right)-2a^3b^2B\left(-m^2+m+3\right)+a^5B\left(m^2-3m+2\right)+ab^4Bm(m+1)+Ab\right.}{2a^3d(m+1)\left(a^2+b^2\right)^3}$$

```
[Out] ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*Hypergeometric2F1[1, (1 + m)/2, (3
 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/((a^2 + b^2)^3*d*(1 + m)) -
 (b*(A*b^5*(1 - m)*m + a*b^4*B*m*(1 + m) - 2*a^3*b^2*B*(3 + m - m^2) + 2*a^
2*A*b^3*(1 + 3*m - m^2) - a^4*A*b*(6 - 5*m + m^2) + a^5*B*(2 - 3*m + m^2))*
Hypergeometric2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 +
 m))/(2*a^3*(a^2 + b^2)^3*d*(1 + m)) - ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^
2*B)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]^(2 + m))/((a^2 + b^2)^3*d*(2 + m)) + (b*(A*b - a*B)*Tan[c + d*x]^(1 + m)
)/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b*(A*b^3*(1 - m) - a^3*B*(3
 - m) + a^2*A*b*(5 - m) + a*b^2*B*(1 + m))*Tan[c + d*x]^(1 + m))/(2*a^2*(a^
2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 1.28485, antiderivative size = 438, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3609, 3649, 3653, 3538, 3476, 364, 3634, 64}

$$-\frac{b\left(2a^2Ab^3\left(-m^2+3m+1\right)-a^4Ab\left(m^2-5m+6\right)-2a^3b^2B\left(-m^2+m+3\right)+a^5B\left(m^2-3m+2\right)+ab^4Bm(m+1)+Ab\right.}{2a^3d(m+1)\left(a^2+b^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] ((a^3*A - 3*a*A*b^2 + 3*a^2*b*B - b^3*B)*Hypergeometric2F1[1, (1 + m)/2, (3
 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/((a^2 + b^2)^3*d*(1 + m)) -
 (b*(A*b^5*(1 - m)*m + a*b^4*B*m*(1 + m) - 2*a^3*b^2*B*(3 + m - m^2) + 2*a^
2*A*b^3*(1 + 3*m - m^2) - a^4*A*b*(6 - 5*m + m^2) + a^5*B*(2 - 3*m + m^2))*
Hypergeometric2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 +
 m))/(2*a^3*(a^2 + b^2)^3*d*(1 + m)) - ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^
2*B)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]^(2 + m))/((a^2 + b^2)^3*d*(2 + m)) + (b*(A*b - a*B)*Tan[c + d*x]^(1 + m)
)/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^2) + (b*(A*b^3*(1 - m) - a^3*B*(3
```

```
 - m) + a^2*A*b*(5 - m) + a*b^2*B*(1 + m))*Tan[c + d*x]^(1 + m))/(2*a^2*(a^
2 + b^2)^2*d*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
```

```
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{\int \frac{\tan^m(c+dx)\left(2a^2A+Ab^2(1-m)+abB(1+m)-2a(Ab \cdots\right.}{(a+b\tan(c \cdots}}{2a\left(a^2 \cdots\right.}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(Ab^3(1-m)-a^3B(3-m)+a^2Ab(5- \cdots\right.}{2a^2\left(a^2+b^2\right)^2d(a+ \cdots}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(Ab^3(1-m)-a^3B(3-m)+a^2Ab(5- \cdots\right.}{2a^2\left(a^2+b^2\right)^2d(a+ \cdots}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{2a\left(a^2+b^2\right)d(a+b\tan(c+dx))^2} + \frac{b\left(Ab^3(1-m)-a^3B(3-m)+a^2Ab(5- \cdots\right.}{2a^2\left(a^2+b^2\right)^2d(a+ \cdots}$$

$$= -\frac{b\left(Ab^5(1-m)m+ab^4Bm(1+m)-2a^3b^2B\left(3+m-m^2\right)+2a^2Ab^3\left(1+3m \cdots\right.\right.}{\cdots}$$

$$= \frac{\left(a^3A-3aAb^2+3a^2bB-b^3B\right)\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c+dx)\right)\tan^{1+m}(c+ \cdots}{\left(a^2+b^2\right)^3d(1+m)}$$

Mathematica [A] time = 6.24346, size = 534, normalized size = 1.22

$$\frac{\frac{\left(-a^2bm\left(a^2Ab(5-m)+a^3(-B)(3-m)+ab^2B(m+1)+Ab^3(1-m)\right)+b^2\left(\left(a^2-b^2m\right)\left(2a^2A+abB(m+1)+Ab^2(1-m)\right)-a^2b(3-m)(m+1)(Ab-aB)\right)+2a^3b\left(a^2(-B)+2aAb+b^2B\right)\right)\tan^{m+1}(c+dx)\text{Hypergeom} \cdots}{ad(m+1)\left(a^2+b^2\right)}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] (b*(A*b - a*B)*Tan[c + d*x]^(1 + m))/(2*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x]
)^2) + (((-(a*(-2*a*b*(A*b - a*B) - a*b*(A*b - a*B)*(1 - m))) + b^2*(2*a^2*
A + A*b^2*(1 - m) + a*b*B*(1 + m)))*Tan[c + d*x]^(1 + m))/(a*(a^2 + b^2)*d*
(a + b*Tan[c + d*x])) + (((2*a^3*b*(2*a*A*b - a^2*B + b^2*B) - a^2*b*m*(A*b
^3*(1 - m) - a^3*B*(3 - m) + a^2*A*b*(5 - m) + a*b^2*B*(1 + m)) + b^2*(-(a^
2*b*(A*b - a*B)*(3 - m)*(1 + m)) + (a^2 - b^2*m)*(2*a^2*A + A*b^2*(1 - m) +
 a*b*B*(1 + m))))*Hypergeometric2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]
*Tan[c + d*x]^(1 + m))/(a*(a^2 + b^2)*d*(1 + m)) + ((2*a^2*(a^3*A - 3*a*A*b
```

```
^2 + 3*a^2*b*B - b^3*B)*Hypergeometric2F1[1, (1 + m)/2, 1 + (1 + m)/2, -Tan
[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) - (2*a^2*(3*a^2*A*b - A*b^3
- a^3*B + 3*a*b^2*B)*Hypergeometric2F1[1, (2 + m)/2, 1 + (2 + m)/2, -Tan[c
+ d*x]^2]*Tan[c + d*x]^(2 + m))/(d*(2 + m)))/(a^2 + b^2))/(a*(a^2 + b^2)))/
(2*a*(a^2 + b^2))
```

Maple [F] time = 0.578, size = 0, normalized size = 0.

$$\int \frac{(\tan(dx+c))^m (A+B\tan(dx+c))}{(a+b\tan(dx+c))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(b\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{b^3\tan(dx+c)^3+3\,ab^2\tan(dx+c)^2+3\,a^2b\tan(dx+c)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b^3*tan(d*x + c)^3 + 3*a*b^2*
tan(d*x + c)^2 + 3*a^2*b*tan(d*x + c) + a^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(b\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^3, x)
```

3.486 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx$

Optimal. Leaf size=659

$$-\frac{b\left(3a^4Ab^3\left(m^3-7m^2+10m+8\right)+3a^2Ab^5m\left(m^2-5m+2\right)-a^6Ab\left(-m^3+9m^2-26m+24\right)-3a^5b^2B\left(m^3-4m^2-\right.\right.}{}$$

```
[Out] ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*Hypergeometric2F1[1,
 (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/((a^2 + b^2)^
4*d*(1 + m)) - (b*(a*b^6*B*m*(1 - m^2) + 3*a^2*A*b^5*m*(2 - 5*m + m^2) + A*
b^7*m*(2 - 3*m + m^2) + 3*a^3*b^4*B*(2 + 5*m + 2*m^2 - m^3) + a^7*B*(6 - 11
*m + 6*m^2 - m^3) - a^6*A*b*(24 - 26*m + 9*m^2 - m^3) + 3*a^4*A*b^3*(8 + 10
*m - 7*m^2 + m^3) - 3*a^5*b^2*B*(12 - m - 4*m^2 + m^3))*Hypergeometric2F1[1
, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 + m))/(6*a^4*(a^2 +
b^2)^4*d*(1 + m)) - ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*
Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2
 + m))/((a^2 + b^2)^4*d*(2 + m)) + (b*(A*b - a*B)*Tan[c + d*x]^(1 + m))/(3*
a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) + (b*(A*b^3*(2 - m) - a^3*B*(5 - m)
 + a^2*A*b*(8 - m) + a*b^2*B*(1 + m))*Tan[c + d*x]^(1 + m))/(6*a^2*(a^2 + b
^2)^2*d*(a + b*Tan[c + d*x])^2) + (b*(a*b^4*B*(1 - m^2) + 2*a^3*b^2*B*(7 +
3*m - m^2) + a^4*A*b*(26 - 9*m + m^2) + 2*a^2*A*b^3*(2 - 6*m + m^2) - a^5*B
*(11 - 6*m + m^2) + A*b^5*(2 - 3*m + m^2))*Tan[c + d*x]^(1 + m))/(6*a^3*(a^
2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rubi [A] time = 2.44736, antiderivative size = 659, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3609, 3649, 3653, 3538, 3476, 364, 3634, 64}

$$-\frac{b\left(3a^4Ab^3\left(m^3-7m^2+10m+8\right)+3a^2Ab^5m\left(m^2-5m+2\right)-a^6Ab\left(-m^3+9m^2-26m+24\right)-3a^5b^2B\left(m^3-4m^2-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```



```
[Out] ((a^4*A - 6*a^2*A*b^2 + A*b^4 + 4*a^3*b*B - 4*a*b^3*B)*Hypergeometric2F1[1,
 (1 + m)/2, (3 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 + m))/((a^2 + b^2)^
4*d*(1 + m)) - (b*(a*b^6*B*m*(1 - m^2) + 3*a^2*A*b^5*m*(2 - 5*m + m^2) + A*
b^7*m*(2 - 3*m + m^2) + 3*a^3*b^4*B*(2 + 5*m + 2*m^2 - m^3) + a^7*B*(6 - 11
```

```
*m + 6*m^2 - m^3) - a^6*A*b*(24 - 26*m + 9*m^2 - m^3) + 3*a^4*A*b^3*(8 + 10
*m - 7*m^2 + m^3) - 3*a^5*b^2*B*(12 - m - 4*m^2 + m^3))*Hypergeometric2F1[1
, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c + d*x]^(1 + m))/(6*a^4*(a^2 +
b^2)^4*d*(1 + m)) - ((4*a^3*A*b - 4*a*A*b^3 - a^4*B + 6*a^2*b^2*B - b^4*B)*
Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, -Tan[c + d*x]^2]*Tan[c + d*x]^(2
 + m))/((a^2 + b^2)^4*d*(2 + m)) + (b*(A*b - a*B)*Tan[c + d*x]^(1 + m))/(3*
a*(a^2 + b^2)*d*(a + b*Tan[c + d*x])^3) + (b*(A*b^3*(2 - m) - a^3*B*(5 - m)
 + a^2*A*b*(8 - m) + a*b^2*B*(1 + m))*Tan[c + d*x]^(1 + m))/(6*a^2*(a^2 + b
^2)^2*d*(a + b*Tan[c + d*x])^2) + (b*(a*b^4*B*(1 - m^2) + 2*a^3*b^2*B*(7 +
3*m - m^2) + a^4*A*b*(26 - 9*m + m^2) + 2*a^2*A*b^3*(2 - 6*m + m^2) - a^5*B
*(11 - 6*m + m^2) + A*b^5*(2 - 3*m + m^2))*Tan[c + d*x]^(1 + m))/(6*a^3*(a^
2 + b^2)^3*d*(a + b*Tan[c + d*x]))
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
```

```
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3538

```
Int[((b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Tan[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Tan[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x] && NeQ[c^2
+ d^2, 0] &&  !IntegerQ[2*m]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^4}\,dx = \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{\int \frac{\tan^m(c+dx)\left(3a^2A+Ab^2(2-m)+abB(1+m)-3a(Ab\right.}{(a+b\tan(c}}{3a\left(a^2\right.}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{b\left(Ab^3(2-m)-a^3B(5-m)+a^2Ab(8-\right.}{6a^2\left(a^2+b^2\right)^2 d(a+}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{b\left(Ab^3(2-m)-a^3B(5-m)+a^2Ab(8-\right.}{6a^2\left(a^2+b^2\right)^2 d(a+}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{b\left(Ab^3(2-m)-a^3B(5-m)+a^2Ab(8-\right.}{6a^2\left(a^2+b^2\right)^2 d(a+}$$

$$= \frac{b(Ab-aB)\tan^{1+m}(c+dx)}{3a\left(a^2+b^2\right)d(a+b\tan(c+dx))^3} + \frac{b\left(Ab^3(2-m)-a^3B(5-m)+a^2Ab(8-\right.}{6a^2\left(a^2+b^2\right)^2 d(a+}$$

$$= -\frac{b\left(ab^6Bm\left(1-m^2\right)+3a^2Ab^5m\left(2-5m+m^2\right)+Ab^7m\left(2-3m+m^2\right)+3a\right.}{}$$

$$= \frac{\left(a^4A-6a^2Ab^2+Ab^4+4a^3bB-4ab^3B\right)\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\tan^2(c+dx)\right)\tan}{\left(a^2+b^2\right)^4 d(1+m)}$$

<u>Mathematica</u> [B] time = 6.2787, size = 1901, normalized size = 2.88

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^4,x]
```

```
[Out] (b*(A*b - a*B)*Tan[c + d*x]^(1 + m))/(3*a*(a^2 + b^2)*d*(a + b*Tan[c + d*x]
)^3) + (((-(a*(-3*a*b*(A*b - a*B) - a*b*(A*b - a*B)*(2 - m))) + b^2*(3*a^2*
A + A*b^2*(2 - m) + a*b*B*(1 + m)))*Tan[c + d*x]^(1 + m))/(2*a*(a^2 + b^2)*
d*(a + b*Tan[c + d*x])^2) + (((b^2*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) +
(2*a^2 + b^2*(1 - m))*(3*a^2*A + A*b^2*(2 - m) + a*b*B*(1 + m))) - a*(-6*a^
2*b*(2*a*A*b - a^2*B + b^2*B) - a*b*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m)
+ a^2*A*b*(8 - m) + a*b^2*B*(1 + m))))*Tan[c + d*x]^(1 + m))/(a*(a^2 + b^2)
*d*(a + b*Tan[c + d*x])) + (((a^2*b*(6*a^3*(2*a*A*b - a^2*B + b^2*B) - b^2*
```

```
(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 - m) + a*b^2*B*(1 + m))
 + b*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2*(1 - m))*(3*a^2*A
 + A*b^2*(2 - m) + a*b*B*(1 + m)))) - a^2*m*(b^2*(-(a^2*b*(A*b - a*B)*(5 -
m)*(1 + m)) + (2*a^2 + b^2*(1 - m))*(3*a^2*A + A*b^2*(2 - m) + a*b*B*(1 + m
))) - a*(-6*a^2*b*(2*a*A*b - a^2*B + b^2*B) - a*b*(1 - m)*(A*b^3*(2 - m) -
a^3*B*(5 - m) + a^2*A*b*(8 - m) + a*b^2*B*(1 + m)))) + b^2*((a^2 - b^2*m)*(
-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2*(1 - m))*(3*a^2*A + A*b
^2*(2 - m) + a*b*B*(1 + m))) + a*(1 + m)*(-6*a^2*b*(2*a*A*b - a^2*B + b^2*B
) - a*b*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 - m) + a*b^2*B*
(1 + m)))))*Hypergeometric2F1[1, 1 + m, 2 + m, -((b*Tan[c + d*x])/a)]*Tan[c
 + d*x]^(1 + m))/(a*(a^2 + b^2)*d*(1 + m)) + (((-(a*b*(6*a^3*(2*a*A*b - a^2
*B + b^2*B) - b^2*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 - m)
+ a*b^2*B*(1 + m)) + b*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2
*(1 - m))*(3*a^2*A + A*b^2*(2 - m) + a*b*B*(1 + m))))) + a*((a^2 - b^2*m)*(
-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2*(1 - m))*(3*a^2*A + A*b
^2*(2 - m) + a*b*B*(1 + m))) + a*(1 + m)*(-6*a^2*b*(2*a*A*b - a^2*B + b^2*B
) - a*b*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 - m) + a*b^2*B*
(1 + m))) + m*(b^2*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2*(1
- m))*(3*a^2*A + A*b^2*(2 - m) + a*b*B*(1 + m))) - a*(-6*a^2*b*(2*a*A*b - a
^2*B + b^2*B) - a*b*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 - m
) + a*b^2*B*(1 + m))))))*Hypergeometric2F1[1, (1 + m)/2, 1 + (1 + m)/2, -Ta
n[c + d*x]^2]*Tan[c + d*x]^(1 + m))/(d*(1 + m)) + ((-(a^2*(6*a^3*(2*a*A*b -
 a^2*B + b^2*B) - b^2*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 -
 m) + a*b^2*B*(1 + m)) + b*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 +
 b^2*(1 - m))*(3*a^2*A + A*b^2*(2 - m) + a*b*B*(1 + m))))) - b*((a^2 - b^2*
m)*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2*(1 - m))*(3*a^2*A +
 A*b^2*(2 - m) + a*b*B*(1 + m))) + a*(1 + m)*(-6*a^2*b*(2*a*A*b - a^2*B + b
^2*B) - a*b*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8 - m) + a*b^
2*B*(1 + m))) + m*(b^2*(-(a^2*b*(A*b - a*B)*(5 - m)*(1 + m)) + (2*a^2 + b^2
*(1 - m))*(3*a^2*A + A*b^2*(2 - m) + a*b*B*(1 + m))) - a*(-6*a^2*b*(2*a*A*b
 - a^2*B + b^2*B) - a*b*(1 - m)*(A*b^3*(2 - m) - a^3*B*(5 - m) + a^2*A*b*(8
 - m) + a*b^2*B*(1 + m))))))*Hypergeometric2F1[1, (2 + m)/2, 1 + (2 + m)/2,
 -Tan[c + d*x]^2]*Tan[c + d*x]^(2 + m))/(d*(2 + m)))/(a^2 + b^2))/(a*(a^2 +
 b^2)))/(2*a*(a^2 + b^2)))/(3*a*(a^2 + b^2))
```

Maple [F] time = 0.633, size = 0, normalized size = 0.

$$\int \frac{(\tan (dx+c))^m (A+B\tan (dx+c))}{(a+b\tan (dx+c))^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(b\tan(dx+c)+a)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^4, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{b^4\tan(dx+c)^4+4\,ab^3\tan(dx+c)^3+6\,a^2b^2\tan(dx+c)^2+4\,a^3b\tan(dx+c)+a^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b^4*tan(d*x + c)^4 + 4*a*b^3*
tan(d*x + c)^3 + 6*a^2*b^2*tan(d*x + c)^2 + 4*a^3*b*tan(d*x + c) + a^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**4,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(b\tan(dx+c)+a)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^4,x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^4, x)
```

3.487 $\int \tan^m(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=193

$$\frac{a^2(A+iB)\tan^{m+1}(c+dx)\sqrt{a+b\tan(c+dx)}F_1\left(m+1;-\frac{5}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{\frac{b\tan(c+dx)}{a}+1}}+\frac{a^2(A-iB)\tan^{m+1}}{}$$

```
[Out] (a^2*(A + I*B)*AppellF1[1 + m, -5/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*
Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d*x]])/(2*d*(1 + m)*S
qrt[1 + (b*Tan[c + d*x])/a]) + (a^2*(A - I*B)*AppellF1[1 + m, -5/2, 1, 2 +
m, -((b*Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*T
an[c + d*x]])/(2*d*(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])
```

Rubi [A] time = 0.451647, antiderivative size = 193, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {3603, 3602, 135, 133}

$$\frac{a^2(A+iB)\tan^{m+1}(c+dx)\sqrt{a+b\tan(c+dx)}F_1\left(m+1;-\frac{5}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{\frac{b\tan(c+dx)}{a}+1}}+\frac{a^2(A-iB)\tan^{m+1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (a^2*(A + I*B)*AppellF1[1 + m, -5/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*
Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d*x]])/(2*d*(1 + m)*S
qrt[1 + (b*Tan[c + d*x])/a]) + (a^2*(A - I*B)*AppellF1[1 + m, -5/2, 1, 2 +
m, -((b*Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*T
an[c + d*x]])/(2*d*(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
```

```
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int(1+i\tan(c+dx))\tan^m(c+dx)(a+b\tan(c$$

$$= \frac{(A-iB)\,\text{Subst}\left(\int\frac{x^m(a+bx)^{5/2}}{1-ix}\,dx,x,\tan(c+dx)\right)}{2d} + \frac{(A+i}{}$$

$$= \frac{\left(a^2(A-iB)\sqrt{a+b\tan(c+dx)}\right)\text{Subst}\left(\int\frac{x^m\left(1+\frac{bx}{a}\right)^{5/2}}{1-ix}\,dx,x\right.}{2d\sqrt{1+\frac{b\tan(c+dx)}{a}}}$$

$$= \frac{a^2(A+iB)F_1\left(1+m;-\frac{5}{2},1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+\right.}{2d(1+m)\sqrt{1+\frac{b\tan(c}{a}}}$$

Mathematica [F] time = 28.353, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.49, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+b\tan(dx+c))^{\frac{5}{2}} (A+B\tan(dx+c))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\tan(dx+c)^m\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*tan(d*x + c)^m, x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(Bb^2\tan(dx+c)^3+Aa^2+\left(2\,Bab+Ab^2\right)\tan(dx+c)^2+\left(Ba^2+2\,Aab\right)\tan(dx+c)\right)\sqrt{b\tan(dx+c)+a}\,\mathrm{ta}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*b^2*tan(d*x + c)^3 + A*a^2 + (2*B*a*b + A*b^2)*tan(d*x + c)^2 +
 (B*a^2 + 2*A*a*b)*tan(d*x + c))*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^m, x
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.488 $\int \tan^m(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=189

$$\frac{a(A+iB)\tan^{m+1}(c+dx)\sqrt{a+b\tan(c+dx)}F_1\left(m+1;-\frac{3}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{\frac{b\tan(c+dx)}{a}+1}}+\frac{a(A-iB)\tan^{m+1}(c$$

```
[Out] (a*(A + I*B)*AppellF1[1 + m, -3/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Ta
n[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d*x]])/(2*d*(1 + m)*Sqr
t[1 + (b*Tan[c + d*x])/a]) + (a*(A - I*B)*AppellF1[1 + m, -3/2, 1, 2 + m, -
((b*Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c
 + d*x]])/(2*d*(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])
```

Rubi [A] time = 0.454937, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {3603, 3602, 135, 133}

$$\frac{a(A+iB)\tan^{m+1}(c+dx)\sqrt{a+b\tan(c+dx)}F_1\left(m+1;-\frac{3}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{\frac{b\tan(c+dx)}{a}+1}}+\frac{a(A-iB)\tan^{m+1}(c$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] (a*(A + I*B)*AppellF1[1 + m, -3/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Ta
n[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d*x]])/(2*d*(1 + m)*Sqr
t[1 + (b*Tan[c + d*x])/a]) + (a*(A - I*B)*AppellF1[1 + m, -3/2, 1, 2 + m, -
((b*Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c
 + d*x]])/(2*d*(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
```

```
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int (1+i\tan(c+dx))\tan^m(c+dx)(a+b\tan(c$$

$$= \frac{(A-iB)\operatorname{Subst}\left(\int \frac{x^m(a+bx)^{3/2}}{1-ix}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+i}{}$$

$$= \frac{\left(a(A-iB)\sqrt{a+b\tan(c+dx)}\right)\operatorname{Subst}\left(\int \frac{x^m\left(1+\frac{bx}{a}\right)^{3/2}}{1-ix}\,dx, x,\right.}{2d\sqrt{1+\frac{b\tan(c+dx)}{a}}}$$

$$= \frac{a(A+iB)F_1\left(1+m;-\frac{3}{2},1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+\right.}{2d(1+m)\sqrt{1+\frac{b\tan(c}{a}}}$$

Mathematica [F] time = 14.9155, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.493, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m (a+b\tan(dx+c))^{\frac{3}{2}} (A+B\tan(dx+c))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\tan(dx+c)^m\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*tan(d*x + c)^m, x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(Bb\tan(dx+c)^2+Aa+(Ba+Ab)\tan(dx+c)\right)\sqrt{b\tan(dx+c)+a}\tan(dx+c)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*b*tan(d*x + c)^2 + A*a + (B*a + A*b)*tan(d*x + c))*sqrt(b*tan(d
*x + c) + a)*tan(d*x + c)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.489 $\int \tan^m(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=187

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{a+b\tan(c+dx)}F_1\left(m+1;-\frac{1}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{\frac{b\tan(c+dx)}{a}+1}}+\frac{(A-iB)\tan^{m+1}(c+$$

```
[Out] ((A + I*B)*AppellF1[1 + m, -1/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[
c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d*x]])/(2*d*(1 + m)*Sqrt[
1 + (b*Tan[c + d*x])/a]) + ((A - I*B)*AppellF1[1 + m, -1/2, 1, 2 + m, -((b*
Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d
*x]])/(2*d*(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])
```

Rubi [A] time = 0.397857, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {3603, 3602, 135, 133}

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{a+b\tan(c+dx)}F_1\left(m+1;-\frac{1}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{\frac{b\tan(c+dx)}{a}+1}}+\frac{(A-iB)\tan^{m+1}(c+$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((A + I*B)*AppellF1[1 + m, -1/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[
c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d*x]])/(2*d*(1 + m)*Sqrt[
1 + (b*Tan[c + d*x])/a]) + ((A - I*B)*AppellF1[1 + m, -1/2, 1, 2 + m, -((b*
Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[a + b*Tan[c + d
*x]])/(2*d*(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
```

```
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \tan^m(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int(1+i\tan(c+dx))\tan^m(c+dx)\sqrt{a+b\tan(c+$$

$$= \frac{(A-iB)\,\text{Subst}\left(\int\frac{x^m\sqrt{a+bx}}{1-ix}\,dx,x,\tan(c+dx)\right)}{2d} + \frac{(A+iB)\,\text{S}}{}$$

$$= \frac{\left((A-iB)\sqrt{a+b\tan(c+dx)}\right)\text{Subst}\left(\int\frac{x^m\sqrt{1+\frac{bx}{a}}}{1-ix}\,dx,x,\tan(\right.}{2d\sqrt{1+\frac{b\tan(c+dx)}{a}}}$$

$$= \frac{(A+iB)F_1\left(1+m;-\frac{1}{2},1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(1+m)\sqrt{1+\frac{b\tan(c+dx}{a}}}$$

Mathematica [F] time = 4.98642, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.542, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^m\sqrt{a+b\tan(dx+c)}\,(A+B\tan(dx+c))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\tan(dx+c)^m\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\tan(dx+c)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\tan^m(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*tan(c + d*x)**m, x)
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.490 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=187

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{\frac{b\tan(c+dx)}{a}+1}F_1\left(m+1;\frac{1}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\tan^{m+1}(c+dx)\sqrt{}}{}$$

```
[Out] ((A + I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
 + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])/(2*d*(1 + m)*Sq
rt[a + b*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, -((b*Ta
n[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*
x])/a])/(2*d*(1 + m)*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.409318, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {3603, 3602, 135, 133}

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{\frac{b\tan(c+dx)}{a}+1}F_1\left(m+1;\frac{1}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\tan^{m+1}(c+dx)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] ((A + I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
 + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])/(2*d*(1 + m)*Sq
rt[a + b*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1 + m, 1/2, 1, 2 + m, -((b*Ta
n[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*
x])/a])/(2*d*(1 + m)*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] && !IntegerQ[m] && !IntegerQ[n] && !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] && !IntegerQ[m] && !IntegerQ[n] && !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
& !IntegerQ[m] && !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \frac{1}{2}(A-iB)\int \frac{(1+i\tan(c+dx))\tan^m(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx + \frac{1}{2}(A+iB)\int \frac{(1-i\tan(c\cdot$$
$$= \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{x^m}{(1-ix)\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+iB)\,\mathrm{Subst}\left(\int \frac{x^m}{(1+ix)\sqrt{a}}\right.}{2d}$$
$$= \frac{\left((A-iB)\sqrt{1+\frac{b\tan(c+dx)}{a}}\right)\mathrm{Subst}\left(\int \frac{x^m}{(1-ix)\sqrt{1+\frac{bx}{a}}}\,dx, x, \tan(c+dx)\right)}{2d\sqrt{a+b\tan(c+dx)}} + \frac{\left((A+iB\right.}{}$$
$$= \frac{(A+iB)F_1\left(1+m;\frac{1}{2},1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)\tan^{1+m}(c+dx)\sqrt{1}}{2d(1+m)\sqrt{a+b\tan(c+dx)}}$$

Mathematica [F] time = 9.20934, size = 0, normalized size = 0.

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]], x
]
```

Maple [F] time = 0.568, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^m (A+B\tan (dx+c)) \frac{1}{\sqrt{a+b\tan (dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan (dx+c)+A)\tan (dx+c)^m}{\sqrt{b\tan (dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/sqrt(b*tan(d*x + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan (dx+c)+A)\tan (dx+c)^m}{\sqrt{b\tan (dx+c)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*tan(d*x + c)^m/sqrt(b*tan(d*x + c) + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^m(c + dx)}{\sqrt{a + b\tan(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**m/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^m}{\sqrt{b\tan(dx + c) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/sqrt(b*tan(d*x + c) + a), x)
```

3.491 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=193

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{\frac{b\tan(c+dx)}{a}+1}F_1\left(m+1;\frac{3}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2ad(m+1)\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\tan^{m+1}(c+dx)\sqrt{}}{}$$

```
[Out] ((A + I*B)*AppellF1[1 + m, 3/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
 + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])/(2*a*d*(1 + m)*
Sqrt[a + b*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1 + m, 3/2, 1, 2 + m, -((b*
Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c +
d*x])/a])/(2*a*d*(1 + m)*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.45469, antiderivative size = 193, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {3603, 3602, 135, 133}

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{\frac{b\tan(c+dx)}{a}+1}F_1\left(m+1;\frac{3}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2ad(m+1)\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\tan^{m+1}(c+dx)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((A + I*B)*AppellF1[1 + m, 3/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
 + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])/(2*a*d*(1 + m)*
Sqrt[a + b*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1 + m, 3/2, 1, 2 + m, -((b*
Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c +
d*x])/a])/(2*a*d*(1 + m)*Sqrt[a + b*Tan[c + d*x]])
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] && !IntegerQ[m] && !IntegerQ[n] && !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] && !IntegerQ[m] && !IntegerQ[n] && !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
& !IntegerQ[m] && !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \frac{1}{2}(A-iB)\int \frac{(1+i\tan(c+dx))\tan^m(c+dx)}{(a+b\tan(c+dx))^{3/2}}\,dx + \frac{1}{2}(A+iB)\int \frac{(1-i\tan(c\ldots}{(a+b\,t\ldots}$$

$$= \frac{(A-iB)\,\text{Subst}\left(\int \frac{x^m}{(1-ix)(a+bx)^{3/2}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+iB)\,\text{Subst}\left(\int \frac{x\ldots}{(1+ix)(\ldots}\right.}{2\ldots}$$

$$= \frac{\left((A-iB)\sqrt{1+\frac{b\tan(c+dx)}{a}}\right)\text{Subst}\left(\int \frac{x^m}{(1-ix)\left(1+\frac{bx}{a}\right)^{3/2}}\,dx, x, \tan(c+dx)\right)}{2ad\sqrt{a+b\tan(c+dx)}} + \frac{\left((A+\ldots\right.}{\ldots}$$

$$= \frac{(A+iB)F_1\left(1+m;\frac{3}{2},1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)\tan^{1+m}(c+dx)\sqrt{1\ldots}}{2ad(1+m)\sqrt{a+b\tan(c+dx)}}$$

Mathematica [F] time = 25.7721, size = 0, normalized size = 0.

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),
x]
```

```
[Out] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),
 x]
```

Maple [F] time = 0.517, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^m (A+B\tan (dx+c)) (a+b\tan (dx+c))^{-\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan (dx+c)+A)\tan (dx+c)^m}{(b\tan (dx+c)+a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^(3/2), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan (dx+c)+A)\sqrt{b\tan (dx+c)+a}\tan (dx+c)^m}{b^2\tan (dx+c)^2+2\,ab\tan (dx+c)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^m/(b^2*
tan(d*x + c)^2 + 2*a*b*tan(d*x + c) + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\tan^{m}(c + dx)}{(a + b\tan(c + dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*tan(c + d*x)**m/(a + b*tan(c + d*x))**(3/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\tan(dx + c)^{m}}{(b\tan(dx + c) + a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^(3/2), x
)
```

3.492 $\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=193

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{\frac{b\tan(c+dx)}{a}+1}F_1\left(m+1;\frac{5}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2a^2d(m+1)\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\tan^{m+1}(c+dx)\sqrt{}}{}$$

```
[Out] ((A + I*B)*AppellF1[1 + m, 5/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
 + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])/(2*a^2*d*(1 + m
)*Sqrt[a + b*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1 + m, 5/2, 1, 2 + m, -((
b*Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c
+ d*x])/a])/(2*a^2*d*(1 + m)*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.456835, antiderivative size = 193, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {3603, 3602, 135, 133}

$$\frac{(A+iB)\tan^{m+1}(c+dx)\sqrt{\frac{b\tan(c+dx)}{a}+1}F_1\left(m+1;\frac{5}{2},1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2a^2d(m+1)\sqrt{a+b\tan(c+dx)}}+\frac{(A-iB)\tan^{m+1}(c+dx)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```

```
[Out] ((A + I*B)*AppellF1[1 + m, 5/2, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
 + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c + d*x])/a])/(2*a^2*d*(1 + m
)*Sqrt[a + b*Tan[c + d*x]]) + ((A - I*B)*AppellF1[1 + m, 5/2, 1, 2 + m, -((
b*Tan[c + d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*Sqrt[1 + (b*Tan[c
+ d*x])/a])/(2*a^2*d*(1 + m)*Sqrt[a + b*Tan[c + d*x]])
```

Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] && !IntegerQ[m] && !IntegerQ[n] && !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] && !IntegerQ[m] && !IntegerQ[n] && !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
& !IntegerQ[m] && !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \frac{1}{2}(A-iB)\int \frac{(1+i\tan(c+dx))\tan^m(c+dx)}{(a+b\tan(c+dx))^{5/2}}\,dx + \frac{1}{2}(A+iB)\int \frac{(1-i\tan(c\ldots}{(a+b\,\mathrm{t}\ldots}$$

$$= \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{x^m}{(1-ix)(a+bx)^{5/2}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+iB)\,\mathrm{Subst}\left(\int \frac{x\ldots}{(1+ix)(\ldots}\ldots\right.}{2\ldots}$$

$$= \frac{\left((A-iB)\sqrt{1+\frac{b\tan(c+dx)}{a}}\right)\mathrm{Subst}\left(\int \frac{x^m}{(1-ix)\left(1+\frac{bx}{a}\right)^{5/2}}\,dx, x, \tan(c+dx)\right)}{2a^2d\sqrt{a+b\tan(c+dx)}} + \frac{\left((A+\ldots\right.}{\ldots}$$

$$= \frac{(A+iB)F_1\left(1+m;\frac{5}{2},1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)\tan^{1+m}(c+dx)\sqrt{1\ldots}}{2a^2d(1+m)\sqrt{a+b\tan(c+dx)}}$$

Mathematica [F] time = 70.3696, size = 0, normalized size = 0.

$$\int \frac{\tan^m(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
x]
```

```
[Out] Integrate[(Tan[c + d*x]^m*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),
 x]
```

Maple [F] time = 0.505, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^{m} (A+B\tan (dx+c)) (a+b\tan (dx+c))^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] int(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan (dx+c)+A)\tan (dx+c)^{m}}{(b\tan (dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^(5/2), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan (dx+c)+A)\sqrt{b\tan (dx+c)+a}\tan (dx+c)^{m}}{b^{3}\tan (dx+c)^{3}+3\,ab^{2}\tan (dx+c)^{2}+3\,a^{2}b\tan (dx+c)+a^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*tan(d*x + c)^m/(b^3*
tan(d*x + c)^3 + 3*a*b^2*tan(d*x + c)^2 + 3*a^2*b*tan(d*x + c) + a^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\tan(dx+c)^m}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*tan(d*x + c)^m/(b*tan(d*x + c) + a)^(5/2), x
)
```

3.493 $\int \tan^m(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=183

$$\frac{(A+iB)\tan^{m+1}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(m+1;-n,1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)}+\frac{(A\ldots}{\ldots}$$

```
[Out] ((A + I*B)*AppellF1[1 + m, -n, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
+ d*x]]*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^n)/(2*d*(1 + m)*(1 + (b*T
an[c + d*x])/a)^n) + ((A - I*B)*AppellF1[1 + m, -n, 1, 2 + m, -((b*Tan[c +
d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^n)/(2*d
*(1 + m)*(1 + (b*Tan[c + d*x])/a)^n)
```

Rubi [A] time = 0.313777, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = {3603, 3602, 135, 133}

$$\frac{(A+iB)\tan^{m+1}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(m+1;-n,1;m+2;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(m+1)}+\frac{(A\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((A + I*B)*AppellF1[1 + m, -n, 1, 2 + m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
+ d*x]]*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^n)/(2*d*(1 + m)*(1 + (b*T
an[c + d*x])/a)^n) + ((A - I*B)*AppellF1[1 + m, -n, 1, 2 + m, -((b*Tan[c +
d*x])/a), I*Tan[c + d*x]]*Tan[c + d*x]^(1 + m)*(a + b*Tan[c + d*x])^n)/(2*d
*(1 + m)*(1 + (b*Tan[c + d*x])/a)^n)
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
```

```
!IntegerQ[n] && !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] && !IntegerQ[m] && !IntegerQ[n] && !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] && !IntegerQ[m] && !IntegerQ[n] && !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
& !IntegerQ[m] && !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int(1+i\tan(c+dx))\tan^m(c+dx)(a+b\tan(c+$$

$$= \frac{(A-iB)\,\text{Subst}\left(\int \frac{x^m(a+bx)^n}{1-ix}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+iB)}{}$$

$$= \frac{\left((A-iB)(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+dx)}{a}\right)^{-n}\right)\text{Subst}\left(\int\right.}{2d}$$

$$= \frac{(A+iB)F_1\left(1+m;-n,1;2+m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx\right.}{2d(1+}$$

Mathematica [F] time = 2.10371, size = 0, normalized size = 0.

$$\int \tan^m(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^m*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.415, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^{m} (a+b\tan (dx+c))^{n} (A+B\tan (dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(b\tan (dx+c)+a)^{n} \tan (dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((B\tan (dx+c)+A)(b\tan (dx+c)+a)^{n} \tan (dx+c)^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**m*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\tan(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^m, x)
```

3.494 $\int \tan^4(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=387

$$\frac{(A-iB)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(b+ia)}-\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\text{Hy}}{2a}$$

```
[Out] -(((A*b^3*(2 + n)*(3 + n)*(4 + n) - a*(b^2*B*(3 + n)*(4 + n) - 2*a*(3*a*B -
 A*b*(4 + n))))*(a + b*Tan[c + d*x])^(1 + n))/(b^4*d*(1 + n)*(2 + n)*(3 + n
)*(4 + n))) + ((A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c +
d*x])/(a - I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) - ((
A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]
*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a - b)*d*(1 + n)) - ((b^2*B*(3 + n)*(4
 + n) - 2*a*(3*a*B - A*b*(4 + n)))*Tan[c + d*x]*(a + b*Tan[c + d*x])^(1 + n
))/(b^3*d*(2 + n)*(3 + n)*(4 + n)) - ((3*a*B - A*b*(4 + n))*Tan[c + d*x]^2*
(a + b*Tan[c + d*x])^(1 + n))/(b^2*d*(3 + n)*(4 + n)) + (B*Tan[c + d*x]^3*(
a + b*Tan[c + d*x])^(1 + n))/(b*d*(4 + n))
```

Rubi [A] time = 1.05107, antiderivative size = 385, normalized size of antiderivative = 0.99, number of steps used = 9, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3607, 3647, 3630, 3539, 3537, 68}

$$-\frac{\left(-2a^2Ab(n+4)+6a^3B-ab^2B(n+3)(n+4)+Ab^3(n+2)(n+3)(n+4)\right)(a+b\tan(c+dx))^{n+1}}{b^4d(n+1)(n+2)(n+3)(n+4)}+\frac{\tan(c+dx)\left(6a^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^4*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((6*a^3*B - 2*a^2*A*b*(4 + n) - a*b^2*B*(3 + n)*(4 + n) + A*b^3*(2 + n)*(
3 + n)*(4 + n))*(a + b*Tan[c + d*x])^(1 + n))/(b^4*d*(1 + n)*(2 + n)*(3 + n
)*(4 + n))) + ((A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c +
d*x])/(a - I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) - ((
A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]
*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a - b)*d*(1 + n)) + ((6*a^2*B - 2*a*A*
b*(4 + n) - b^2*B*(3 + n)*(4 + n))*Tan[c + d*x]*(a + b*Tan[c + d*x])^(1 + n
))/(b^3*d*(2 + n)*(3 + n)*(4 + n)) - ((3*a*B - A*b*(4 + n))*Tan[c + d*x]^2*
(a + b*Tan[c + d*x])^(1 + n))/(b^2*d*(3 + n)*(4 + n)) + (B*Tan[c + d*x]^3*(
```

a + b*Tan[c + d*x])^(1 + n))/(b*d*(4 + n))

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan^4(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B\tan^3(c+dx)(a+b\tan(c+dx))^{1+n}}{bd(4+n)} + \frac{\int \tan^2(c+dx)(a}{}$$

$$= -\frac{(3aB-Ab(4+n))\tan^2(c+dx)(a+b\tan(c+dx))^{1+n}}{b^2d(3+n)(4+n)} +$$

$$= \frac{\left(6a^2B-2aAb(4+n)-b^2B(3+n)(4+n)\right)\tan(c+dx)(a}{b^3d(2+n)(3+n)(4+n)}$$

$$= -\frac{\left(6a^3B-2a^2Ab(4+n)-ab^2B(3+n)(4+n)+Ab^3(2+\right.}{b^4d(1+n)(2+n)(3+n)}$$

$$= -\frac{\left(6a^3B-2a^2Ab(4+n)-ab^2B(3+n)(4+n)+Ab^3(2+\right.}{b^4d(1+n)(2+n)(3+n)}$$

$$= -\frac{\left(6a^3B-2a^2Ab(4+n)-ab^2B(3+n)(4+n)+Ab^3(2+\right.}{b^4d(1+n)(2+n)(3+n)}$$

$$= -\frac{\left(6a^3B-2a^2Ab(4+n)-ab^2B(3+n)(4+n)+Ab^3(2+\right.}{b^4d(1+n)(2+n)(3+n)}$$

Mathematica [A] time = 5.78065, size = 384, normalized size = 0.99

$$\frac{(a+b\tan(c+dx))^{n+1}\left(i\left(b^4\left(n^3+9n^2+26n+24\right)(-(a+ib))(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+}{a-ib}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^4*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a + b*Tan[c + d*x])^(1 + n)*(I*((2*I)*(a - I*b)*(a + I*b)*(6*a^3*B - 2*a^
2*A*b*(4 + n) - a*b^2*B*(3 + n)*(4 + n) + A*b^3*(2 + n)*(3 + n)*(4 + n)) -
(a + I*b)*b^4*(A - I*B)*(24 + 26*n + 9*n^2 + n^3)*Hypergeometric2F1[1, 1 +
n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)] + (a - I*b)*b^4*(A + I*B)*(24 + 2
6*n + 9*n^2 + n^3)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/
(a + I*b)]) + 2*(a - I*b)*(a + I*b)*b*(1 + n)*(6*a^2*B - 2*a*A*b*(4 + n) -
b^2*B*(3 + n)*(4 + n))*Tan[c + d*x] - 2*(a - I*b)*(a + I*b)*b^2*(1 + n)*(2
+ n)*(3*a*B - A*b*(4 + n))*Tan[c + d*x]^2 + 2*(a - I*b)*(a + I*b)*b^3*B*(1
+ n)*(2 + n)*(3 + n)*Tan[c + d*x]^3))/(2*(a - I*b)*(a + I*b)*b^4*d*(1 + n)*
(2 + n)*(3 + n)*(4 + n))
```

Maple [F] time = 0.362, size = 0, normalized size = 0.

$$\int (\tan (dx+c))^{4} (a+b\tan (dx+c))^{n} (A+B\tan (dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^4*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(B\tan (dx+c)^{5}+A\tan (dx+c)^{4}\right)(b\tan (dx+c)+a)^{n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c)^5 + A*tan(d*x + c)^4)*(b*tan(d*x + c) + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\tan(dx+c)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^4, x)
```

3.495 $\int \tan^3(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=291

$$\frac{(B+iA)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(b+ia)}+\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\text{Hyp}}{2d}$$

```
[Out] ((2*a^2*B - a*A*b*(3 + n) - b^2*B*(6 + 5*n + n^2))*(a + b*Tan[c + d*x])^(1
+ n))/(b^3*d*(1 + n)*(2 + n)*(3 + n)) + ((I*A + B)*Hypergeometric2F1[1, 1 +
 n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2
*(I*a + b)*d*(1 + n)) + ((A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a +
b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(a + I*b)*d*(1
+ n)) - ((2*a*B - A*b*(3 + n))*Tan[c + d*x]*(a + b*Tan[c + d*x])^(1 + n))/(
b^2*d*(2 + n)*(3 + n)) + (B*Tan[c + d*x]^2*(a + b*Tan[c + d*x])^(1 + n))/(b
*d*(3 + n))
```

Rubi [A] time = 0.583964, antiderivative size = 289, normalized size of antiderivative = 0.99, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {3607, 3647, 3630, 3539, 3537, 68}

$$\frac{\left(2a^2B-aAb(n+3)-b^2B(n+2)(n+3)\right)(a+b\tan(c+dx))^{n+1}}{b^3d(n+1)(n+2)(n+3)}-\frac{\tan(c+dx)(2aB-Ab(n+3))(a+b\tan(c+dx))^{n+1}}{b^2d(n+2)(n+3)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^3*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((2*a^2*B - a*A*b*(3 + n) - b^2*B*(2 + n)*(3 + n))*(a + b*Tan[c + d*x])^(1
+ n))/(b^3*d*(1 + n)*(2 + n)*(3 + n)) + ((I*A + B)*Hypergeometric2F1[1, 1 +
 n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2
*(I*a + b)*d*(1 + n)) + ((A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a +
b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(a + I*b)*d*(1
+ n)) - ((2*a*B - A*b*(3 + n))*Tan[c + d*x]*(a + b*Tan[c + d*x])^(1 + n))/(
b^2*d*(2 + n)*(3 + n)) + (B*Tan[c + d*x]^2*(a + b*Tan[c + d*x])^(1 + n))/(b
*d*(3 + n))
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan^3(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B\tan^2(c+dx)(a+b\tan(c+dx))^{1+n}}{bd(3+n)} + \frac{\int \tan(c+dx)(a+\ldots}{}$$

$$= -\frac{(2aB-Ab(3+n))\tan(c+dx)(a+b\tan(c+dx))^{1+n}}{b^2d(2+n)(3+n)} + \frac{B\ldots}{}$$

$$= \frac{\left(2a^2B-aAb(3+n)-b^2B(2+n)(3+n)\right)(a+b\tan(c+dx\ldots}{b^3d(1+n)(2+n)(3+n)}$$

$$= \frac{\left(2a^2B-aAb(3+n)-b^2B(2+n)(3+n)\right)(a+b\tan(c+dx\ldots}{b^3d(1+n)(2+n)(3+n)}$$

$$= \frac{\left(2a^2B-aAb(3+n)-b^2B(2+n)(3+n)\right)(a+b\tan(c+dx\ldots}{b^3d(1+n)(2+n)(3+n)}$$

$$= \frac{\left(2a^2B-aAb(3+n)-b^2B(2+n)(3+n)\right)(a+b\tan(c+dx\ldots}{b^3d(1+n)(2+n)(3+n)}$$

Mathematica [A] time = 2.24764, size = 281, normalized size = 0.97

$$\frac{(a+b\tan(c+dx))^{n+1}\left(b^3\left(n^2+5n+6\right)(a+ib)(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)+b^3\left(n^2+5\ldots\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^3*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a + b*Tan[c + d*x])^(1 + n)*(2*(a - I*b)*(a + I*b)*(2*a^2*B - a*A*b*(3 +
n) - b^2*B*(2 + n)*(3 + n)) + (a + I*b)*b^3*(A - I*B)*(6 + 5*n + n^2)*Hyper
geometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)] + (a - I*b)*b
^3*(A + I*B)*(6 + 5*n + n^2)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[
c + d*x])/(a + I*b)] - 2*(a - I*b)*(a + I*b)*b*(1 + n)*(2*a*B - A*b*(3 + n)
)*Tan[c + d*x] + 2*(a - I*b)*(a + I*b)*b^2*B*(1 + n)*(2 + n)*Tan[c + d*x]^2
```

```
))/(2*(a - I*b)*(a + I*b)*b^3*d*(1 + n)*(2 + n)*(3 + n))
```

Maple [F] time = 0.355, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^3 (a+b\tan(dx+c))^n (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n \tan(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(B\tan(dx+c)^4 + A\tan(dx+c)^3\right)(b\tan(dx+c)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c)^4 + A*tan(d*x + c)^3)*(b*tan(d*x + c) + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\tan(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^3, x)
```

3.496 $\int \tan^2(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=219

$$\frac{(B+iA)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(a-ib)}+\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\text{Hy}}{2}$$

```
[Out] -(((a*B - A*b*(2 + n))*(a + b*Tan[c + d*x])^(1 + n))/(b^2*d*(1 + n)*(2 + n)
)) + ((I*A + B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a
- I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(a - I*b)*d*(1 + n)) + ((A + I*B)*
Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*T
an[c + d*x])^(1 + n))/(2*(I*a - b)*d*(1 + n)) + (B*Tan[c + d*x]*(a + b*Tan[
c + d*x])^(1 + n))/(b*d*(2 + n))
```

Rubi [A] time = 0.353011, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {3607, 3630, 3539, 3537, 68}

$$-\frac{(aB-Ab(n+2))(a+b\tan(c+dx))^{n+1}}{b^2d(n+1)(n+2)}+\frac{(B+iA)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(a-ib)}+\frac{(A+iB)}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((a*B - A*b*(2 + n))*(a + b*Tan[c + d*x])^(1 + n))/(b^2*d*(1 + n)*(2 + n)
)) + ((I*A + B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a
- I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(a - I*b)*d*(1 + n)) + ((A + I*B)*
Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*T
an[c + d*x])^(1 + n))/(2*(I*a - b)*d*(1 + n)) + (B*Tan[c + d*x]*(a + b*Tan[
c + d*x])^(1 + n))/(b*d*(2 + n))
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
```

```
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan^2(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B\tan(c+dx)(a+b\tan(c+dx))^{1+n}}{bd(2+n)} + \frac{\int(a+b\tan(c+d}{}$$

$$= -\frac{(aB-Ab(2+n))(a+b\tan(c+dx))^{1+n}}{b^2d(1+n)(2+n)} + \frac{B\tan(c+dx)}{}$$

$$= -\frac{(aB-Ab(2+n))(a+b\tan(c+dx))^{1+n}}{b^2d(1+n)(2+n)} + \frac{B\tan(c+dx)}{}$$

$$= -\frac{(aB-Ab(2+n))(a+b\tan(c+dx))^{1+n}}{b^2d(1+n)(2+n)} + \frac{B\tan(c+dx)}{}$$

$$= -\frac{(aB-Ab(2+n))(a+b\tan(c+dx))^{1+n}}{b^2d(1+n)(2+n)} + \frac{(iA+B)\,{}_2F_1\big(}{}$$

Mathematica [A] time = 1.23716, size = 169, normalized size = 0.77

$$\frac{(a+b\tan(c+dx))^{n+1}\left(\frac{b(n+2)(B+iA)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{(n+1)(a-ib)} + \frac{b(n+2)(B-iA)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+d}{a+ib}\right.}{(n+1)(a+ib)}\right.}{2bd(n+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a + b*Tan[c + d*x])^(1 + n)*((4*A*b - 2*a*B + 2*A*b*n)/(b + b*n) + (b*(I*
A + B)*(2 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a -
 I*b)])/((a - I*b)*(1 + n)) + (b*((-I)*A + B)*(2 + n)*Hypergeometric2F1[1,
1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)])/((a + I*b)*(1 + n)) + 2*B*Ta
n[c + d*x]))/(2*b*d*(2 + n))
```

Maple [F] time = 0.368, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^2 (a+b\tan(dx+c))^n (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

[Out] int(tan(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\tan(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(B\tan(dx+c)^3+A\tan(dx+c)^2\right)(b\tan(dx+c)+a)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c)^3 + A*tan(d*x + c)^2)*(b*tan(d*x + c) + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\tan(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^2, x)
```

3.497 $\int \tan(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=168

$$-\frac{(A-iB)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(a-ib)}-\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\text{Hy}}{2}$$

```
[Out] (B*(a + b*Tan[c + d*x])^(1 + n))/(b*d*(1 + n)) - ((A - I*B)*Hypergeometric2
F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan[c + d*x])^(1
 + n))/(2*(a - I*b)*d*(1 + n)) - ((A + I*B)*Hypergeometric2F1[1, 1 + n, 2 +
 n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(a + I
*b)*d*(1 + n))
```

Rubi [A] time = 0.177936, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3592, 3539, 3537, 68}

$$-\frac{(A-iB)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(a-ib)}-\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a-}{}\right)}{2d(n+1)(a+ib)}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] (B*(a + b*Tan[c + d*x])^(1 + n))/(b*d*(1 + n)) - ((A - I*B)*Hypergeometric2
F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan[c + d*x])^(1
 + n))/(2*(a - I*b)*d*(1 + n)) - ((A + I*B)*Hypergeometric2F1[1, 1 + n, 2 +
 n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(a + I
*b)*d*(1 + n))
```


Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \tan(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{B(a+b\tan(c+dx))^{1+n}}{bd(1+n)} + \int(-B+A\tan(c+dx))(a+b\,\mathrm{t}$$

$$= \frac{B(a+b\tan(c+dx))^{1+n}}{bd(1+n)} + \frac{1}{2}(-iA-B)\int(1+i\tan(c+dx$$

$$= \frac{B(a+b\tan(c+dx))^{1+n}}{bd(1+n)} + \frac{(A-iB)\,\mathrm{Subst}\left(\int\frac{(a-ibx)^n}{-1+x}\,dx,x,\right.}{2d}$$

$$= \frac{B(a+b\tan(c+dx))^{1+n}}{bd(1+n)} - \frac{(A-iB)\,{}_2F_1\left(1,1+n;2+n;\frac{a+b}{}\right.}{2(a-ib}$$

Mathematica [A] time = 0.208763, size = 125, normalized size = 0.74

$$\frac{(a+b\tan(c+dx))^{n+1}\left(-\frac{(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{a-ib}-\frac{(A+iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a+ib}\right)}{a+ib}+\frac{2B}{b}\right)}{2d(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] (((2*B)/b - ((A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*
x])/(a - I*b)])/(a - I*b) - ((A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (
a + b*Tan[c + d*x])/(a + I*b)])/(a + I*b))*(a + b*Tan[c + d*x])^(1 + n))/(2
*d*(1 + n))
```

Maple [F] time = 0.328, size = 0, normalized size = 0.

$$\int \tan \left(dx+c\right) \left(a+b\tan \left(dx+c\right)\right)^{n} \left(A+B\tan \left(dx+c\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan \left(dx+c\right)+A)(b\tan \left(dx+c\right)+a)^{n}\tan \left(dx+c\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(B\tan \left(dx+c\right)^{2}+A\tan \left(dx+c\right)\right)(b\tan \left(dx+c\right)+a)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] integral((B*tan(d*x + c)^2 + A*tan(d*x + c))*(b*tan(d*x + c) + a)^n, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A+B\tan (c+dx))\,(a+b\tan (c+dx))^n\tan (c+dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**n*tan(c + d*x), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(b\tan (dx+c)+a)^n\tan (dx+c)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c), x)
```

3.498 $\int (a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=143

$$\frac{(A-iB)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(b+ia)}+\frac{(-B+iA)(a+b\tan(c+dx))^{n+1}\text{Hy}}{2d}$$

```
[Out] ((A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b
)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) + ((I*A - B)*Hyper
geometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c
+ d*x])^(1 + n))/(2*(a + I*b)*d*(1 + n))
```

Rubi [A] time = 0.130205, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13, Rules used = {3539, 3537, 68}

$$\frac{(A-iB)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(b+ia)}+\frac{(-B+iA)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a+}{}\right.}{2d(n+1)(a+ib)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b
)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) + ((I*A - B)*Hyper
geometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c
+ d*x])^(1 + n))/(2*(a + I*b)*d*(1 + n))
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
```

```
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int (a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int (1+i\tan(c+dx))(a+b\tan(c+dx))^n\,dx + \frac{1}{2}(A+iB)\int ($$
$$= -\frac{(iA-B)\,\mathrm{Subst}\left(\int \frac{(a+ibx)^n}{-1+x}\,dx, x, -i\tan(c+dx)\right)}{2d} + \frac{(iA+B)\,\mathrm{Subst}\left(\int\right.}{}$$
$$= -\frac{(iA+B)\,{}_2F_1\left(1,1+n;2+n;\frac{a+b\tan(c+dx)}{a-ib}\right)(a+b\tan(c+dx))^{1+n}}{2(a-ib)d(1+n)} - \frac{(A}{}$$

Mathematica [A] time = 0.14948, size = 120, normalized size = 0.84

$$\frac{i(a+b\tan(c+dx))^{n+1}\left(\frac{(A+iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a+ib}\right)}{a+ib} - \frac{(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{a-ib}\right)}{2d(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((I/2)*(-(((A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x]
)/(a - I*b)])/(a - I*b)) + ((A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a
 + b*Tan[c + d*x])/(a + I*b)])/(a + I*b))*(a + b*Tan[c + d*x])^(1 + n))/(d*
(1 + n))
```

Maple [F] time = 0.553, size = 0, normalized size = 0.

$$\int (a+b\tan(dx+c))^n\,(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((B\tan(dx+c)+A)(b\tan(dx+c)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A+B\tan(c+dx))\,(a+b\tan(c+dx))^n\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**n, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n, x)
```

3.499 $\int \cot(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=190

$$\frac{(B+iA)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(b+ia)}+\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\text{Hyp}}{2d}$$

```
[Out] ((I*A + B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b
)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) + ((A + I*B)*Hyper
geometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c
+ d*x])^(1 + n))/(2*(a + I*b)*d*(1 + n)) - (A*Hypergeometric2F1[1, 1 + n, 2
 + n, 1 + (b*Tan[c + d*x])/a]*(a + b*Tan[c + d*x])^(1 + n))/(a*d*(1 + n))
```

Rubi [A] time = 0.273356, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {3613, 3539, 3537, 68, 3634, 65}

$$\frac{(B+iA)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a+b\tan(c+dx)}{a-ib}\right)}{2d(n+1)(b+ia)}+\frac{(A+iB)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a+b}{}\right.}{2d(n+1)(a+ib)}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((I*A + B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b
)]*(a + b*Tan[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) + ((A + I*B)*Hyper
geometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c
+ d*x])^(1 + n))/(2*(a + I*b)*d*(1 + n)) - (A*Hypergeometric2F1[1, 1 + n, 2
 + n, 1 + (b*Tan[c + d*x])/a]*(a + b*Tan[c + d*x])^(1 + n))/(a*d*(1 + n))
```


Rule 3613

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)])^(n_))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[
1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n*Simp[a*A + b*B - (A*b - a*B)*Tan[
e + f*x], x], x], x] + Dist[(b*(A*b - a*B))/(a^2 + b^2), Int[((c + d*Tan[e
+ f*x])^n*(1 + Tan[e + f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ
```

```
[c^2 + d^2, 0]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \cot(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = A\int \cot(c+dx)(a+b\tan(c+dx))^n\left(1+\tan^2(c+dx)\right)\,dx +$$

$$= \frac{1}{2}(-iA+B)\int(1-i\tan(c+dx))(a+b\tan(c+dx))^n\,dx + \frac{1}{2}$$

$$= -\frac{A\,{}_2F_1\left(1,1+n;2+n;1+\frac{b\tan(c+dx)}{a}\right)(a+b\tan(c+dx))^{1+n}}{ad(1+n)}$$

$$= \frac{(A-iB)\,{}_2F_1\left(1,1+n;2+n;\frac{a+b\tan(c+dx)}{a-ib}\right)(a+b\tan(c+dx))}{2(a-ib)d(1+n)}$$

Mathematica [A] time = 0.336725, size = 169, normalized size = 0.89

$$\frac{(a+b\tan(c+dx))^{n+1}\left(a(a+ib)(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)+(a-ib)\left(a(A+iB)\text{Hyper}\right.\right.}{2ad(n+1)(a-i}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a*(a + I*b)*(A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d
*x])/(a - I*b)] + (a - I*b)*(a*(A + I*B)*Hypergeometric2F1[1, 1 + n, 2 + n,
 (a + b*Tan[c + d*x])/(a + I*b)] - 2*A*(a + I*b)*Hypergeometric2F1[1, 1 + n
, 2 + n, 1 + (b*Tan[c + d*x])/a]))*(a + b*Tan[c + d*x])^(1 + n))/(2*a*(a -
I*b)*(a + I*b)*d*(1 + n))
```

Maple [F] time = 0.536, size = 0, normalized size = 0.

$$\int \cot(dx+c)(a+b\tan(dx+c))^n(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((B\cot(dx+c)\tan(dx+c)+A\cot(dx+c))(b\tan(dx+c)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fric
as")
```

```
[Out] integral((B*cot(d*x + c)*tan(d*x + c) + A*cot(d*x + c))*(b*tan(d*x + c) + a
)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="giac
")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c), x)
```

3.500 $\int \cot^2(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=228

$$-\frac{(aB+Abn)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{b\tan(c+dx)}{a}+1\right)}{a^2d(n+1)}-\frac{(A-iB)(a+b\tan(c+dx))}{}$$

```
[Out] -((A*Cot[c + d*x]*(a + b*Tan[c + d*x])^(1 + n))/(a*d)) - ((A - I*B)*Hyperge
ometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan[c +
d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) + ((A + I*B)*Hypergeometric2F1[1, 1
+ n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(
2*(I*a - b)*d*(1 + n)) - ((a*B + A*b*n)*Hypergeometric2F1[1, 1 + n, 2 + n,
1 + (b*Tan[c + d*x])/a]*(a + b*Tan[c + d*x])^(1 + n))/(a^2*d*(1 + n))
```

Rubi [A] time = 0.447354, antiderivative size = 228, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.226, Rules used = {3609, 3653, 3539, 3537, 68, 3634, 65}

$$-\frac{(aB+Abn)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b\tan(c+dx)}{a}+1\right)}{a^2d(n+1)}-\frac{(A-iB)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n\right.}{2d(n+1)(b+ia)}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((A*Cot[c + d*x]*(a + b*Tan[c + d*x])^(1 + n))/(a*d)) - ((A - I*B)*Hyperge
ometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan[c +
d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) + ((A + I*B)*Hypergeometric2F1[1, 1
+ n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 + n))/(
2*(I*a - b)*d*(1 + n)) - ((a*B + A*b*n)*Hypergeometric2F1[1, 1 + n, 2 + n,
1 + (b*Tan[c + d*x])/a]*(a + b*Tan[c + d*x])^(1 + n))/(a^2*d*(1 + n))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
```

```
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
```

```
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \cot^2(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = -\frac{A\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{ad} - \frac{\int \cot(c+dx)(a+}{}$$
$$= -\frac{A\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{ad} - \frac{\int (a+b\tan(c+}{}$$
$$= -\frac{A\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{ad} - \frac{1}{2}(A-iB)\int (1+$$
$$= -\frac{A\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{ad} - \frac{(aB+Abn)\,{}_2F_1\left(\right.}{}$$
$$= -\frac{A\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{ad} + \frac{(iA+B)\,{}_2F_1\left(1,1\right.}{}$$

Mathematica [A] time = 0.369548, size = 202, normalized size = 0.89

$$\frac{(a+b\tan(c+dx))^{n+1}\left(a^2(a+ib)(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)-(a-ib)\left(a^2(A+iB)\text{Hy}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^2*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a^2*(a + I*b)*(A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c +
 d*x])/(a - I*b)] - (a - I*b)*(a^2*(A + I*B)*Hypergeometric2F1[1, 1 + n, 2
+ n, (a + b*Tan[c + d*x])/(a + I*b)] + 2*((-I)*a + b)*(a*B*Hypergeometric2F
1[1, 1 + n, 2 + n, 1 + (b*Tan[c + d*x])/a] - A*b*Hypergeometric2F1[2, 1 + n
, 2 + n, 1 + (b*Tan[c + d*x])/a])))*(a + b*Tan[c + d*x])^(1 + n))/(2*a^2*(a
 - I*b)*((-I)*a + b)*d*(1 + n))
```

Maple [F] time = 0.343, size = 0, normalized size = 0.

$$\int (\cot (dx+c))^2 (a+b\tan (dx+c))^n (A+B\tan (dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx+c)+A)(b\tan (dx+c)+a)^n \cot (dx+c)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(B\cot (dx+c)^2 \tan (dx+c)+A\cot (dx+c)^2\right)(b\tan (dx+c)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*cot(d*x + c)^2*tan(d*x + c) + A*cot(d*x + c)^2)*(b*tan(d*x + c)
 + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**2*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^2*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^2, x)
```

3.501 $\int \cot^3(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=292

$$\frac{\left(2a^2A-2abBn+Ab^2(1-n)n\right)(a+b\tan(c+dx))^{n+1}\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{b\tan(c+dx)}{a}+1\right)}{2a^3d(n+1)}-\frac{(B+iA)(a}{}$$

```
[Out] -((2*a*B - A*b*(1 - n))*Cot[c + d*x]*(a + b*Tan[c + d*x])^(1 + n))/(2*a^2*d
) - (A*Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(1 + n))/(2*a*d) - ((I*A + B)*Hy
pergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan
[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) - ((A + I*B)*Hypergeometric2F1[
1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 +
n))/(2*(a + I*b)*d*(1 + n)) + ((2*a^2*A - 2*a*b*B*n + A*b^2*(1 - n)*n)*Hype
rgeometric2F1[1, 1 + n, 2 + n, 1 + (b*Tan[c + d*x])/a]*(a + b*Tan[c + d*x])
^(1 + n))/(2*a^3*d*(1 + n))
```

Rubi [A] time = 0.805643, antiderivative size = 292, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.258, Rules used = {3609, 3649, 3653, 3539, 3537, 68, 3634, 65}

$$\frac{\left(2a^2A-2abBn+Ab^2(1-n)n\right)(a+b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b\tan(c+dx)}{a}+1\right)}{2a^3d(n+1)}-\frac{\cot(c+dx)(2aB-Ab(1-n)}{2a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((2*a*B - A*b*(1 - n))*Cot[c + d*x]*(a + b*Tan[c + d*x])^(1 + n))/(2*a^2*d
) - (A*Cot[c + d*x]^2*(a + b*Tan[c + d*x])^(1 + n))/(2*a*d) - ((I*A + B)*Hy
pergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a - I*b)]*(a + b*Tan
[c + d*x])^(1 + n))/(2*(I*a + b)*d*(1 + n)) - ((A + I*B)*Hypergeometric2F1[
1, 1 + n, 2 + n, (a + b*Tan[c + d*x])/(a + I*b)]*(a + b*Tan[c + d*x])^(1 +
n))/(2*(a + I*b)*d*(1 + n)) + ((2*a^2*A - 2*a*b*B*n + A*b^2*(1 - n)*n)*Hype
rgeometric2F1[1, 1 + n, 2 + n, 1 + (b*Tan[c + d*x])/a]*(a + b*Tan[c + d*x])
^(1 + n))/(2*a^3*d*(1 + n))
```


Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
```

```
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3539

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Dist[(c + I*d)/2, Int[(a + b*Tan[e + f*x])^m*(1
 - I*Tan[e + f*x]), x], x] + Dist[(c - I*d)/2, Int[(a + b*Tan[e + f*x])^m*(
1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&  !IntegerQ[m]
```

Rule 3537

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Dist[(c*d)/f, Subst[Int[(a + (b*x)/d)^m/(d^2 + c
*x), x], x, d*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[b
*c - a*d, 0] && NeQ[a^2 + b^2, 0] && EqQ[c^2 + d^2, 0]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rubi steps

$$\int \cot^3(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = -\frac{A\cot^2(c+dx)(a+b\tan(c+dx))^{1+n}}{2ad} - \frac{\int \cot^2(c+dx)(\ldots}{\ldots}$$

$$= -\frac{(2aB-Ab(1-n))\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{2a^2d} - \ldots$$

$$= -\frac{(2aB-Ab(1-n))\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{2a^2d} - \ldots$$

$$= -\frac{(2aB-Ab(1-n))\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{2a^2d} - \ldots$$

$$= -\frac{(2aB-Ab(1-n))\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{2a^2d} - \ldots$$

$$= -\frac{(2aB-Ab(1-n))\cot(c+dx)(a+b\tan(c+dx))^{1+n}}{2a^2d} - \ldots$$

Mathematica [A] time = 0.474324, size = 230, normalized size = 0.79

$$-\frac{(a+b\tan(c+dx))^{n+1}\left(a^3(a+ib)(A-iB)\text{Hypergeometric2F1}\left(1,n+1,n+2,\frac{a+b\tan(c+dx)}{a-ib}\right)+(a-ib)\left(a^3(A+iB)\text{H}\ldots\right.\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^3*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((a^3*(a + I*b)*(A - I*B)*Hypergeometric2F1[1, 1 + n, 2 + n, (a + b*Tan[c
+ d*x])/(a - I*b)] + (a - I*b)*(a^3*(A + I*B)*Hypergeometric2F1[1, 1 + n, 2
 + n, (a + b*Tan[c + d*x])/(a + I*b)] - 2*(a + I*b)*(a^2*A*Hypergeometric2F
1[1, 1 + n, 2 + n, 1 + (b*Tan[c + d*x])/a] + b*(a*B*Hypergeometric2F1[2, 1
+ n, 2 + n, 1 + (b*Tan[c + d*x])/a] - A*b*Hypergeometric2F1[3, 1 + n, 2 + n
, 1 + (b*Tan[c + d*x])/a]))))*(a + b*Tan[c + d*x])^(1 + n))/(2*a^3*(a - I*b
)*(a + I*b)*d*(1 + n))
```

Maple [F] time = 0.653, size = 0, normalized size = 0.

$$\int \left(\cot(dx+c)\right)^3\left(a+b\tan(dx+c)\right)^n\left(A+B\tan(dx+c)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n \cot(dx+c)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(B\cot(dx+c)^3\tan(dx+c)+A\cot(dx+c)^3\right)(b\tan(dx+c)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*cot(d*x + c)^3*tan(d*x + c) + A*cot(d*x + c)^3)*(b*tan(d*x + c)
 + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**3*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^3*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^3, x)
```

3.502 $\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=103

$$-\frac{2a(B+iA)\cot^{\frac{3}{2}}(c+dx)}{3d}+\frac{2a(A-iB)\sqrt{\cot(c+dx)}}{d}+\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2aA\cot^{\frac{5}{2}}(c+d$$

```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (2*a*
(A - I*B)*Sqrt[Cot[c + d*x]])/d - (2*a*(I*A + B)*Cot[c + d*x]^(3/2))/(3*d)
- (2*a*A*Cot[c + d*x]^(5/2))/(5*d)
```

Rubi [A] time = 0.235965, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3581, 3592, 3528, 3533, 208}

$$-\frac{2a(B+iA)\cot^{\frac{3}{2}}(c+dx)}{3d}+\frac{2a(A-iB)\sqrt{\cot(c+dx)}}{d}+\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2aA\cot^{\frac{5}{2}}(c+d$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (2*a*
(A - I*B)*Sqrt[Cot[c + d*x]])/d - (2*a*(I*A + B)*Cot[c + d*x]^(3/2))/(3*d)
- (2*a*A*Cot[c + d*x]^(5/2))/(5*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
```

```
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \int \cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))(B+A\cot(c+dx))\,dx$$

$$= -\frac{2aA\cot^{\frac{5}{2}}(c+dx)}{5d} + \int \cot^{\frac{3}{2}}(c+dx)(-a(A-iB)+a(iA$$

$$= -\frac{2a(iA+B)\cot^{\frac{3}{2}}(c+dx)}{3d} - \frac{2aA\cot^{\frac{5}{2}}(c+dx)}{5d} + \int \sqrt{\cot$$

$$= \frac{2a(A-iB)\sqrt{\cot(c+dx)}}{d} - \frac{2a(iA+B)\cot^{\frac{3}{2}}(c+dx)}{3d} - \frac{2a}{}$$

$$= \frac{2a(A-iB)\sqrt{\cot(c+dx)}}{d} - \frac{2a(iA+B)\cot^{\frac{3}{2}}(c+dx)}{3d} - \frac{2a}{}$$

$$= \frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{2a(A-i}{}$$

Mathematica [B] time = 2.96737, size = 263, normalized size = 2.55

$$\frac{a\sin^2(c+dx)(\cot(c+dx)+i)(\cos(dx)-i\sin(dx))(A\cot(c+dx)+B)\left(-\frac{2ie^{-ic}(A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}}-\frac{1}{15}(\cos(c)-i\sin\right.}{d(A\cos(c+dx)+B\sin(c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (a*(I + Cot[c + d*x])*(B + A*Cot[c + d*x])*(Cos[d*x] - I*Sin[d*x])*Sin[c +
d*x]^2*(((-2*I)*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((
2*I)*(c + d*x)))]])/(E^(I*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*
(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I)*(c + d*x)))]
) - (Sqrt[Cot[c + d*x]]*Csc[c + d*x]^2*(Cos[c] - I*Sin[c])*(-12*A + (15*I)*
B + 3*(6*A - (5*I)*B)*Cos[2*(c + d*x)] + 5*(I*A + B)*Sin[2*(c + d*x)]))/15)
)/(d*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [C] time = 0.474, size = 2945, normalized size = 28.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/15*a/d*2^(1/2)*(-15*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)+18*A*cos(d*x+c)^3*2^(1/2)-15*A*cos(d*x+c)*2^(1/2)-15*B*cos(d*x+c)^2*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-15*I*A*((cos(d*x+c)-1+
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2)+15*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2
*I,1/2*2^(1/2))-15*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*El
```

lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))-15*A*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Elli
pticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))
+15*B*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-15*B*cos(d*x
+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*B*cos(d*x+c
)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2)
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+5*B*cos(d*x+c)^2*sin(d*x+c)
*2^(1/2)-15*I*B*cos(d*x+c)^3*2^(1/2)+15*I*B*cos(d*x+c)*2^(1/2)+15*A*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*B*cos(d*x+c)^3*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*A*cos(d*x+c)^2*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ell
ipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-15*I*A*cos(d*x+c)^2*((cos(d*x+c)-1+sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-15*I*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2)+15*I*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2+1/2*I,1/2*2^(1/2))-15*I*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
+1/2*I,1/2*2^(1/2))+15*I*A*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)-15*I*A*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*
2^(1/2))-15*A*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2

```
)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^
(1/2))+15*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))+15*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ellipt
icPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-1
5*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2)
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+15*B*((cos(d*x+c)-1+sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+5*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2))*(co
s(d*x+c)/sin(d*x+c))^(7/2)*sin(d*x+c)/cos(d*x+c)^4
```

Maxima [B] time = 1.55369, size = 259, normalized size = 2.51

$$\frac{15\left(2\sqrt{2}((i-1)A+(i+1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}((i-1)A+(i+1)B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(}}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/60*(15*(2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2
/sqrt(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(
2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log
(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*(-(I + 1)*A + (
I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a + 8*(15*
A - 15*I*B)*a/sqrt(tan(d*x + c)) + 40*(-I*A - B)*a/tan(d*x + c)^(3/2) - 24*
A*a/tan(d*x + c)^(5/2))/d
```

Fricas [B] time = 1.59234, size = 1153, normalized size = 11.19

$$-\frac{15\left(de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\log\left(-\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}-\left(i\,de^{(2i\,dx+2i\,c)}-i\,d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}}}\right.}{(i\,A+B)a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/60*(15*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A
^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) - (I
*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqr
t((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I
*c)/((I*A + B)*a)) - 15*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) +
d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B)*a*e^(2*I*d*x
 + 2*I*c) - (-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^
2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^
(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 8*((23*A - 20*I*B)*a*e^(4*I*d*x + 4*I*c
) - 6*(4*A - 5*I*B)*a*e^(2*I*d*x + 2*I*c) + (13*A - 10*I*B)*a)*sqrt((I*e^(2
*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(4*I*d*x + 4*I*c) - 2
*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)*cot(d*x + c)^(7/2), x
)
```

3.503 $\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=78

$$-\frac{2a(B+iA)\sqrt{\cot(c+dx)}}{d}-\frac{2\sqrt[4]{-1}a(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d}$$

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*a
*(I*A + B)*Sqrt[Cot[c + d*x]])/d - (2*a*A*Cot[c + d*x]^(3/2))/(3*d)
```

Rubi [A] time = 0.191667, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3581, 3592, 3528, 3533, 208}

$$-\frac{2a(B+iA)\sqrt{\cot(c+dx)}}{d}-\frac{2\sqrt[4]{-1}a(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*a
*(I*A + B)*Sqrt[Cot[c + d*x]])/d - (2*a*A*Cot[c + d*x]^(3/2))/(3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \int \sqrt{\cot(c+dx)}(ia+a\cot(c+dx))(B+A\cot(c+dx))\,dx$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \int \sqrt{\cot(c+dx)}(-a(A-iB)+a(iA$$

$$= -\frac{2a(iA+B)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \int \frac{-a(iA$$

$$= -\frac{2a(iA+B)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{\left(2a^2(iA\right.}{}$$

$$= -\frac{2\sqrt[4]{-1}a(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{2a(iA+}{}$$

Mathematica [B] time = 3.31194, size = 161, normalized size = 2.06

$$-\frac{2ae^{-ic}\sin^2(c+dx)\sqrt{\cot(c+dx)}(\cot(c+dx)+i)(\cos(dx)-i\sin(dx))(A\cot(c+dx)+B)\left(-3i(A-iB)\sqrt{i\tan(c+dx)}\right.}{3d(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-2*a*Sqrt[Cot[c + d*x]]*(I + Cot[c + d*x])*(B + A*Cot[c + d*x])*(Cos[d*x]
- I*Sin[d*x])*Sin[c + d*x]^2*((3*I)*A + 3*B + A*Cot[c + d*x] - (3*I)*(A - I
*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqr
t[I*Tan[c + d*x]]))/(3*d*E^(I*c)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [C] time = 0.446, size = 1538, normalized size = 19.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3*a/d*2^(1/2)*(-3*I*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2),1/2+1/2*I,1/2*2^(1/2))+3*I*B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2*2^(1/2))-3*I*B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*I*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2),1/2+1/2*I,1/2*2^(1/2))-3*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2*2^(1/2))+3*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*I*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2*2^(1/2))-3*I*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))-3*B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+
```

```
1/2*I,1/2*2^(1/2))-3*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2
))+3*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipti
cPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*
B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*I*A*2
^(1/2)*cos(d*x+c)*sin(d*x+c)+A*2^(1/2)*cos(d*x+c)^2+3*B*2^(1/2)*cos(d*x+c)*
sin(d*x+c))*(cos(d*x+c)/sin(d*x+c))^(5/2)*sin(d*x+c)/cos(d*x+c)^3
```

Maxima [B] time = 1.59765, size = 235, normalized size = 3.01

$$-\frac{3\left(2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/12*(3*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
2/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*sqr
t(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*((I - 1)*A + (I + 1)*B)*lo
g(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*((I - 1)*A + (
I + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a - 24*(-I
*A - B)*a/sqrt(tan(d*x + c)) + 8*A*a/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.45666, size = 983, normalized size = 12.6

$$-\frac{3\left(de^{(2idx+2ic)}-d\right)\sqrt{\frac{\left(-4iA^2-8AB+4iB^2\right)a^2}{d^2}}\log\left(-\frac{\left(2(A-iB)ae^{(2idx+2ic)}+\left(de^{(2idx+2ic)}-d\right)\sqrt{\frac{\left(-4iA^2-8AB+4iB^2\right)a^2}{d^2}}\sqrt{\frac{ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}-1}}\right)e^{(-2idx-2ic)}}{(iA+B)a}\right)-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/12*(3*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/
d^2)*log(-(2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) - d)*
sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 3*(d*e^(
2*I*d*x + 2*I*c) - d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log(-(2*(A
 - I*B)*a*e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*x + 2*I*c) - d)*sqrt((-4*I*A^2
- 8*A*B + 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - ((-32*I*A - 24*B)*a*e^(
2*I*d*x + 2*I*c) + (16*I*A + 24*B)*a)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(
2*I*d*x + 2*I*c) - 1)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)*cot(d*x + c)^(5/2), x
)
```

3.504 $\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=53

$$-\frac{2aA\sqrt{\cot(c+dx)}}{d}-\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}$$

```
[Out] (-2*(-1)^(1/4)*a*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*a
*A*Sqrt[Cot[c + d*x]])/d
```

Rubi [A] time = 0.150765, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3581, 3592, 3533, 208}

$$-\frac{2aA\sqrt{\cot(c+dx)}}{d}-\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```



```
[Out] (-2*(-1)^(1/4)*a*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*a
*A*Sqrt[Cot[c + d*x]])/d
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))(B+A\cot(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} + \int \frac{-a(A-iB)+a(iA+B)\cot(c+dx}{\sqrt{\cot(c+dx)}}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} + \frac{\left(2a^2(A-iB)^2\right)\operatorname{Subst}\left(\int \frac{1}{a(A-iB)+a(iA-}\right.}{d}$$

$$= -\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{2aA\sqrt{\cot}}{d}$$

Mathematica [A] time = 2.0035, size = 92, normalized size = 1.74

$$\frac{2ae^{-ic}(\cos(c)+i\sin(c))\sqrt{\cot(c+dx)}\left(-A+(A-iB)\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*a*Sqrt[Cot[c + d*x]]*(Cos[c] + I*Sin[c])*(-A + (A - I*B)*ArcTanh[Sqrt[(-
1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]]))
/(d*E^(I*c))
```

Maple [C] time = 0.417, size = 1425, normalized size = 26.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)

[Out] -a/d*2^(1/2)*(I*A*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-I*A*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+A*cos(d*x+c)*2^(1/2))*(cos(d*x+c)/sin(d*x+c))^(3/2)*sin(d*x+c)/cos(d*x+c)^2

Maxima [B] time = 1.55758, size = 209, normalized size = 3.94

$$-\frac{\left(2\sqrt{2}((i-1)\ A+(i+1)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}((i-1)\ A+(i+1)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx}}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/4*((2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sq
rt(tan(d*x + c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(2)*
(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(sq
rt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*(-(I + 1)*A + (I -
 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a + 8*A*a/sqr
t(tan(d*x + c)))/d
```

Fricas [B] time = 1.41133, size = 803, normalized size = 15.15

$$-\frac{8\,Aa\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}-\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}d\log\left(-\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}-\left(i\,de^{(2i\,dx+2i\,c)}-i\,d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}\right)e^{(-2i\,dx-2i\,c)}}{(i\,A+B)a}\right)}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/4*(8*A*a*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)) - s
qrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*d*log(-(2*(A - I*B)*a*e^(2*I*d*x +
 2*I*c) - (I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*
a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2
*I*d*x - 2*I*c)/((I*A + B)*a)) + sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*
d*log(-(2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) - (-I*d*e^(2*I*d*x + 2*I*c) + I*d
)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)*cot(d*x + c)^(3/2), x
)
```

3.505 $\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=55

$$\frac{2\sqrt[4]{-1}a(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB}{d\sqrt{\cot(c+dx)}}$$

```
[Out] (2*(-1)^(1/4)*a*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + ((2*I
)*a*B)/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.151535, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {3581, 3591, 3533, 208}

$$\frac{2\sqrt[4]{-1}a(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB}{d\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*(-1)^(1/4)*a*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + ((2*I
)*a*B)/(d*Sqrt[Cot[c + d*x]])
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
```

```
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))(B+A\cot(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$
$$= \frac{2iaB}{d\sqrt{\cot(c+dx)}} + \int \frac{a(iA+B)+a(A-iB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx$$
$$= \frac{2iaB}{d\sqrt{\cot(c+dx)}} + \frac{\left(2a^2(iA+B)^2\right)\text{Subst}\left(\int \frac{1}{-a(iA+B)+a(A-iB)}\right.}{d}$$
$$= \frac{2\sqrt[4]{-1}a(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{2ia}{d\sqrt{\cot(c}}$$

Mathematica [A] time = 3.38976, size = 108, normalized size = 1.96

$$\frac{2ae^{-ic}(\cos(c)+i\sin(c))\left((A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)+iB\sqrt{i\tan(c+dx)}\right)}{d\sqrt{i\tan(c+dx)}\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*a*(Cos[c] + I*Sin[c])*((A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))
/(1 + E^((2*I)*(c + d*x)))]] + I*B*Sqrt[I*Tan[c + d*x]]))/(d*E^(I*c)*Sqrt[C
ot[c + d*x]]*Sqrt[I*Tan[c + d*x]])
```

Maple [C] time = 0.454, size = 784, normalized size = 14.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x+c)-1)*(
I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)
)^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)*EllipticPi
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)*EllipticPi((-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-I*B*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)*EllipticF((-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-A*sin(d*x+c)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2*2^(1/2))+B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))+I*B*2^(1/2)*cos(d*x+c)-I*B*2^(1/2))/cos(d*x+c)/sin(d*x+c)^
3
```

Maxima [B] time = 1.54788, size = 209, normalized size = 3.8

$$\frac{8i\,Ba\sqrt{\tan\left(dx+c\right)}+\left(2\,\sqrt{2}(-\left(i+1\right)\,A+\left(i-1\right)\,B)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\,\sqrt{2}(-\left(i+1\right)\,A+\left(i-1\right)\,B)\,\mathrm{arct}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/4*(8*I*B*a*sqrt(tan(d*x + c)) + (2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arcta
n(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (
I - 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*(
(I - 1)*A + (I + 1)*B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1)
 + sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(
d*x + c) + 1))*a)/d
```

Fricas [B] time = 1.54361, size = 938, normalized size = 17.05

$$\frac{\left(de^{(2i\,dx+2i\,c)}+d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\log\left(-\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}+\left(de^{(2i\,dx+2i\,c)}-d\right)\sqrt{\frac{\left(-4i\,A^2-8\,AB+4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}\right)e^{(-2i\,dx-2i\,c)}}{(i\,A+B)a}\right)-\left(d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/4*((d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)
*log(-(2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) - d)*sqrt
((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^
(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - (d*e^(2*I*d*
x + 2*I*c) + d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B
)*a*e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*x + 2*I*c) - d)*sqrt((-4*I*A^2 - 8*A*
B + 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
 - 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) + 8*(B*a*e^(2*I*d*x + 2*I*c) -
B*a)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(2*I
*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int A\sqrt{\cot\left(c+dx\right)}\,dx+\int B\tan\left(c+dx\right)\sqrt{\cot\left(c+dx\right)}\,dx+\int iA\tan\left(c+dx\right)\sqrt{\cot\left(c+dx\right)}\,dx+\int iB\tan^2\left(c+dx\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] a*(Integral(A*sqrt(cot(c + d*x)), x) + Integral(B*tan(c + d*x)*sqrt(cot(c +
 d*x)), x) + Integral(I*A*tan(c + d*x)*sqrt(cot(c + d*x)), x) + Integral(I*
B*tan(c + d*x)**2*sqrt(cot(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)*sqrt(cot(d*x + c)), x
)
```

3.506 $\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=80

$$\frac{2a(B+iA)}{d\sqrt{\cot(c+dx)}}+\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB}{3d\cot^{\frac{3}{2}}(c+dx)}$$

```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (((2*
I)/3)*a*B)/(d*Cot[c + d*x]^(3/2)) + (2*a*(I*A + B))/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.187618, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3581, 3591, 3529, 3533, 208}

$$\frac{2a(B+iA)}{d\sqrt{\cot(c+dx)}}+\frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB}{3d\cot^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```


```
[Out] (2*(-1)^(1/4)*a*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (((2*
I)/3)*a*B)/(d*Cot[c + d*x]^(3/2)) + (2*a*(I*A + B))/(d*Sqrt[Cot[c + d*x]])
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
```

```
-1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \int \frac{(ia+a\cot(c+dx))(B+A\cot(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB}{3d\cot^{\frac{3}{2}}(c+dx)} + \int \frac{a(iA+B)+a(A-iB)\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2a(iA+B)}{d\sqrt{\cot(c+dx)}} + \int \frac{a(A-iB)-a(iA+B)\cot(c+d}{\sqrt{\cot(c+dx)}}$$

$$= \frac{2iaB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2a(iA+B)}{d\sqrt{\cot(c+dx)}} + \frac{\left(2a^2(A-iB)^2\right)\text{Subst}\left(\int \frac{1}{-a(A-iB)-a}\right.}{d}$$

$$= \frac{2\sqrt[4]{-1}a(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{2iaB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2a}{d\sqrt{c}}$$

Mathematica [A] time = 2.64355, size = 96, normalized size = 1.2

$$\frac{2a\left(3(B+iA)\cot(c+dx)+\frac{3(A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{(i\tan(c+dx))^{3/2}}+iB\right)}{3d\cot^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
x]
```

```
[Out] (2*a*(I*B + 3*(I*A + B)*Cot[c + d*x] + (3*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((
2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]])/(I*Tan[c + d*x])^(3/2)))/(3*d
*Cot[c + d*x]^(3/2))
```

Maple [C] time = 0.501, size = 889, normalized size = 11.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/3*a/d*2^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x+c)-1)*(3*I*A*cos(d*x+c)*sin(d*x+c
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*A*cos(d*x+c)*s
in(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*B*cos(d*x+c)*sin(
d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*A*cos(d*x+c
)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*B*cos
(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipt
icPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3
*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(co
```

```
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+3*I*A*
cos(d*x+c)^2*2^(1/2)+I*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)-3*I*A*cos(d*x+c)*2^(
1/2)+3*B*cos(d*x+c)^2*2^(1/2)-I*B*sin(d*x+c)*2^(1/2)-3*B*cos(d*x+c)*2^(1/2)
)/cos(d*x+c)/sin(d*x+c)^4/(cos(d*x+c)/sin(d*x+c))^(1/2)
```

Maxima [B] time = 1.55281, size = 239, normalized size = 2.99

$$8\left(iBa - \frac{3(-iA-B)a}{\tan(dx+c)}\right)\tan(dx+c)^{\frac{3}{2}} + 3\left(2\sqrt{2}((i-1)\ A + (i+1)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2} + \frac{2}{\sqrt{\tan(dx+c)}}\right)\right) + 2\sqrt{2}((i-1)\ A + (i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/12*(8*(I*B*a - 3*(-I*A - B)*a/tan(d*x + c))*tan(d*x + c)^(3/2) + 3*(2*sqr
t(2)*((I - 1)*A + (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x +
 c)))) + 2*sqrt(2)*((I - 1)*A + (I + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2
/sqrt(tan(d*x + c)))) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(sqrt(2)/sqrt(t
an(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(-
sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a)/d
```

Fricas [B] time = 1.47274, size = 1135, normalized size = 14.19

$$-\frac{3\left(de^{(4i\,dx+4i\,c)} + 2\,de^{(2i\,dx+2i\,c)} + d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\log\left(-\frac{\left(2\,(A-i\,B)ae^{(2i\,dx+2i\,c)}-\left(i\,de^{(2i\,dx+2i\,c)}-i\,d\right)\sqrt{\frac{\left(4i\,A^2+8\,AB-4i\,B^2\right)a^2}{d^2}}\sqrt{\frac{ie^{(2i\,dx+2i\,c)}+}{e^{(2i\,dx+2i\,c)}-1}}\right.}{(i\,A+B)a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] -1/12*(3*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^
2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) - (I*
d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*sqrt
```

```
((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*
c)/((I*A + B)*a)) - 3*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B)*a*e^(2*I*d*x +
 2*I*c) - (-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((4*I*A^2 + 8*A*B - 4*I*B^2)
*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-
2*I*d*x - 2*I*c)/((I*A + B)*a)) - (8*(3*A - 4*I*B)*a*e^(4*I*d*x + 4*I*c) +
16*I*B*a*e^(2*I*d*x + 2*I*c) - 8*(3*A - 2*I*B)*a)*sqrt((I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x
 + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int \frac{A}{\sqrt{\cot(c+dx)}}\,dx + \int \frac{B\tan(c+dx)}{\sqrt{\cot(c+dx)}}\,dx + \int \frac{iA\tan(c+dx)}{\sqrt{\cot(c+dx)}}\,dx + \int \frac{iB\tan^2(c+dx)}{\sqrt{\cot(c+dx)}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] a*(Integral(A/sqrt(cot(c + d*x)), x) + Integral(B*tan(c + d*x)/sqrt(cot(c +
 d*x)), x) + Integral(I*A*tan(c + d*x)/sqrt(cot(c + d*x)), x) + Integral(I*
B*tan(c + d*x)**2/sqrt(cot(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)/sqrt(cot(d*x + c)), x
)
```

3.507 $\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=105

$$\frac{2a(B+iA)}{3d\cot^{\frac{3}{2}}(c+dx)}+\frac{2a(A-iB)}{d\sqrt{\cot(c+dx)}}-\frac{2\sqrt[4]{-1}a(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)}$$

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (((2
*I)/5)*a*B)/(d*Cot[c + d*x]^(5/2)) + (2*a*(I*A + B))/(3*d*Cot[c + d*x]^(3/2
)) + (2*a*(A - I*B))/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.226374, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.147, Rules used = {3581, 3591, 3529, 3533, 208}

$$\frac{2a(B+iA)}{3d\cot^{\frac{3}{2}}(c+dx)}+\frac{2a(A-iB)}{d\sqrt{\cot(c+dx)}}-\frac{2\sqrt[4]{-1}a(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),x]
```

```
[Out] (-2*(-1)^(1/4)*a*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (((2
*I)/5)*a*B)/(d*Cot[c + d*x]^(5/2)) + (2*a*(I*A + B))/(3*d*Cot[c + d*x]^(3/2
)) + (2*a*(A - I*B))/(d*Sqrt[Cot[c + d*x]])
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
```

```
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx = \int \frac{(ia+a\cot(c+dx))(B+A\cot(c+dx))}{\cot^{\frac{7}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)} + \int \frac{a(iA+B)+a(A-iB)\cot(c+dx)}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2a(iA+B)}{3d\cot^{\frac{3}{2}}(c+dx)} + \int \frac{a(A-iB)-a(iA+B)\cot(c-}{\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2a(iA+B)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2a(A-iB)}{d\sqrt{\cot(c+dx)}} + \int \frac{-a(iA+B)}{}$$

$$= \frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2a(iA+B)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2a(A-iB)}{d\sqrt{\cot(c+dx)}} + \frac{\left(2a^2(iA+B)^2\right.}{}$$

$$= -\frac{2\sqrt[4]{-1}a(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{2iaB}{5d\cot^{\frac{5}{2}}(c+dx)} + \cdots$$

Mathematica [A] time = 3.50123, size = 133, normalized size = 1.27

$$\frac{a\left(\sec^2(c+dx)(5(B+iA)\sin(2(c+dx))+3(5A-6iB)\cos(2(c+dx))+3(5A-4iB))-\frac{30(A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{i\tan(c+dx)}}\right)}{15d\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),
x]
```

```
[Out] (a*(Sec[c + d*x]^2*(3*(5*A - (4*I)*B) + 3*(5*A - (6*I)*B)*Cos[2*(c + d*x)]
+ 5*(I*A + B)*Sin[2*(c + d*x)]) - (30*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)
*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]])/Sqrt[I*Tan[c + d*x]]))/(15*d*Sqrt
[Cot[c + d*x]])
```

Maple [C] time = 0.459, size = 971, normalized size = 9.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

```
[Out] -1/15*a/d*2^(1/2)*(cos(d*x+c)-1)*(-5*I*A*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+5*
I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)+15*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)+15*A*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2*2^(1/2))*sin(d*x+c)-15*A*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)+15*B*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)+3*I*2^(1/2)*B-
18*I*B*2^(1/2)*cos(d*x+c)^2-15*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
```

```
c))^(1/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2),1/2*2^(1/2))*sin(d*x+c)-15*A*cos(d*x+c)^3*2^(1/2)-3*I*B*2^(1/2)*cos(d*x
+c)-5*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+15*A*2^(1/2)*cos(d*x+c)^2+18*I*B*2^
(1/2)*cos(d*x+c)^3+5*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+15*I*A*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c))*(cos(d*x+c
)+1)^2/cos(d*x+c)/sin(d*x+c)^5/(cos(d*x+c)/sin(d*x+c))^(3/2)
```

Maxima [B] time = 1.56457, size = 261, normalized size = 2.49

$$-\frac{8\left(-3iBa-\frac{5(iA+B)a}{\tan(dx+c)}-\frac{(15A-15iB)a}{\tan(dx+c)^2}\right)\tan(dx+c)^{\frac{5}{2}}+15\left(2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorithm
="maxima")
```

```
[Out] -1/60*(8*(-3*I*B*a - 5*(I*A + B)*a/tan(d*x + c) - (15*A - 15*I*B)*a/tan(d*x
 + c)^2)*tan(d*x + c)^(5/2) + 15*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan
(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I
 - 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*((
I - 1)*A + (I + 1)*B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1)
+ sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d
*x + c) + 1))*a)/d
```

Fricas [B] time = 1.65072, size = 1310, normalized size = 12.48

$$-\frac{15\left(de^{(6idx+6ic)}+3de^{(4idx+4ic)}+3de^{(2idx+2ic)}+d\right)\sqrt{\frac{\left(-4iA^2-8AB+4iB^2\right)a^2}{d^2}}\log\left(-\frac{\left(2(A-iB)ae^{(2idx+2ic)}+\left(de^{(2idx+2ic)}-d\right)\sqrt{\frac{\left(-4iA^2-8AB\right.}{d^2}}\right.}{(iA+B)a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorithm
="fricas")
```

```
[Out] -1/60*(15*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x
 + 2*I*c) + d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B)
*a*e^(2*I*d*x + 2*I*c) + (d*e^(2*I*d*x + 2*I*c) - d)*sqrt((-4*I*A^2 - 8*A*B
 + 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
- 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B)*a)) - 15*(d*e^(6*I*d*x + 6*I*c) + 3*
d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((-4*I*A^2 - 8*A*B
 + 4*I*B^2)*a^2/d^2)*log(-(2*(A - I*B)*a*e^(2*I*d*x + 2*I*c) - (d*e^(2*I*d*
x + 2*I*c) - d)*sqrt((-4*I*A^2 - 8*A*B + 4*I*B^2)*a^2/d^2)*sqrt((I*e^(2*I*d
*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((I*A + B
)*a)) - ((-160*I*A - 184*B)*a*e^(6*I*d*x + 6*I*c) + (-80*I*A - 8*B)*a*e^(4*
I*d*x + 4*I*c) + (160*I*A + 88*B)*a*e^(2*I*d*x + 2*I*c) + (80*I*A + 104*B)*
a)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(6*I*d
*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int \frac{A}{\cot^{\frac{3}{2}}(c+dx)}\,dx+\int \frac{B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)}\,dx+\int \frac{iA\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)}\,dx+\int \frac{iB\tan^2(c+dx)}{\cot^{\frac{3}{2}}(c+dx)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)**(3/2),x)
```

```
[Out] a*(Integral(A/cot(c + d*x)**(3/2), x) + Integral(B*tan(c + d*x)/cot(c + d*x
)**(3/2), x) + Integral(I*A*tan(c + d*x)/cot(c + d*x)**(3/2), x) + Integral
(I*B*tan(c + d*x)**2/cot(c + d*x)**(3/2), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)/cot(d*x + c)^(3/2), x
)
```

3.508 $\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=128

$$-\frac{2a^2(5B+7iA)\cot^{\frac{3}{2}}(c+dx)}{15d}+\frac{4a^2(A-iB)\sqrt{\cot(c+dx)}}{d}+\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2A\cot^{\frac{3}{2}}}{}$$

```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (4*
a^2*(A - I*B)*Sqrt[Cot[c + d*x]])/d - (2*a^2*((7*I)*A + 5*B)*Cot[c + d*x]^(
3/2))/(15*d) - (2*A*Cot[c + d*x]^(3/2)*(I*a^2 + a^2*Cot[c + d*x]))/(5*d)
```

Rubi [A] time = 0.360165, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3581, 3594, 3592, 3528, 3533, 208}

$$-\frac{2a^2(5B+7iA)\cot^{\frac{3}{2}}(c+dx)}{15d}+\frac{4a^2(A-iB)\sqrt{\cot(c+dx)}}{d}+\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2A\cot^{\frac{3}{2}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (4*
a^2*(A - I*B)*Sqrt[Cot[c + d*x]])/d - (2*a^2*((7*I)*A + 5*B)*Cot[c + d*x]^(
3/2))/(15*d) - (2*A*Cot[c + d*x]^(3/2)*(I*a^2 + a^2*Cot[c + d*x]))/(5*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
```

```
n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2(B+A\cot(c+dx))$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)\left(ia^2+a^2\cot(c+dx)\right)}{5d} - \frac{2}{5}\int \sqrt{\cot(c+}$$

$$= -\frac{2a^2(7iA+5B)\cot^{\frac{3}{2}}(c+dx)}{15d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)\left(ia^2+a\right.}{5d}$$

$$= \frac{4a^2(A-iB)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(7iA+5B)\cot^{\frac{3}{2}}(c+dx)}{15d}$$

$$= \frac{4a^2(A-iB)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(7iA+5B)\cot^{\frac{3}{2}}(c+dx)}{15d}$$

$$= \frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{4a^2(A}{}$$

Mathematica [B] time = 5.66056, size = 272, normalized size = 2.12

$$\frac{a^2\sin^3(c+dx)(\cot(c+dx)+i)^2(A\cot(c+dx)+B)\left(-\frac{4ie^{-2ic}(A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}} - \frac{1}{15}(\cos(2c)-i\sin(2c))\sqrt{\cot(c+}\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (a^2*(I + Cot[c + d*x])^2*(B + A*Cot[c + d*x])*Sin[c + d*x]^3*(((-4*I)*(A -
 I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]])/
(E^((2*I)*c)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*Sqr
t[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I)*(c + d*x)))]) - (Sqrt[Cot[c
+ d*x]]*Csc[c + d*x]^2*(Cos[2*c] - I*Sin[2*c])*(-27*A + (30*I)*B + (33*A -
(30*I)*B)*Cos[2*(c + d*x)] + 5*((2*I)*A + B)*Sin[2*(c + d*x)]))/15))/(d*(Co
s[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [C] time = 0.446, size = 2947, normalized size = 23.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)

[Out] 1/15*a^2/d*2^(1/2)*(30*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-33*A*cos(d*x+c)^3*2^(1/2)+30*A*cos(d*x+c)*2^(1/2)+30*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+30*A*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-30*B*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+30*B*cos(d*x+c)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+30*I*B*cos(d*x+c)^3*2^(1/2)-30*I*B*2^(1/2)*cos(d*x+c)-30*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-5*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-30*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-10*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+30*A*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-30*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-30*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+30*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)^3-30*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*cos(d*x+c)^3-30*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(

```
1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)^3+30*I*A*((cos(d*x+c)-1+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)^2-30*I*A*((cos(d*x+c)-1+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2),1/2*2^(1/2))*cos(d*x+c)^2-30*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))*cos(d*x+c)^2-30*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))*cos(d*x+c)+30*I*A*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
),1/2*2^(1/2))+30*I*B*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))+30*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-30*B*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-30*I*A*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+30*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
*2^(1/2))+30*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)))*(c
os(d*x+c)/sin(d*x+c))^(7/2)*sin(d*x+c)/cos(d*x+c)^4
```

Maxima [A] time = 1.56812, size = 270, normalized size = 2.11

$$-\frac{15\left(2\sqrt{2}(-(i-1)\ A-(i+1)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}(-(i-1)\ A-(i+1)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
```

```
hm="maxima")
```

```
[Out] -1/30*(15*(2*sqrt(2)*(-(I - 1)*A - (I + 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
 2/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I - 1)*A - (I + 1)*B)*arctan(-1/2*sq
rt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)*
log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A
+ (I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^2 - 4
*(30*A - 30*I*B)*a^2/sqrt(tan(d*x + c)) - 20*(-2*I*A - B)*a^2/tan(d*x + c)^
(3/2) + 12*A*a^2/tan(d*x + c)^(5/2))/d
```

Fricas [B] time = 1.59621, size = 1200, normalized size = 9.38

$$-\frac{15\sqrt{\frac{(16iA^2+32AB-16iB^2)a^4}{d^2}}\left(de^{(4idx+4ic)}-2de^{(2idx+2ic)}+d\right)\log\left(-\frac{4(A-iB)a^2e^{(2idx+2ic)}-\sqrt{\frac{(16iA^2+32AB-16iB^2)a^4}{d^2}}\left(ide^{(2idx+2ic)}-id\right)\sqrt{\frac{ie^{(2}}{e^{(2i}}}}{(2iA+2B)a^2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/60*(15*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(4*I*d*x + 4*I*
c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c)
 - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(I*d*e^(2*I*d*x + 2*I*c) -
I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d
*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 15*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a
^4/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(4*(A -
I*B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)
*(-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 8*((43*A -
35*I*B)*a^2*e^(4*I*d*x + 4*I*c) - 6*(9*A - 10*I*B)*a^2*e^(2*I*d*x + 2*I*c)
+ (23*A - 25*I*B)*a^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) - 1)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^2\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2*cot(d*x + c)^(7/2),
 x)
```

3.509 $\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=103

$$-\frac{2a^2(3B+5iA)\sqrt{\cot(c+dx)}}{3d}-\frac{4\sqrt[4]{-1}a^2(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2A\sqrt{\cot(c+dx)}\left(a^2\cot(c+dx)+ia^2\right)}{3d}$$

```
[Out] (-4*(-1)^(1/4)*a^2*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2
*a^2*((5*I)*A + 3*B)*Sqrt[Cot[c + d*x]])/(3*d) - (2*A*Sqrt[Cot[c + d*x]]*(I
*a^2 + a^2*Cot[c + d*x]))/(3*d)
```

Rubi [A] time = 0.32573, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3581, 3594, 3592, 3533, 208}

$$-\frac{2a^2(3B+5iA)\sqrt{\cot(c+dx)}}{3d}-\frac{4\sqrt[4]{-1}a^2(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{2A\sqrt{\cot(c+dx)}\left(a^2\cot(c+dx)+ia^2\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-4*(-1)^(1/4)*a^2*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2
*a^2*((5*I)*A + 3*B)*Sqrt[Cot[c + d*x]])/(3*d) - (2*A*Sqrt[Cot[c + d*x]]*(I
*a^2 + a^2*Cot[c + d*x]))/(3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
```

```
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^2(B+A\cot(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\left(ia^2+a^2\cot(c+dx)\right)}{3d} - \frac{2}{3}\int \frac{(ia+a\,\mathrm{c}}{}$$

$$= -\frac{2a^2(5iA+3B)\sqrt{\cot(c+dx)}}{3d} - \frac{2A\sqrt{\cot(c+dx)}\left(ia^2+a\right.}{3d}$$

$$= -\frac{2a^2(5iA+3B)\sqrt{\cot(c+dx)}}{3d} - \frac{2A\sqrt{\cot(c+dx)}\left(ia^2+a\right.}{3d}$$

$$= -\frac{4\sqrt[4]{-1}a^2(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{2a^2(5}{}$$

Mathematica [A] time = 4.6349, size = 174, normalized size = 1.69

$$-\frac{2a^2e^{-2ic}\sin(c+dx)\sqrt{\cot(c+dx)}(\cos(2(c+dx))+i\sin(2(c+dx)))(A\cot(c+dx)+B)\left(-6i(A-iB)\sqrt{i\tan(c+dx)}\tanh\right.}{3d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (-2*a^2*Sqrt[Cot[c + d*x]]*(B + A*Cot[c + d*x])*Sin[c + d*x]*(Cos[2*(c + d*
x)] + I*Sin[2*(c + d*x)])*((6*I)*A + 3*B + A*Cot[c + d*x] - (6*I)*(A - I*B)
*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I
*Tan[c + d*x]]))/(3*d*E^((2*I)*c)*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x]
 + B*Sin[c + d*x]))
```

Maple [C] time = 0.454, size = 1540, normalized size = 15.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3*a^2/d*2^(1/2)*(-6*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^
(1/2))*cos(d*x+c)*sin(d*x+c)-6*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*
I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)+6*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)-6*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))+6*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-6*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c
```

```
)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2*2^(1/2))-6*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2),1/2+1/2*I,1/2*2^(1/2))-6*B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+6*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
*2^(1/2))*sin(d*x+c)+6*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2
*I,1/2*2^(1/2))-6*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-
6*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+6*I*A
*2^(1/2)*cos(d*x+c)*sin(d*x+c)+A*2^(1/2)*cos(d*x+c)^2+3*B*2^(1/2)*cos(d*x+c
)*sin(d*x+c))*(cos(d*x+c)/sin(d*x+c))^(5/2)*sin(d*x+c)/cos(d*x+c)^3
```

Maxima [B] time = 1.55138, size = 243, normalized size = 2.36

$$-\frac{3\left(2\sqrt{2}(-(i+1)\ A+(i-1)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}(-(i+1)\ A+(i-1)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/6*(3*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2
/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*sqrt
(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log
(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*((I - 1)*A + (I
 + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^2 - 12*(-
2*I*A - B)*a^2/sqrt(tan(d*x + c)) + 4*A*a^2/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.47733, size = 1026, normalized size = 9.96

$$-\frac{3\sqrt{\frac{\left(-16i A^2-32 AB+16i B^2\right)a^4}{d^2}}\left(de^{(2i dx+2i c)}-d\right)\log\left(-\frac{\left(4(A-iB)a^2e^{(2i dx+2i c)}+\sqrt{\frac{\left(-16i A^2-32 AB+16i B^2\right)a^4}{d^2}}\left(de^{(2i dx+2i c)}-d\right)\sqrt{\frac{ie^{(2i dx+2i c)}+i}{e^{(2i dx+2i c)}-1}}\right)e^{(-2i dx-2i c}}{(2i A+2B)a^2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/12*(3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*
c) - d)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + sqrt((-16*I*A^2 - 32*A*
B + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2*I
*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^
2)) - 3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c
) - d)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((-16*I*A^2 - 32*A*B
 + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2*I*
c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2
)) - ((-56*I*A - 24*B)*a^2*e^(2*I*d*x + 2*I*c) + (40*I*A + 24*B)*a^2)*sqrt(
(I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(2*I*d*x + 2*I
*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^2\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2*cot(d*x + c)^(5/2),
 x)
```

3.510 $\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=99

$$-\frac{2a^2(A+iB)\sqrt{\cot(c+dx)}}{d}-\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iB\left(a^2\cot(c+dx)+ia^2\right)}{d\sqrt{\cot(c+dx)}}$$

```
[Out] (-4*(-1)^(1/4)*a^2*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2
*a^2*(A + I*B)*Sqrt[Cot[c + d*x]])/d + ((2*I)*B*(I*a^2 + a^2*Cot[c + d*x]))
/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.316739, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3581, 3593, 3592, 3533, 208}

$$-\frac{2a^2(A+iB)\sqrt{\cot(c+dx)}}{d}-\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iB\left(a^2\cot(c+dx)+ia^2\right)}{d\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-4*(-1)^(1/4)*a^2*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2
*a^2*(A + I*B)*Sqrt[Cot[c + d*x]])/d + ((2*I)*B*(I*a^2 + a^2*Cot[c + d*x]))
/(d*Sqrt[Cot[c + d*x]])
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
```

```
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^2(B+A\cot(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

$$= \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{d\sqrt{\cot(c+dx)}} + 2\int \frac{(ia+a\cot(c+dx))\left(\frac{1}{2}a\right.}{}$$

$$= -\frac{2a^2(A+iB)\sqrt{\cot(c+dx)}}{d} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{d\sqrt{\cot(c+dx)}}$$

$$= -\frac{2a^2(A+iB)\sqrt{\cot(c+dx)}}{d} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{d\sqrt{\cot(c+dx)}}$$

$$= -\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{2a^2(A}{}$$

Mathematica [A] time = 4.21523, size = 163, normalized size = 1.65

$$-\frac{2a^2e^{-2ic}\cos(c+dx)\sqrt{\cot(c+dx)}(\cos(2(c+dx))+i\sin(2(c+dx)))(A+B\tan(c+dx))\left(-2(A-iB)\sqrt{i\tan(c+dx)}\tanh\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (-2*a^2*Cos[c + d*x]*Sqrt[Cot[c + d*x]]*(Cos[2*(c + d*x)] + I*Sin[2*(c + d*
x)])*(A + B*Tan[c + d*x])*(A - 2*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c +
 d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]] + B*Tan[c + d*x]))
/(d*E^((2*I)*c)*(Cos[d*x] + I*Sin[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x])
)
```

Maple [C] time = 0.461, size = 1440, normalized size = 14.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] -a^2/d*2^(1/2)*(2*I*A*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2)
)-2*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)+2
*I*B*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*I*
A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-2*I*A*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+
```

```
c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2),1/2+1/2*I,1/2*2^(1/2))+2*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)+2*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*B
*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*A*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*B*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2)-2*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2
^(1/2))+A*cos(d*x+c)*2^(1/2)+B*2^(1/2)*sin(d*x+c))*(cos(d*x+c)/sin(d*x+c))^
(3/2)*sin(d*x+c)/cos(d*x+c)^2
```

Maxima [B] time = 1.55613, size = 235, normalized size = 2.37

$$-\frac{4\,Ba^2\sqrt{\tan\left(dx+c\right)}-\left(2\,\sqrt{2}(-(i-1)\;A-(i+1)\;B)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\,\sqrt{2}(-(i-1)\;A-(i+1)\;B)\,\mathrm{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/2*(4*B*a^2*sqrt(tan(d*x + c)) - (2*sqrt(2)*(-(I - 1)*A - (I + 1)*B)*arct
an(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I - 1)*A -
(I + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*
(-(I + 1)*A + (I - 1)*B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) +
1) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/t
an(d*x + c) + 1))*a^2 + 4*A*a^2/sqrt(tan(d*x + c)))/d
```

Fricas [B] time = 1.46031, size = 1010, normalized size = 10.2

$$\frac{\sqrt{\frac{\left(16i\,A^2+32\,AB-16i\,B^2\right)a^4}{d^2}}\left(de^{(2i\,dx+2i\,c)}+d\right)\log\left(-\frac{\left(4\,(A-i\,B)a^2e^{(2i\,dx+2i\,c)}-\sqrt{\frac{\left(16i\,A^2+32\,AB-16i\,B^2\right)a^4}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}-i\,d\right)\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}\right)e^{(-2i\,dx-2i\,c)}}{(2i\,A+2\,B)a^2}\right)-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/4*(sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) +
d)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 + 32*A*B - 16
*I*B^2)*a^4/d^2)*(I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)
) - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) + d
)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 + 32*A*B - 16*
I*B^2)*a^4/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)
) - 8*((A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + (A + I*B)*a^2)*sqrt((I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^2\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2*cot(d*x + c)^(3/2),
 x)
```

3.511 $\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=105

$$-\frac{2a^2(3A-5iB)}{3d\sqrt{\cot(c+dx)}}+\frac{4\sqrt[4]{-1}a^2(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iB\left(a^2\cot(c+dx)+ia^2\right)}{3d\cot^{\frac{3}{2}}(c+dx)}$$

```
[Out] (4*(-1)^(1/4)*a^2*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*
a^2*(3*A - (5*I)*B))/(3*d*Sqrt[Cot[c + d*x]]) + (((2*I)/3)*B*(I*a^2 + a^2*C
ot[c + d*x]))/(d*Cot[c + d*x]^(3/2))
```

Rubi [A] time = 0.325542, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3581, 3593, 3591, 3533, 208}

$$-\frac{2a^2(3A-5iB)}{3d\sqrt{\cot(c+dx)}}+\frac{4\sqrt[4]{-1}a^2(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iB\left(a^2\cot(c+dx)+ia^2\right)}{3d\cot^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```



```
[Out] (4*(-1)^(1/4)*a^2*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*
a^2*(3*A - (5*I)*B))/(3*d*Sqrt[Cot[c + d*x]]) + (((2*I)/3)*B*(I*a^2 + a^2*C
ot[c + d*x]))/(d*Cot[c + d*x]^(3/2))
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
```

```
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^2(B+A\cot(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{(ia+a\cot(c+dx))\left(\frac{1}{2}a\right.}{}$$

$$= -\frac{2a^2(3A-5iB)}{3d\sqrt{\cot(c+dx)}} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{3a^2}{}$$

$$= -\frac{2a^2(3A-5iB)}{3d\sqrt{\cot(c+dx)}} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{\left(12a^4(iA\right.}{}$$

$$= \frac{4\sqrt[4]{-1}a^2(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{2a^2(3A}{3d\sqrt{\cot}}$$

Mathematica [B] time = 3.53968, size = 254, normalized size = 2.42

$$\frac{a^2e^{-i(c-dx)}\sqrt{\cot(c+dx)}\left(A\left(1+e^{2i(c+dx)}\right)-iB\left(-1+e^{2i(c+dx)}\right)\right)\left(\left(-1+e^{2i(c+dx)}\right)\left(3iA\left(1+e^{2i(c+dx)}\right)+B\left(5+7e^{2i(c+dx)}\right)\right)-6\right.}{3d\left(e^{2ic+3idx}+e^{idx}\right)^2(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (a^2*((-I)*B*(-1 + E^((2*I)*(c + d*x))) + A*(1 + E^((2*I)*(c + d*x))))*((-1
 + E^((2*I)*(c + d*x)))*((3*I)*A*(1 + E^((2*I)*(c + d*x))) + B*(5 + 7*E^((2
*I)*(c + d*x)))) - (6*I)*(A - I*B)*Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^(
(2*I)*(c + d*x)))]*(1 + E^((2*I)*(c + d*x)))^2*ArcTanh[Sqrt[(-1 + E^((2*I)*
(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]])*Sqrt[Cot[c + d*x]])/(3*d*E^(I*(c -
 d*x))*(E^(I*d*x) + E^((2*I)*c + (3*I)*d*x))^2*(A*Cos[c + d*x] + B*Sin[c +
d*x]))
```

Maple [C] time = 0.458, size = 888, normalized size = 8.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/3*a^2/d*2^(1/2)*(cos(d*x+c)-1)*(6*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+6*I*B*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-6*I*B*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticF((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-6*A*cos(d*x+c)*sin(d*x+c)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+6*A*cos(d*x+c)*sin(d*x
+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+6*B*cos(d*x+c)*sin(d*x+c)*(
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+6*I*B*2^(1/2)*cos(d*x
+c)^2-3*A*2^(1/2)*cos(d*x+c)^2-6*I*B*2^(1/2)*cos(d*x+c)-B*2^(1/2)*cos(d*x+c
)*sin(d*x+c)+3*A*cos(d*x+c)*2^(1/2)+B*2^(1/2)*sin(d*x+c))*(cos(d*x+c)+1)^2*
(cos(d*x+c)/sin(d*x+c))^(1/2)/cos(d*x+c)^2/sin(d*x+c)^3
```

Maxima [B] time = 1.56511, size = 244, normalized size = 2.32

$$\frac{3\left(2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}(-(i+1)A+(i-1)B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/6*(3*(2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/
sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I + 1)*A + (I - 1)*B)*arctan(-1/2*sqrt(
2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(
sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*((I - 1)*A + (I
```

```
+ 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^2 - 4*(B*a
^2 + (3*A - 6*I*B)*a^2/tan(d*x + c))*tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.50129, size = 1172, normalized size = 11.16

$$\frac{3\sqrt{\frac{\left(-16i\,A^2-32\,AB+16i\,B^2\right)a^4}{d^2}}\left(de^{(4i\,dx+4i\,c)}+2\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(-\frac{\left(4\,(A-i\,B)a^2e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-16i\,A^2-32\,AB+16i\,B^2\right)a^4}{d^2}}\left(de^{(2i\,dx+2i\,c)}-d\right)\sqrt{\frac{i\,e^{(2i\,dx}}{e^{(2i\,dx}}}\right.}{(2i\,A+2\,B)a^2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/12*(3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(4*I*d*x + 4*I*c
) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c)
+ sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)
*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x -
 2*I*c)/((2*I*A + 2*B)*a^2)) - 3*sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d
^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(4*(A - I*B)
*a^2*e^(2*I*d*x + 2*I*c) - sqrt((-16*I*A^2 - 32*A*B + 16*I*B^2)*a^4/d^2)*(d
*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) + ((24*I*A + 56*B)*a^
2*e^(4*I*d*x + 4*I*c) - 16*B*a^2*e^(2*I*d*x + 2*I*c) + (-24*I*A - 40*B)*a^2
)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(4*I*d*
x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int A\sqrt{\cot(c+dx)}\,dx+\int -A\tan^2(c+dx)\sqrt{\cot(c+dx)}\,dx+\int B\tan(c+dx)\sqrt{\cot(c+dx)}\,dx+\int -B\tan^3(c+d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] a**2*(Integral(A*sqrt(cot(c + d*x)), x) + Integral(-A*tan(c + d*x)**2*sqrt(
cot(c + d*x)), x) + Integral(B*tan(c + d*x)*sqrt(cot(c + d*x)), x) + Integr
```

```
al(-B*tan(c + d*x)**3*sqrt(cot(c + d*x)), x) + Integral(2*I*A*tan(c + d*x)*
sqrt(cot(c + d*x)), x) + Integral(2*I*B*tan(c + d*x)**2*sqrt(cot(c + d*x)),
 x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^2\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2*sqrt(cot(d*x + c)),
 x)
```

3.512 $\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=130

$$-\frac{2a^2(5A-7iB)}{15d\cot^{\frac{3}{2}}(c+dx)}+\frac{4a^2(B+iA)}{d\sqrt{\cot(c+dx)}}+\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iB\left(a^2\cot(c+dx)+ia^2\right)}{5d\cot^{\frac{5}{2}}(c+dx)}$$

```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*
a^2*(5*A - (7*I)*B))/(15*d*Cot[c + d*x]^(3/2)) + (4*a^2*(I*A + B))/(d*Sqrt[
Cot[c + d*x]]) + (((2*I)/5)*B*(I*a^2 + a^2*Cot[c + d*x]))/(d*Cot[c + d*x]^(
5/2))
```

Rubi [A] time = 0.371507, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3581, 3593, 3591, 3529, 3533, 208}

$$-\frac{2a^2(5A-7iB)}{15d\cot^{\frac{3}{2}}(c+dx)}+\frac{4a^2(B+iA)}{d\sqrt{\cot(c+dx)}}+\frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iB\left(a^2\cot(c+dx)+ia^2\right)}{5d\cot^{\frac{5}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```


```
[Out] (4*(-1)^(1/4)*a^2*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (2*
a^2*(5*A - (7*I)*B))/(15*d*Cot[c + d*x]^(3/2)) + (4*a^2*(I*A + B))/(d*Sqrt[
Cot[c + d*x]]) + (((2*I)/5)*B*(I*a^2 + a^2*Cot[c + d*x]))/(d*Cot[c + d*x]^(
5/2))
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \int \frac{(ia+a\cot(c+dx))^2(B+A\cot(c+dx))}{\cot^{\frac{7}{2}}(c+dx)}\,dx$$

$$= \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{(ia+a\cot(c+dx))\left(\frac{1}{2}a(5iA+7B)+\right.}{\cot^{\frac{5}{2}}(c+d}$$

$$= -\frac{2a^2(5A-7iB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{5a^2(iA+B)+}{\text{co}}$$

$$= -\frac{2a^2(5A-7iB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{4a^2(iA+B)}{d\sqrt{\cot(c+dx)}} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2}{5}$$

$$= -\frac{2a^2(5A-7iB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{4a^2(iA+B)}{d\sqrt{\cot(c+dx)}} + \frac{2iB\left(ia^2+a^2\cot(c+dx)\right)}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{(2}{}$$

$$= \frac{4\sqrt[4]{-1}a^2(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{2a^2(5A-7iB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{}{a}$$

Mathematica [A] time = 7.07377, size = 133, normalized size = 1.02

$$\frac{a^2\left(\sec^2(c+dx)(-5(A-2iB)\sin(2(c+dx))+(33B+30iA)\cos(2(c+dx))+30iA+27B)-\frac{60i(A-iB)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{i\tan(c+dx)}}\right)}{15d\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]
],x]
```

```
[Out] (a^2*(Sec[c + d*x]^2*((30*I)*A + 27*B + ((30*I)*A + 33*B)*Cos[2*(c + d*x)]
- 5*(A - (2*I)*B)*Sin[2*(c + d*x)]) - ((60*I)*(A - I*B)*ArcTanh[Sqrt[(-1 +
E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]])/Sqrt[I*Tan[c + d*x]]))/(1
5*d*Sqrt[Cot[c + d*x]])
```

Maple [C] time = 0.481, size = 971, normalized size = 7.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/15*a^2/d*2^(1/2)*(cos(d*x+c)-1)*(30*I*A*2^(1/2)*cos(d*x+c)^3-10*I*B*cos(d
*x+c)*sin(d*x+c)*2^(1/2)-30*I*A*2^(1/2)*cos(d*x+c)^2+30*A*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)+30*B*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)-30*B
*sin(d*x+c)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(
1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2-30*I*A
*sin(d*x+c)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(
1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2+10*I*B
*sin(d*x+c)*2^(1/2)*cos(d*x+c)^2-30*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2-5*A*sin(d*x+c)*2^(1/2)*cos(d*x+
c)^2+30*I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2)*cos(d*x+c)^2+33*B*2^(1/2)*cos(d*x+c)^3+5*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)
-33*B*cos(d*x+c)^2*2^(1/2)-3*B*cos(d*x+c)*2^(1/2)+3*B*2^(1/2))*(cos(d*x+c)+
1)^2/cos(d*x+c)^2/sin(d*x+c)^4/(cos(d*x+c)/sin(d*x+c))^(1/2)
```

Maxima [A] time = 1.55116, size = 270, normalized size = 2.08

$$-\frac{4\left(3\,Ba^2+\frac{(5\,A-10i\,B)a^2}{\tan(dx+c)}-\frac{30\,(i\,A+B)a^2}{\tan(dx+c)^2}\right)\tan\left(dx+c\right)^{\frac{5}{2}}+15\left(2\,\sqrt{2}(-\left(i-1\right)\,A-\left(i+1\right)\,B)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="maxima")
```

```
[Out] -1/30*(4*(3*B*a^2 + (5*A - 10*I*B)*a^2/tan(d*x + c) - 30*(I*A + B)*a^2/tan(
d*x + c)^2)*tan(d*x + c)^(5/2) + 15*(2*sqrt(2)*(-(I - 1)*A - (I + 1)*B)*arc
```

```
tan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sqrt(2)*(-(I - 1)*A -
 (I + 1)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)
*(-(I + 1)*A + (I - 1)*B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) +
 1) + sqrt(2)*(-(I + 1)*A + (I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/
tan(d*x + c) + 1))*a^2)/d
```

Fricas [B] time = 1.63894, size = 1361, normalized size = 10.47

$$-\frac{15\sqrt{\frac{(16iA^2+32AB-16iB^2)a^4}{d^2}}\left(de^{(6idx+6ic)}+3de^{(4idx+4ic)}+3de^{(2idx+2ic)}+d\right)\log\left(-\frac{\left(4(A-iB)a^2e^{(2idx+2ic)}-\sqrt{\frac{(16iA^2+32AB-16iB^2)a^4}{d^2}}\left(ide\right.\right.}{(2iA+2B)a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="fricas")
```

```
[Out] -1/60*(15*sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(6*I*d*x + 6*I*
c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log(-(4*(A - I*
B)*a^2*e^(2*I*d*x + 2*I*c) - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(
I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 15*sqrt((16*I*
A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x +
 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log(-(4*(A - I*B)*a^2*e^(2*I*d*x + 2
*I*c) - sqrt((16*I*A^2 + 32*A*B - 16*I*B^2)*a^4/d^2)*(-I*d*e^(2*I*d*x + 2*I
*c) + I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(
-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a^2)) - 8*((35*A - 43*I*B)*a^2*e^(6*I*d*x
+ 6*I*c) + (25*A - 11*I*B)*a^2*e^(4*I*d*x + 4*I*c) - (35*A - 31*I*B)*a^2*e^
(2*I*d*x + 2*I*c) - (25*A - 23*I*B)*a^2)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c)
 + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int\frac{A}{\sqrt{\cot(c+dx)}}\,dx+\int-\frac{A\tan^2(c+dx)}{\sqrt{\cot(c+dx)}}\,dx+\int\frac{B\tan(c+dx)}{\sqrt{\cot(c+dx)}}\,dx+\int-\frac{B\tan^3(c+dx)}{\sqrt{\cot(c+dx)}}\,dx+\int\frac{2iA\tan(c+dx)}{\sqrt{\cot(c+dx)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**2*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] a**2*(Integral(A/sqrt(cot(c + d*x)), x) + Integral(-A*tan(c + d*x)**2/sqrt(
cot(c + d*x)), x) + Integral(B*tan(c + d*x)/sqrt(cot(c + d*x)), x) + Integr
al(-B*tan(c + d*x)**3/sqrt(cot(c + d*x)), x) + Integral(2*I*A*tan(c + d*x)/
sqrt(cot(c + d*x)), x) + Integral(2*I*B*tan(c + d*x)**2/sqrt(cot(c + d*x)),
 x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^2}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^2/sqrt(cot(d*x + c)),
 x)
```

3.513 $\int \cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=171

$$\frac{8a^3(23A-21iB)\cot^{\frac{3}{2}}(c+dx)}{105d}-\frac{2(7B+11iA)\cot^{\frac{3}{2}}(c+dx)\left(a^3\cot(c+dx)+ia^3\right)}{35d}+\frac{8a^3(B+iA)\sqrt{\cot(c+dx)}}{d}+\frac{8\sqrt[4]{-1}a}{}$$

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (8*
a^3*(I*A + B)*Sqrt[Cot[c + d*x]])/d + (8*a^3*(23*A - (21*I)*B)*Cot[c + d*x]
^(3/2))/(105*d) - (2*a*A*Cot[c + d*x]^(3/2)*(I*a + a*Cot[c + d*x])^2)/(7*d)
 - (2*((11*I)*A + 7*B)*Cot[c + d*x]^(3/2)*(I*a^3 + a^3*Cot[c + d*x]))/(35*d
)
```

Rubi [A] time = 0.528106, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3581, 3594, 3592, 3528, 3533, 208}

$$\frac{8a^3(23A-21iB)\cot^{\frac{3}{2}}(c+dx)}{105d}-\frac{2(7B+11iA)\cot^{\frac{3}{2}}(c+dx)\left(a^3\cot(c+dx)+ia^3\right)}{35d}+\frac{8a^3(B+iA)\sqrt{\cot(c+dx)}}{d}+\frac{8\sqrt[4]{-1}a}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (8*
a^3*(I*A + B)*Sqrt[Cot[c + d*x]])/d + (8*a^3*(23*A - (21*I)*B)*Cot[c + d*x]
^(3/2))/(105*d) - (2*a*A*Cot[c + d*x]^(3/2)*(I*a + a*Cot[c + d*x])^2)/(7*d)
 - (2*((11*I)*A + 7*B)*Cot[c + d*x]^(3/2)*(I*a^3 + a^3*Cot[c + d*x]))/(35*d
)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3(B+A\cot(c+dx))\,dx$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))^2}{7d} - \frac{2}{7}\int \sqrt{\cot(c+a}$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))^2}{7d} - \frac{2(11iA+7B)\,\mathrm{co}}{}$$

$$= \frac{8a^3(23A-21iB)\cot^{\frac{3}{2}}(c+dx)}{105d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)(ia+a\,\mathrm{c}}{7d}$$

$$= \frac{8a^3(iA+B)\sqrt{\cot(c+dx)}}{d} + \frac{8a^3(23A-21iB)\cot^{\frac{3}{2}}(c+dx)}{105d}$$

$$= \frac{8a^3(iA+B)\sqrt{\cot(c+dx)}}{d} + \frac{8a^3(23A-21iB)\cot^{\frac{3}{2}}(c+dx)}{105d}$$

$$= \frac{8\sqrt[4]{-1}a^3(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{8a^3(iA+}{}$$

Mathematica [A] time = 9.16553, size = 161, normalized size = 0.94

$$\frac{a^3\sqrt{\cot(c+dx)}\left(\csc^3(c+dx)(-((-95A+105iB)\cos(c+dx)+5(31A-21iB)\cos(3(c+dx))+42\sin(c+dx)((21B+23i\right.}{210d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (a^3*Sqrt[Cot[c + d*x]]*(-(Csc[c + d*x]^3*((-95*A + (105*I)*B)*Cos[c + d*x]
 + 5*(31*A - (21*I)*B)*Cos[3*(c + d*x)] + 42*((-17*I)*A - 19*B + ((23*I)*A
+ 21*B)*Cos[2*(c + d*x)])*Sin[c + d*x])) - (1680*I)*(A - I*B)*ArcTanh[Sqrt[
(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]]
))/(210*d)
```

Maple [C] time = 0.568, size = 3132, normalized size = 18.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/105*a^3/d*2^(1/2)*(-420*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+420*A*sin(d*x+c)
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-105*I*B*cos(d*x+c)^4*2^(1/2)+1
05*I*B*cos(d*x+c)^2*2^(1/2)+441*B*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)-140*A*2^(
1/2)*cos(d*x+c)^2-420*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*
I,1/2*2^(1/2))+155*A*cos(d*x+c)^4*2^(1/2)-420*I*A*cos(d*x+c)^2*sin(d*x+c)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2
^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-420*I*B*cos(d*x+c)^2*
sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+420*I*B*c
os(d*x+c)^2*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*El
lipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+420*I*A*
cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
)+420*I*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)-420*I*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2*2^(1/2))-420*I*A*cos(d*x+c)^3*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)-420*I*B*cos(d*x+c)^3*sin(d*x+c)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+420*I*B*cos(d*x+c)^3*sin(d*x+c)*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+420*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2*2^(1/2))-420*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-
```

```
1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+420*B*cos(d*x+c)*sin(d*x+c)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+483*I*A*cos(d*x+c)^3*sin(d
*x+c)*2^(1/2)-420*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)+420*B*sin(d*x+c)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-420*A*cos(d*x+c)^3*sin(d*x
+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-420*B*cos(d*x+c)^3*sin(d*x+
c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1
/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+420*I*A*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)*EllipticPi((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+420*I*B*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-420*I*B*sin(d*x+c)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+420*A*cos(d*x+c)^3*sin(d*x+c)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2
^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-420*A*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*sin(d*x+c)+420*A*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)-420*B*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c))*(
cos(d*x+c)/sin(d*x+c))^(9/2)*sin(d*x+c)/cos(d*x+c)^5
```

Maxima [A] time = 1.52589, size = 292, normalized size = 1.71

$$-\frac{105\left(\sqrt{2}((2i+2)\ A-(2i-2)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}((2i+2)\ A-(2i-2)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/105*(105*(sqrt(2)*((2*I + 2)*A - (2*I - 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2
) + 2/sqrt(tan(d*x + c)))) + sqrt(2)*((2*I + 2)*A - (2*I - 2)*B)*arctan(-1/
2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*
B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*((I - 1)*
A + (I + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^3 -
 840*(I*A + B)*a^3/sqrt(tan(d*x + c)) - 2*(140*A - 105*I*B)*a^3/tan(d*x + c
)^(3/2) - 42*(-3*I*A - B)*a^3/tan(d*x + c)^(5/2) + 30*A*a^3/tan(d*x + c)^(7
/2))/d
```

Fricas [B] time = 1.75402, size = 1386, normalized size = 8.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/420*(105*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6
*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log(-(8*(A -
 I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d
^2)*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 105*sqrt((-64
*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d
*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x
 + 2*I*c) - sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x +
2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^
(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) + ((5104*I*A + 4368*B)*a^3*e^(6*I*d
*x + 6*I*c) + (-10336*I*A - 10752*B)*a^3*e^(4*I*d*x + 4*I*c) + (8816*I*A +
9072*B)*a^3*e^(2*I*d*x + 2*I*c) + (-2624*I*A - 2688*B)*a^3)*sqrt((I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*
```

```
e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^3\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(9/2),
 x)
```

3.514 $\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=146

$$\frac{16a^3(6A-5iB)\sqrt{\cot(c+dx)}}{15d}-\frac{2(5B+9iA)\sqrt{\cot(c+dx)}\left(a^3\cot(c+dx)+ia^3\right)}{15d}+\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}$$

```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (16
*a^3*(6*A - (5*I)*B)*Sqrt[Cot[c + d*x]])/(15*d) - (2*a*A*Sqrt[Cot[c + d*x]]
*(I*a + a*Cot[c + d*x])^2)/(5*d) - (2*((9*I)*A + 5*B)*Sqrt[Cot[c + d*x]]*(I
*a^3 + a^3*Cot[c + d*x]))/(15*d)
```

Rubi [A] time = 0.488346, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3581, 3594, 3592, 3533, 208}

$$\frac{16a^3(6A-5iB)\sqrt{\cot(c+dx)}}{15d}-\frac{2(5B+9iA)\sqrt{\cot(c+dx)}\left(a^3\cot(c+dx)+ia^3\right)}{15d}+\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d + (16
*a^3*(6*A - (5*I)*B)*Sqrt[Cot[c + d*x]])/(15*d) - (2*a*A*Sqrt[Cot[c + d*x]]
*(I*a + a*Cot[c + d*x])^2)/(5*d) - (2*((9*I)*A + 5*B)*Sqrt[Cot[c + d*x]]*(I
*a^3 + a^3*Cot[c + d*x]))/(15*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^3(B+A\cot(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}{5d} - \frac{2}{5}\int \frac{(ia+a\,\mathrm{co}}{}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}{5d} - \frac{2(9iA+5B)\sqrt{}}{}$$

$$= \frac{16a^3(6A-5iB)\sqrt{\cot(c+dx)}}{15d} - \frac{2aA\sqrt{\cot(c+dx)}(ia+a}{5d}$$

$$= \frac{16a^3(6A-5iB)\sqrt{\cot(c+dx)}}{15d} - \frac{2aA\sqrt{\cot(c+dx)}(ia+a}{5d}$$

$$= \frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} + \frac{16a^3(6}{}$$

Mathematica [A] time = 7.52035, size = 132, normalized size = 0.9

$$-\frac{a^3\sqrt{\cot(c+dx)}\left(120(A-iB)\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)+\csc^2(c+dx)(5(B+3iA)\sin(2(c+dx))+9(7A-\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] -(a^3*Sqrt[Cot[c + d*x]]*(Csc[c + d*x]^2*(-57*A + (45*I)*B + 9*(7*A - (5*I)
*B)*Cos[2*(c + d*x)] + 5*((3*I)*A + B)*Sin[2*(c + d*x)]) + 120*(A - I*B)*Ar
cTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Ta
n[c + d*x]]))/(15*d)
```

Maple [C] time = 0.536, size = 2947, normalized size = 20.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

[Out] -1/15*a^3/d*2^(1/2)*(-60*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2)+63*A*cos(d*x+c)^3*2^(1/2)-60*A*cos(d*x+c)*2^(1/2)-60*B*cos(d*x+c)^2*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-60*A*cos(d*x+c)^3*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+60*B*cos(d*x+c)^3*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-60*B*cos(d*x+c)^3*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+60*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2)-60*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))
+5*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+60*I*A*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)+60*I*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2*2^(1/2))+60*I*B*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)+60*I*A*cos(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)-60*I*A*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-60
*I*B*cos(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-60*I
*A*cos(d*x+c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+60*I
*A*cos(d*x+c)^3*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+60*I*B*cos(d*x+

```
c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2
*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-60*I*A*cos(d*x+
c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2
*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+60*A*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-60*A*cos(d*x+c)^2*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+60*B*cos(d*x+c)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+60*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-60*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)-60*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+60*B
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*A*2^(1/2)*cos(
d*x+c)^2*sin(d*x+c)-45*I*B*2^(1/2)*cos(d*x+c)^3+45*I*B*2^(1/2)*cos(d*x+c))*
(cos(d*x+c)/sin(d*x+c))^(7/2)*sin(d*x+c)/cos(d*x+c)^4
```

Maxima [A] time = 1.52166, size = 267, normalized size = 1.83

$$-\frac{15\left(\sqrt{2}(-(2i-2)\ A-(2i+2)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}(-(2i-2)\ A-(2i+2)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/15*(15*(sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2)
 + 2/sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(-1/
```

```
2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)
*B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*(-(I + 1
)*A + (I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^3
 - 2*(60*A - 45*I*B)*a^3/sqrt(tan(d*x + c)) - 10*(-3*I*A - B)*a^3/tan(d*x +
 c)^(3/2) + 6*A*a^3/tan(d*x + c)^(5/2))/d
```

Fricas [B] time = 1.59031, size = 1208, normalized size = 8.27

$$-\frac{15\sqrt{\frac{\left(64i\,A^2+128\,AB-64i\,B^2\right)a^6}{d^2}}\left(de^{(4i\,dx+4i\,c)}-2\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(-\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}-\sqrt{\frac{\left(64i\,A^2+128\,AB-64i\,B^2\right)a^6}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}-i\,d\right)\sqrt{\cdots}\right.}{(4i\,A+4\,B)a^3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/60*(15*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I
*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c
) - sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c)
- I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I
*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 15*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2
)*a^6/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(8*(A
 - I*B)*a^3*e^(2*I*d*x + 2*I*c) - sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/
d^2)*(-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(
2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 16*((39
*A - 25*I*B)*a^3*e^(4*I*d*x + 4*I*c) - 3*(19*A - 15*I*B)*a^3*e^(2*I*d*x + 2
*I*c) + 4*(6*A - 5*I*B)*a^3)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
 2*I*c) - 1)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^3\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(7/2),
 x)
```

3.515 $\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=138

$$-\frac{2(A+3iB)\sqrt{\cot(c+dx)}\left(a^3\cot(c+dx)+ia^3\right)}{3d}-\frac{8\sqrt[4]{-1}a^3(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{16ia^3A\sqrt{\cot(c+dx}}{3d}$$

```
[Out] (-8*(-1)^(1/4)*a^3*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - ((
(16*I)/3)*a^3*A*Sqrt[Cot[c + d*x]])/d + ((2*I)*a*B*(I*a + a*Cot[c + d*x])^2
)/(d*Sqrt[Cot[c + d*x]]) - (2*(A + (3*I)*B)*Sqrt[Cot[c + d*x]]*(I*a^3 + a^3
*Cot[c + d*x]))/(3*d)
```

Rubi [A] time = 0.457495, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3581, 3593, 3594, 3592, 3533, 208}

$$-\frac{2(A+3iB)\sqrt{\cot(c+dx)}\left(a^3\cot(c+dx)+ia^3\right)}{3d}-\frac{8\sqrt[4]{-1}a^3(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{16ia^3A\sqrt{\cot(c+dx}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-8*(-1)^(1/4)*a^3*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - ((
(16*I)/3)*a^3*A*Sqrt[Cot[c + d*x]])/d + ((2*I)*a*B*(I*a + a*Cot[c + d*x])^2
)/(d*Sqrt[Cot[c + d*x]]) - (2*(A + (3*I)*B)*Sqrt[Cot[c + d*x]]*(I*a^3 + a^3
*Cot[c + d*x]))/(3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n - 2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]

<u>Rule 3594</u>

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

<u>Rule 3592</u>

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

<u>Rule 3533</u>

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

<u>Rule 208</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

<u>Rubi steps</u>

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{d\sqrt{\cot(c+dx)}} + 2\int \frac{(ia+a\cot(c+dx))^2\left(\frac{1}{2}a(\right.}{\sqrt{}}$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{d\sqrt{\cot(c+dx)}} - \frac{2(A+3iB)\sqrt{\cot(c+dx)}\left(ia^3+\right.}{3d}$$

$$= -\frac{16ia^3A\sqrt{\cot(c+dx)}}{3d} + \frac{2iaB(ia+a\cot(c+dx))^2}{d\sqrt{\cot(c+dx)}} - \frac{2(A}{}$$

$$= -\frac{16ia^3A\sqrt{\cot(c+dx)}}{3d} + \frac{2iaB(ia+a\cot(c+dx))^2}{d\sqrt{\cot(c+dx)}} - \frac{2(A}{}$$

$$= -\frac{8\sqrt[4]{-1}a^3(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{16ia^3A}{}$$

Mathematica [A] time = 5.467, size = 146, normalized size = 1.06

$$-\frac{a^3\sqrt{\cot(c+dx)}\csc(c+dx)\sec(c+dx)\left((A-3iB)\cos(2(c+dx))-12i(A-iB)\sin(2(c+dx))\sqrt{i\tan(c+dx)}\tanh^{-1}\left(\sqrt{}\right.\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] -(a^3*Sqrt[Cot[c + d*x]]*Csc[c + d*x]*Sec[c + d*x]*(A + (3*I)*B + (A - (3*I
)*B)*Cos[2*(c + d*x)] + (9*I)*A*Sin[2*(c + d*x)] + 3*B*Sin[2*(c + d*x)] - (
12*I)*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c +
d*x)))]]*Sin[2*(c + d*x)]*Sqrt[I*Tan[c + d*x]]))/(3*d)
```

Maple [C] time = 0.526, size = 1562, normalized size = 11.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3*a^3/d*2^(1/2)*(12*I*B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2*2^(1/2))-3*I*B*2^(1/2)*cos(d*x+c)^2+9*I*A*2^(1/2)*cos(d*x+c)*sin(d
*x+c)+12*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))-12*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*
2^(1/2))+3*I*2^(1/2)*B-12*B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2+1/2*I,1/2*2^(1/2))-12*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2+1/2*I,1/2*2^(1/2))-12*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2+1/2*I,1/2*2^(1/2))+12*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2+1/2*I,1/2*2^(1/2))-12*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^
(1/2))-12*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))+12*I*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Elli
pticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-12*I*A*cos
(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+A
*2^(1/2)*cos(d*x+c)^2+3*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)-12*I*B*cos(d*x+c)*s
in(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1
+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*(cos(d*x+
c)/sin(d*x+c))^(5/2)*sin(d*x+c)/cos(d*x+c)^3
```

Maxima [A] time = 1.55885, size = 259, normalized size = 1.88

$$-6i\,Ba^3\sqrt{\tan(dx+c)}+3\left(\sqrt{2}((2i+2)\;A-(2i-2)\;B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}((2i+2)\;A-(2i-2)\;B)\text{ar}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/3*(-6*I*B*a^3*sqrt(tan(d*x + c)) + 3*(sqrt(2)*((2*I + 2)*A - (2*I - 2)*B)
*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + sqrt(2)*((2*I + 2)*
A - (2*I - 2)*B)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sq
rt(2)*((I - 1)*A + (I + 1)*B)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x +
c) + 1) - sqrt(2)*((I - 1)*A + (I + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) +
 1/tan(d*x + c) + 1))*a^3 + 6*(-3*I*A - B)*a^3/sqrt(tan(d*x + c)) - 2*A*a^3
/tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.50108, size = 1077, normalized size = 7.8

$$-\frac{3\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(de^{(4i\,dx+4i\,c)}-d\right)\log\left(-\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(de^{(2i\,dx+2i\,c)}-d\right)\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}\right)e^{(-2i\,dx-}}{(4i\,A+4\,B)a^3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] -1/12*(3*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I
*c) - d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2 - 128*
A*B + 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*
a^3)) - 3*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*
I*c) - d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) - sqrt((-64*I*A^2 - 128
*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)
*a^3)) - ((-80*I*A - 48*B)*a^3*e^(4*I*d*x + 4*I*c) + (-16*I*A + 48*B)*a^3*e
^(2*I*d*x + 2*I*c) + 64*I*A*a^3)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
```

```
*x + 2*I*c) - 1)))/(d*e^(4*I*d*x + 4*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^3\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(5/2),
 x)
```

3.516 $\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=142

$$-\frac{2(3A-7iB)\left(a^3\cot(c+dx)+ia^3\right)}{3d\sqrt{\cot(c+dx)}}-\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{16ia^3B\sqrt{\cot(c+dx)}}{3d}+\frac{2iaB(a\,\mathrm{c}}{3d\,\mathrm{c}}$$

```
[Out] (-8*(-1)^(1/4)*a^3*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - ((
(16*I)/3)*a^3*B*Sqrt[Cot[c + d*x]])/d + (((2*I)/3)*a*B*(I*a + a*Cot[c + d*x
])^2)/(d*Cot[c + d*x]^(3/2)) - (2*(3*A - (7*I)*B)*(I*a^3 + a^3*Cot[c + d*x]
))/(3*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.47097, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3581, 3593, 3592, 3533, 208}

$$-\frac{2(3A-7iB)\left(a^3\cot(c+dx)+ia^3\right)}{3d\sqrt{\cot(c+dx)}}-\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}-\frac{16ia^3B\sqrt{\cot(c+dx)}}{3d}+\frac{2iaB(a\,\mathrm{c}}{3d\,\mathrm{c}}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (-8*(-1)^(1/4)*a^3*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - ((
(16*I)/3)*a^3*B*Sqrt[Cot[c + d*x]])/d + (((2*I)/3)*a*B*(I*a + a*Cot[c + d*x
])^2)/(d*Cot[c + d*x]^(3/2)) - (2*(3*A - (7*I)*B)*(I*a^3 + a^3*Cot[c + d*x]
))/(3*d*Sqrt[Cot[c + d*x]])
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{(ia+a\cot(c+dx))^2\left(\frac{1}{2}a\right.}{}$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{3d\cot^{\frac{3}{2}}(c+dx)} - \frac{2(3A-7iB)\left(ia^3+a^3\cot(c+\right.}{3d\sqrt{\cot(c+dx)}}$$

$$= -\frac{16ia^3B\sqrt{\cot(c+dx)}}{3d} + \frac{2iaB(ia+a\cot(c+dx))^2}{3d\cot^{\frac{3}{2}}(c+dx)} - \frac{2(3A}{}$$

$$= -\frac{16ia^3B\sqrt{\cot(c+dx)}}{3d} + \frac{2iaB(ia+a\cot(c+dx))^2}{3d\cot^{\frac{3}{2}}(c+dx)} - \frac{2(3A}{}$$

$$= -\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{16ia^3B}{}$$

Mathematica [A] time = 5.91535, size = 132, normalized size = 0.93

$$-\frac{a^3\sqrt{\cot(c+dx)}\left(\sec^2(c+dx)((9B+3iA)\sin(2(c+dx))+(3A-iB)\cos(2(c+dx))+3A+iB)-24(A-iB)\sqrt{i\tan(c+\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] -(a^3*Sqrt[Cot[c + d*x]]*(Sec[c + d*x]^2*(3*A + I*B + (3*A - I*B)*Cos[2*(c
+ d*x)] + ((3*I)*A + 9*B)*Sin[2*(c + d*x)]) - 24*(A - I*B)*ArcTanh[Sqrt[(-1
 + E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Sqrt[I*Tan[c + d*x]]))/
(3*d)
```

Maple [C] time = 0.54, size = 1539, normalized size = 10.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3*a^3/d*2^(1/2)*(12*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^
(1/2))*cos(d*x+c)+12*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*cos(d*
x+c)-12*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+
c)^2-I*B*2^(1/2)*cos(d*x+c)^2-12*A*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2+1/2*I,1/2*2^(1/2))+12*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/
2))*cos(d*x+c)^2-12*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/
2))*cos(d*x+c)-12*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))+12*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-
12*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-12*B
*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+12*B*cos
(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(
1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+3*I*A*2^(1/2)*cos(d*x+c
)*sin(d*x+c)+I*B*2^(1/2)+3*A*2^(1/2)*cos(d*x+c)^2+9*B*2^(1/2)*cos(d*x+c)*si
n(d*x+c)+12*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(
d*x+c)^2)*(cos(d*x+c)/sin(d*x+c))^(3/2)*sin(d*x+c)/cos(d*x+c)^3
```

Maxima [A] time = 1.55794, size = 263, normalized size = 1.85

$$3\left(\sqrt{2}(-(2i-2)\ A-(2i+2)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}(-(2i-2)\ A-(2i+2)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/3*(3*(sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
2/sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(-1/2*s
qrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)
*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A
 + (I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^3 -
6*A*a^3/sqrt(tan(d*x + c)) + 2*(-I*B*a^3 - 3*(I*A + 3*B)*a^3/tan(d*x + c))*
tan(d*x + c)^(3/2))/d
```

Fricas [B] time = 1.63229, size = 1185, normalized size = 8.35

$$3\sqrt{\frac{\left(64i\,A^2+128\,AB-64i\,B^2\right)a^6}{d^2}}\left(de^{(4i\,dx+4i\,c)}+2\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(-\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}-\sqrt{\frac{\left(64i\,A^2+128\,AB-64i\,B^2\right)a^6}{d^2}}\left(i\,de^{(2i\,dx+2i\,c)}-i\,d\right)\sqrt{\frac{ie^{(2i}}{e^{(2i}}}\right.}{(4i\,A+4\,B)a^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/12*(3*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(4*I*d*x + 4*I*c
) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c)
- sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c) -
I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d
*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 3*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a
^6/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log(-(8*(A -
I*B)*a^3*e^(2*I*d*x + 2*I*c) - sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2
)*(-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - (16*(3*A -
 5*I*B)*a^3*e^(4*I*d*x + 4*I*c) + 16*(3*A + I*B)*a^3*e^(2*I*d*x + 2*I*c) +
```

```
64*I*B*a^3)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d
*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^3\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(3/2),
 x)
```

3.517 $\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=148

$$-\frac{2(5A-9iB)\left(a^3\cot(c+dx)+ia^3\right)}{15d\cot^{\frac{3}{2}}(c+dx)}-\frac{16a^3(5A-6iB)}{15d\sqrt{\cot(c+dx)}}+\frac{8\sqrt[4]{-1}a^3(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB(a\cot($$

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (16
*a^3*(5*A - (6*I)*B))/(15*d*Sqrt[Cot[c + d*x]]) + (((2*I)/5)*a*B*(I*a + a*C
ot[c + d*x])^2)/(d*Cot[c + d*x]^(5/2)) - (2*(5*A - (9*I)*B)*(I*a^3 + a^3*Co
t[c + d*x]))/(15*d*Cot[c + d*x]^(3/2))
```

Rubi [A] time = 0.491551, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139, Rules used = {3581, 3593, 3591, 3533, 208}

$$-\frac{2(5A-9iB)\left(a^3\cot(c+dx)+ia^3\right)}{15d\cot^{\frac{3}{2}}(c+dx)}-\frac{16a^3(5A-6iB)}{15d\sqrt{\cot(c+dx)}}+\frac{8\sqrt[4]{-1}a^3(B+iA)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d}+\frac{2iaB(a\cot($$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (8*(-1)^(1/4)*a^3*(I*A + B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (16
*a^3*(5*A - (6*I)*B))/(15*d*Sqrt[Cot[c + d*x]]) + (((2*I)/5)*a*B*(I*a + a*C
ot[c + d*x])^2)/(d*Cot[c + d*x]^(5/2)) - (2*(5*A - (9*I)*B)*(I*a^3 + a^3*Co
t[c + d*x]))/(15*d*Cot[c + d*x]^(3/2))
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(ia+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{7}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{(ia+a\cot(c+dx))^2\left(\frac{1}{2}a\right.}{}$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{5d\cot^{\frac{5}{2}}(c+dx)} - \frac{2(5A-9iB)\left(ia^3+a^3\cot(c+\right.}{15d\cot^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{16a^3(5A-6iB)}{15d\sqrt{\cot(c+dx)}} + \frac{2iaB(ia+a\cot(c+dx))^2}{5d\cot^{\frac{5}{2}}(c+dx)} - \frac{2(5A-}{}$$

$$= -\frac{16a^3(5A-6iB)}{15d\sqrt{\cot(c+dx)}} + \frac{2iaB(ia+a\cot(c+dx))^2}{5d\cot^{\frac{5}{2}}(c+dx)} - \frac{2(5A-}{}$$

$$= \frac{8\sqrt[4]{-1}a^3(iA+B)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{16a^3(5}{15d\sqrt{\text{co}}}$$

Mathematica [A] time = 6.33981, size = 140, normalized size = 0.95

$$\frac{a^3\sec^2(c+dx)\left(-5(3B+iA)\sin(2(c+dx)) - 9(5A-7iB)\cos(2(c+dx)) + \frac{120(A-iB)\cos^2(c+dx)\tanh^{-1}\left(\sqrt{\frac{-1+e^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\right)}{\sqrt{i\tan(c+dx)}} - 45A+\right.}{15d\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (a^3*Sec[c + d*x]^2*(-45*A + (57*I)*B - 9*(5*A - (7*I)*B)*Cos[2*(c + d*x)]
- 5*(I*A + 3*B)*Sin[2*(c + d*x)] + (120*(A - I*B)*ArcTanh[Sqrt[(-1 + E^((2*
I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]]*Cos[c + d*x]^2)/Sqrt[I*Tan[c + d
*x]]))/(15*d*Sqrt[Cot[c + d*x]])
```

Maple [C] time = 0.61, size = 973, normalized size = 6.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/15*a^3/d*2^(1/2)*(cos(d*x+c)-1)*(-3*I*B*2^(1/2)-63*I*B*cos(d*x+c)^3*2^(1
/2)-60*I*B*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2)+60*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d
*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*sin(d*x+c)-60*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2*2^(1/2))*sin(d*x+c)-60*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
+1/2*I,1/2*2^(1/2))*sin(d*x+c)+63*I*B*cos(d*x+c)^2*2^(1/2)+5*I*A*cos(d*x+c)
^2*sin(d*x+c)*2^(1/2)+45*A*cos(d*x+c)^3*2^(1/2)+3*I*B*2^(1/2)*cos(d*x+c)+15
*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-60*I*A*cos(d*x+c)^2*sin(d*x+c)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-45*A*2^(1/2)*cos(d*x+c)^2-15*
B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+60*I*B*cos(d*x+c)^2*sin(d*x+c)*EllipticF((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)-5*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2))*(cos(d
*x+c)+1)^2*(cos(d*x+c)/sin(d*x+c))^(1/2)/cos(d*x+c)^3/sin(d*x+c)^3
```

Maxima [A] time = 1.59765, size = 270, normalized size = 1.82

$$-\frac{15\left(\sqrt{2}((2i+2)\ A-(2i-2)\ B)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}((2i+2)\ A-(2i-2)\ B)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/15*(15*(sqrt(2)*((2*I + 2)*A - (2*I - 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2)
+ 2/sqrt(tan(d*x + c)))) + sqrt(2)*((2*I + 2)*A - (2*I - 2)*B)*arctan(-1/2*
```

```
sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*((I - 1)*A + (I + 1)*B)
*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*((I - 1)*A
+ (I + 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^3 + 2
*(3*I*B*a^3 - 5*(-I*A - 3*B)*a^3/tan(d*x + c) + (45*A - 60*I*B)*a^3/tan(d*x
 + c)^2)*tan(d*x + c)^(5/2))/d
```

Fricas [B] time = 1.5634, size = 1369, normalized size = 9.25

$$15\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(de^{(6i\,dx+6i\,c)}+3\,de^{(4i\,dx+4i\,c)}+3\,de^{(2i\,dx+2i\,c)}+d\right)\log\left(-\frac{\left(8\,(A-i\,B)a^3e^{(2i\,dx+2i\,c)}+\sqrt{\frac{\left(-64i\,A^2-128\,AB+64i\,B^2\right)a^6}{d^2}}\left(\right.\right.}{(4i\,A+4\,B)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] 1/60*(15*sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6*I
*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log(-(8*(A - I
*B)*a^3*e^(2*I*d*x + 2*I*c) + sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2
)*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) - 15*sqrt((-64*I*
A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x
+ 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x +
2*I*c) - sqrt((-64*I*A^2 - 128*A*B + 64*I*B^2)*a^6/d^2)*(d*e^(2*I*d*x + 2*I
*c) - d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2
*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^3)) + ((400*I*A + 624*B)*a^3*e^(6*I*d*x +
6*I*c) + (320*I*A + 288*B)*a^3*e^(4*I*d*x + 4*I*c) + (-400*I*A - 528*B)*a^3
*e^(2*I*d*x + 2*I*c) + (-320*I*A - 384*B)*a^3)*sqrt((I*e^(2*I*d*x + 2*I*c)
+ I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x +
4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^3\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3*sqrt(cot(d*x + c)),
 x)
```

3.518 $\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=173

$$-\frac{8a^3(21A-23iB)}{105d\cot^{\frac{3}{2}}(c+dx)}-\frac{2(7A-11iB)\left(a^3\cot(c+dx)+ia^3\right)}{35d\cot^{\frac{5}{2}}(c+dx)}+\frac{8a^3(B+iA)}{d\sqrt{\cot(c+dx)}}+\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+\right.}{d}$$

```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (8*
a^3*(21*A - (23*I)*B))/(105*d*Cot[c + d*x]^(3/2)) + (8*a^3*(I*A + B))/(d*Sq
rt[Cot[c + d*x]]) + (((2*I)/7)*a*B*(I*a + a*Cot[c + d*x])^2)/(d*Cot[c + d*x
]^(7/2)) - (2*(7*A - (11*I)*B)*(I*a^3 + a^3*Cot[c + d*x]))/(35*d*Cot[c + d*
x]^(5/2))
```

Rubi [A] time = 0.542278, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3581, 3593, 3591, 3529, 3533, 208}

$$-\frac{8a^3(21A-23iB)}{105d\cot^{\frac{3}{2}}(c+dx)}-\frac{2(7A-11iB)\left(a^3\cot(c+dx)+ia^3\right)}{35d\cot^{\frac{5}{2}}(c+dx)}+\frac{8a^3(B+iA)}{d\sqrt{\cot(c+dx)}}+\frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```

```
[Out] (8*(-1)^(1/4)*a^3*(A - I*B)*ArcTanh[(-1)^(3/4)*Sqrt[Cot[c + d*x]]])/d - (8*
a^3*(21*A - (23*I)*B))/(105*d*Cot[c + d*x]^(3/2)) + (8*a^3*(I*A + B))/(d*Sq
rt[Cot[c + d*x]]) + (((2*I)/7)*a*B*(I*a + a*Cot[c + d*x])^2)/(d*Cot[c + d*x
]^(7/2)) - (2*(7*A - (11*I)*B)*(I*a^3 + a^3*Cot[c + d*x]))/(35*d*Cot[c + d*
x]^(5/2))
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3533

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[(2*c^2)/f, Subst[Int[1/(b*c - d*x^2), x], x, Sqrt[b*
Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && EqQ[c^2 + d^2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \int \frac{(ia+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{9}{2}}(c+dx)}\,dx$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{(ia+a\cot(c+dx))^2\left(\frac{1}{2}a(7iA+11B)\right.}{\cot^{\frac{7}{2}}(c+d}$$

$$= \frac{2iaB(ia+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} - \frac{2(7A-11iB)\left(ia^3+a^3\cot(c+dx)\right)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{4}{35}\int$$

$$= -\frac{8a^3(21A-23iB)}{105d\cot^{\frac{3}{2}}(c+dx)} + \frac{2iaB(ia+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} - \frac{2(7A-11iB)\left(ia^3+\right.}{35d\cot^{\frac{5}{2}}(c}$$

$$= -\frac{8a^3(21A-23iB)}{105d\cot^{\frac{3}{2}}(c+dx)} + \frac{8a^3(iA+B)}{d\sqrt{\cot(c+dx)}} + \frac{2iaB(ia+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} - \frac{2(}{}$$

$$= -\frac{8a^3(21A-23iB)}{105d\cot^{\frac{3}{2}}(c+dx)} + \frac{8a^3(iA+B)}{d\sqrt{\cot(c+dx)}} + \frac{2iaB(ia+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} - \frac{2(}{}$$

$$= \frac{8\sqrt[4]{-1}a^3(A-iB)\tanh^{-1}\left((-1)^{3/4}\sqrt{\cot(c+dx)}\right)}{d} - \frac{8a^3(21A-23iB)}{105d\cot^{\frac{3}{2}}(c+dx)} +$$

Mathematica [A] time = 14.26, size = 298, normalized size = 1.72

$$\frac{a^3\sin^4(c+dx)(\cot(c+dx)+i)^3(A\cot(c+dx)+B)\left(\frac{(\sin(3c)+i\cos(3c))\sec^2(c+dx)(10((31B+21iA)\cos(2(c+dx))+21iA+25B)+21(59A-57iB)}{210\cot^{\frac{3}{2}}(c+dx)}\right.}{d(\cos(dx)+i\sin(dx))^3(A\cos(c+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]
],x]
```

```
[Out] (a^3*(I + Cot[c + d*x])^3*(B + A*Cot[c + d*x])*((-8*(A - I*B)*Sqrt[(-1 + E^
((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*
x))))/(-1 + E^((2*I)*(c + d*x)))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(
1 + E^((2*I)*(c + d*x)))]])/E^((3*I)*c) + ((10*((21*I)*A + 25*B + ((21*I)*A
 + 31*B)*Cos[2*(c + d*x)]) + 21*(59*A - (57*I)*B)*Cot[c + d*x] + 21*(21*A -
 (23*I)*B)*Cos[3*(c + d*x)]*Csc[c + d*x])*Sec[c + d*x]^2*(I*Cos[3*c] + Sin[
3*c]))/(210*Cot[c + d*x]^(3/2)))*Sin[c + d*x]^4)/(d*(Cos[d*x] + I*Sin[d*x])
^3*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [C] time = 0.636, size = 1043, normalized size = 6.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/105*a^3/d*2^(1/2)*(cos(d*x+c)-1)*(155*I*B*sin(d*x+c)*2^(1/2)*cos(d*x+c)^3
-420*I*B*cos(d*x+c)^3*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)-15*I*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)+420*A*cos(d*x+c)^3*sin(d*
x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I
,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-420*B*sin(d*x+c
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^3*EllipticF(
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+420*B*cos(d*x+c)
^3*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-21*I*A
*2^(1/2)*cos(d*x+c)^2-155*I*B*sin(d*x+c)*2^(1/2)*cos(d*x+c)^2+21*I*A*cos(d*
x+c)*2^(1/2)-105*A*sin(d*x+c)*2^(1/2)*cos(d*x+c)^3-420*I*A*sin(d*x+c)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^3*EllipticF((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+483*B*2^(1/2)*cos(d*x+c
)^4-441*I*A*2^(1/2)*cos(d*x+c)^3+105*A*sin(d*x+c)*2^(1/2)*cos(d*x+c)^2+15*I
*B*sin(d*x+c)*2^(1/2)-483*B*2^(1/2)*cos(d*x+c)^3+420*I*A*sin(d*x+c)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^3*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+441*I*A*2^(1/2
)*cos(d*x+c)^4-63*B*cos(d*x+c)^2*2^(1/2)+63*B*cos(d*x+c)*2^(1/2))*(cos(d*x+
c)+1)^2/cos(d*x+c)^3/sin(d*x+c)^4/(cos(d*x+c)/sin(d*x+c))^(1/2)
```

Maxima [A] time = 1.5661, size = 294, normalized size = 1.7

$$-\frac{2\left(15iBa^3 - \frac{21(-iA-3B)a^3}{\tan(dx+c)} + \frac{(105A-140iB)a^3}{\tan(dx+c)^2} - \frac{420(iA+B)a^3}{\tan(dx+c)^3}\right)\tan(dx+c)^{\frac{7}{2}} + 105\left(\sqrt{2}(-(2i-2)A-(2i+2)B)\arctan\left(\frac{1}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="maxima")
```

```
[Out] -1/105*(2*(15*I*B*a^3 - 21*(-I*A - 3*B)*a^3/tan(d*x + c) + (105*A - 140*I*B
)*a^3/tan(d*x + c)^2 - 420*(I*A + B)*a^3/tan(d*x + c)^3)*tan(d*x + c)^(7/2)
 + 105*(sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(1/2*sqrt(2)*(sqrt(2) +
2/sqrt(tan(d*x + c)))) + sqrt(2)*(-(2*I - 2)*A - (2*I + 2)*B)*arctan(-1/2*s
qrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*(-(I + 1)*A + (I - 1)*B)
*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*(-(I + 1)*A
 + (I - 1)*B)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*a^3)/d
```

Fricas [B] time = 1.76231, size = 1553, normalized size = 8.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="fricas")
```

```
[Out] -1/420*(105*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(8*I*d*x + 8
*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(2*I*d*x
+ 2*I*c) + d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) - sqrt((64*I*A^2 +
128*A*B - 64*I*B^2)*a^6/d^2)*(I*d*e^(2*I*d*x + 2*I*c) - I*d)*sqrt((I*e^(2*I
*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/((4*I*A
 + 4*B)*a^3)) - 105*sqrt((64*I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(d*e^(8*I
*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e^(
2*I*d*x + 2*I*c) + d)*log(-(8*(A - I*B)*a^3*e^(2*I*d*x + 2*I*c) - sqrt((64*
I*A^2 + 128*A*B - 64*I*B^2)*a^6/d^2)*(-I*d*e^(2*I*d*x + 2*I*c) + I*d)*sqrt(
(I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c
)/((4*I*A + 4*B)*a^3)) - 16*((273*A - 319*I*B)*a^3*e^(8*I*d*x + 8*I*c) + 3*
(133*A - 109*I*B)*a^3*e^(6*I*d*x + 6*I*c) - 5*(21*A - 19*I*B)*a^3*e^(4*I*d*
x + 4*I*c) - 3*(133*A - 129*I*B)*a^3*e^(2*I*d*x + 2*I*c) - 4*(42*A - 41*I*B
)*a^3)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(d*e^(8
*I*d*x + 8*I*c) + 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) + 4*d*e
^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\int \frac{A}{\sqrt{\cot(c+dx)}}\,dx + \int -\frac{3A\tan^2(c+dx)}{\sqrt{\cot(c+dx)}}\,dx + \int \frac{B\tan(c+dx)}{\sqrt{\cot(c+dx)}}\,dx + \int -\frac{3B\tan^3(c+dx)}{\sqrt{\cot(c+dx)}}\,dx + \int \frac{3iA\tan(c+dx)}{\sqrt{\cot(c+dx)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**3*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] a**3*(Integral(A/sqrt(cot(c + d*x)), x) + Integral(-3*A*tan(c + d*x)**2/sqr
t(cot(c + d*x)), x) + Integral(B*tan(c + d*x)/sqrt(cot(c + d*x)), x) + Inte
gral(-3*B*tan(c + d*x)**3/sqrt(cot(c + d*x)), x) + Integral(3*I*A*tan(c + d
*x)/sqrt(cot(c + d*x)), x) + Integral(-I*A*tan(c + d*x)**3/sqrt(cot(c + d*x
)), x) + Integral(3*I*B*tan(c + d*x)**2/sqrt(cot(c + d*x)), x) + Integral(-
I*B*tan(c + d*x)**4/sqrt(cot(c + d*x)), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^3}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^3/sqrt(cot(d*x + c)),
 x)
```

3.519 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=297

$$\frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(a\cot(c+dx)+ia)}-\frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad}+\frac{5(-B+iA)\sqrt{\cot(c+dx)}}{2ad}+\frac{((7+5i)A-(5-3i)B)\log\left(\cot(c+dx)\right.}{8\sqrt{2}ad}$$

```
[Out] ((-1/4 + I/4)*((6 + I)*A + (1 + 4*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x
]]])/(Sqrt[2]*a*d) + (((7 - 5*I)*A + (5 + 3*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[C
ot[c + d*x]]])/(4*Sqrt[2]*a*d) + (5*(I*A - B)*Sqrt[Cot[c + d*x]])/(2*a*d) -
 ((7*A + (3*I)*B)*Cot[c + d*x]^(3/2))/(6*a*d) + ((A + I*B)*Cot[c + d*x]^(5/
2))/(2*d*(I*a + a*Cot[c + d*x])) + (((7 + 5*I)*A - (5 - 3*I)*B)*Log[1 - Sqr
t[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2]*a*d) + (((-7 - 5*I)*A +
 (5 - 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2
]*a*d)
```

Rubi [A] time = 0.517593, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(a\cot(c+dx)+ia)}-\frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad}+\frac{5(-B+iA)\sqrt{\cot(c+dx)}}{2ad}+\frac{((7+5i)A-(5-3i)B)\log\left(\cot(c+dx)\right.}{8\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] ((-1/4 + I/4)*((6 + I)*A + (1 + 4*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x
]]])/(Sqrt[2]*a*d) + (((7 - 5*I)*A + (5 + 3*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[C
ot[c + d*x]]])/(4*Sqrt[2]*a*d) + (5*(I*A - B)*Sqrt[Cot[c + d*x]])/(2*a*d) -
 ((7*A + (3*I)*B)*Cot[c + d*x]^(3/2))/(6*a*d) + ((A + I*B)*Cot[c + d*x]^(5/
2))/(2*d*(I*a + a*Cot[c + d*x])) + (((7 + 5*I)*A - (5 - 3*I)*B)*Log[1 - Sqr
t[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2]*a*d) + (((-7 - 5*I)*A +
 (5 - 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2
]*a*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \int \frac{\cot^{\frac{5}{2}}(c+dx)(B+A\cot(c+dx))}{ia+a\cot(c+dx)}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{\int \cot^{\frac{3}{2}}(c+dx)\left(-\frac{5}{2}a(iA-B)+\frac{1}{2}a(7A+3iB)\cot(c\right.}{2a^2}$$

$$= -\frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{\int \sqrt{\cot(c+dx)}\left(-\frac{1}{2}a(7\right.}{}$$

$$= \frac{5(iA-B)\sqrt{\cot(c+dx)}}{2ad} - \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))}$$

$$= \frac{5(iA-B)\sqrt{\cot(c+dx)}}{2ad} - \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))}$$

$$= \frac{5(iA-B)\sqrt{\cot(c+dx)}}{2ad} - \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))}$$

$$= \frac{5(iA-B)\sqrt{\cot(c+dx)}}{2ad} - \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))}$$

$$= \frac{5(iA-B)\sqrt{\cot(c+dx)}}{2ad} - \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{6ad} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{2d(ia+a\cot(c+dx))}$$

$$= -\frac{((7-5i)A+(5+3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{4\sqrt{2}ad} + \frac{((7-5i)A+(5+3i}{}$$

Mathematica [A] time = 2.76456, size = 247, normalized size = 0.83

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(\frac{2}{3}\cot(c+dx)\csc(c+dx)(\cos(dx)-i\sin(dx))((-12B+8iA)\sin(2(c+dx))+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*((1 - I)*Csc[c + d*x]*(((6 + I)*A + (1 + 4*I)*B)*A
rcSin[Cos[c + d*x] - Sin[c + d*x]] + ((-1 - 6*I)*A + (4 + I)*B)*Log[Cos[c +
 d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(Cos[c] + I*Sin[c])*Sqrt[Si
```

```
n[2*(c + d*x)]] + (2*Cot[c + d*x]*Csc[c + d*x]*(Cos[d*x] - I*Sin[d*x])*(-19
*A - (15*I)*B + (11*A + (15*I)*B)*Cos[2*(c + d*x)] + ((8*I)*A - 12*B)*Sin[2
*(c + d*x)]))/3)*(A + B*Tan[c + d*x]))/(8*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d
*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [C] time = 0.501, size = 2598, normalized size = 8.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/12/a/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(5/2)*sin(d*x+c)*(-15*B*2^(1/2)*co
s(d*x+c)*sin(d*x+c)-18*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1
/2))*sin(d*x+c)+21*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))
-3*I*A*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)+15*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)
+3*B*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)+3*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)-18*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2-1/2*I,1/2*2^(1/2))*sin(d*x+c)+3*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1
/2*I,1/2*2^(1/2))*sin(d*x+c)+9*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/
2))*sin(d*x+c)-12*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ell
ipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2)
)*sin(d*x+c)-18*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ellipti
cPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*co
s(d*x+c)*sin(d*x+c)+12*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1
```

```
/2))*cos(d*x+c)*sin(d*x+c)+3*I*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Elli
pticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*B*2^(1/2)*cos(d*x+c)^2-7*A*2^(1/2)*c
os(d*x+c)^2-3*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^
(1/2))+3*A*cos(d*x+c)^4*2^(1/2)+12*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/
2*I,1/2*2^(1/2))*sin(d*x+c)+3*I*B*cos(d*x+c)^4*2^(1/2)+21*A*cos(d*x+c)*sin(
d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-3*A*cos(d*x+c)*sin(d*x+c
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*B*cos(d*x+c)*sin
(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*B*sin(d*x+
c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-18*I*A*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)+3*I*B*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)+
9*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)-12*
I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d
*x+c))/cos(d*x+c)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.69368, size = 1879, normalized size = 6.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/24*(3*(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((-I*A^2 -
 2*A*B + I*B^2)/(a^2*d^2))*log(-2*((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*
e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B +
I*B^2)/(a^2*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*
A + B)) - 3*(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((-I*A^
2 - 2*A*B + I*B^2)/(a^2*d^2))*log(2*((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B
+ I*B^2)/(a^2*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(
I*A + B)) - 6*(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((9*I
*A^2 - 12*A*B - 4*I*B^2)/(a^2*d^2))*log(((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sq
rt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((9*I*A^2 - 1
2*A*B - 4*I*B^2)/(a^2*d^2)) + 3*A + 2*I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) + 6*
(a*d*e^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((9*I*A^2 - 12*A*B
- 4*I*B^2)/(a^2*d^2))*log(-((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((9*I*A^2 - 12*A*B - 4*I*B
^2)/(a^2*d^2)) - 3*A - 2*I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*((19*I*A - 27
*B)*e^(4*I*d*x + 4*I*c) + (-38*I*A + 30*B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*
B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(a*d*e^(4*I
*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{ia\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/(I*a*tan(d*x + c) + a), x
)
```

3.520 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=268

$$\frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(a\cot(c+dx)+ia)}-\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad}-\frac{\left(\frac{1}{8}-\frac{i}{8}\right)((4+i)A+(1+2i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right.}{\sqrt{2}ad}$$

```
[Out] (((-5 - 3*I)*A + (3 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(4*Sqrt
[2]*a*d) + (((5 + 3*I)*A - (3 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
])/(4*Sqrt[2]*a*d) - ((5*A + I*B)*Sqrt[Cot[c + d*x]])/(2*a*d) + ((A + I*B)*
Cot[c + d*x]^(3/2))/(2*d*(I*a + a*Cot[c + d*x])) - ((1/8 - I/8)*((4 + I)*A
+ (1 + 2*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]
*a*d) + (((5 - 3*I)*A + (3 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(8*Sqrt[2]*a*d)
```

Rubi [A] time = 0.459142, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(a\cot(c+dx)+ia)}-\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad}-\frac{\left(\frac{1}{8}-\frac{i}{8}\right)((4+i)A+(1+2i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right.}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```

```
[Out] (((-5 - 3*I)*A + (3 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(4*Sqrt
[2]*a*d) + (((5 + 3*I)*A - (3 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
])/(4*Sqrt[2]*a*d) - ((5*A + I*B)*Sqrt[Cot[c + d*x]])/(2*a*d) + ((A + I*B)*
Cot[c + d*x]^(3/2))/(2*d*(I*a + a*Cot[c + d*x])) - ((1/8 - I/8)*((4 + I)*A
+ (1 + 2*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]
*a*d) + (((5 - 3*I)*A + (3 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(8*Sqrt[2]*a*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \int \frac{\cot^{\frac{3}{2}}(c+dx)(B+A\cot(c+dx))}{ia+a\cot(c+dx)}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{\int \sqrt{\cot(c+dx)}\left(-\frac{3}{2}a(iA-B)+\frac{1}{2}a(5A+iB)\cot(c\right.}{2a^2}$$

$$= -\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{\int \frac{-\frac{1}{2}a(5A+iB)-\frac{3}{2}a(iA-B)\cot}{\sqrt{\cot(c+dx)}}}{2a^2}$$

$$= -\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{\text{Subst}\left(\int \frac{\frac{1}{2}a(5A+iB)+\frac{3}{2}a(i}{1+x^4}\right.}{}$$

$$= -\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{((5+3i)A-(3-i)B)\,\text{S}}{}$$

$$= -\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} + \frac{((5+3i)A-(3-i)B)\,\text{S}}{}$$

$$= -\frac{(5A+iB)\sqrt{\cot(c+dx)}}{2ad} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{2d(ia+a\cot(c+dx))} - \frac{((5-3i)A+(3+i)B)\,\text{lo}}{}$$

$$= -\frac{((5+3i)A-(3-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{4\sqrt{2}ad} + \frac{((5+3i)A-(3-i)B)}{}$$

Mathematica [A] time = 2.20758, size = 223, normalized size = 0.83

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(\cot(c+dx)(-4\cos(dx)+4i\sin(dx))(4A\cos(c+dx)+(-B+5iA)\sin(c+dx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(Cot[c + d*x]*(-4*Cos[d*x] + (4*I)*Sin[d*x])*(4*A*
Cos[c + d*x] + ((5*I)*A - B)*Sin[c + d*x]) + Csc[c + d*x]*(((3 - 5*I)*A + (
1 + 3*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((4 + I)*A + (1 +
 2*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(I*Cos[
c] - Sin[c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(8*d*Sqrt[Cot[c
+ d*x]]*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [C] time = 0.436, size = 2437, normalized size = 9.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/4/a/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(3/2)*sin(d*x+c)*(I*B*2^(1/2)*cos(
d*x+c)+3*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-4*A*cos(d
*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*B*cos(d*x+c)
^3*2^(1/2)-A*cos(d*x+c)^3*2^(1/2)+5*A*cos(d*x+c)*2^(1/2)-2*B*cos(d*x+c)*(-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*A*(-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+I*A*c
os(d*x+c)^2*sin(d*x+c)*2^(1/2)-4*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*
I,1/2*2^(1/2))-2*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipt
icPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-A
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*I*A*cos(d*x+c)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+4*I*A*cos(d*x+c)*(-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*I*B*cos(d*x+c)*(-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
+1/2*I,1/2*2^(1/2))-B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
```

```
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))-A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(
1/2))+3*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2
^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-B*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2*2^(1/2))+4*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*I
*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*A*cos(d*x+c)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*cos(d*x+c)*(-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)))/cos(d*x+c)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")

[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.55247, size = 1634, normalized size = 6.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/8*(a*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1/
2*((4*I*a*d*e^(2*I*d*x + 2*I*c) - 4*I*a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2)) - 4*(A
- I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a*d*sqrt((I*A
^2 + 2*A*B - I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1/2*((-4*I*a*d*e^(2*
I*d*x + 2*I*c) + 4*I*a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2)) - 4*(A - I*B)*e^(2*I*d*x
 + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 2*a*d*sqrt((-4*I*A^2 + 4*A*B +
 I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(((a*d*e^(2*I*d*x + 2*I*c) - a*d)
*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-4*I*A^2
 + 4*A*B + I*B^2)/(a^2*d^2)) + 2*I*A - B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*a
*d*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(-((a*
d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
 2*I*c) - 1))*sqrt((-4*I*A^2 + 4*A*B + I*B^2)/(a^2*d^2)) - 2*I*A + B)*e^(-2
*I*d*x - 2*I*c)/(a*d)) - 2*((9*A + I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt
((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*
c)/(a*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{i\,a\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(I*a*tan(d*x + c) + a), x
)
```

3.521 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx$

Optimal. Leaf size=235

$$\frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(a\cot(c+dx)+ia)}-\frac{((3+i)A-(1+i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{8\sqrt{2}ad}+\frac{((3+i)A-(1+i)B)\log\left(\cot(c\right.}{8\sqrt{2}}$$

```
[Out] ((1/4 - I/4)*((2 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*a*d) - ((1/4 - I/4)*((2 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(Sqrt[2]*a*d) + ((A + I*B)*Sqrt[Cot[c + d*x]])/(2*d*(I*a + a*Cot[c + d*
x])) - (((3 + I)*A - (1 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c
+ d*x]])/(8*Sqrt[2]*a*d) + (((3 + I)*A - (1 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2]*a*d)
```

Rubi [A] time = 0.37852, antiderivative size = 235, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3581, 3595, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(a\cot(c+dx)+ia)}-\frac{((3+i)A-(1+i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{8\sqrt{2}ad}+\frac{((3+i)A-(1+i)B)\log\left(\cot(c\right.}{8\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),x]
```


```
[Out] ((1/4 - I/4)*((2 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*a*d) - ((1/4 - I/4)*((2 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(Sqrt[2]*a*d) + ((A + I*B)*Sqrt[Cot[c + d*x]])/(2*d*(I*a + a*Cot[c + d*
x])) - (((3 + I)*A - (1 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c
+ d*x]])/(8*Sqrt[2]*a*d) + (((3 + I)*A - (1 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2]*a*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{a+ia\tan(c+dx)}\,dx = \int \frac{\sqrt{\cot(c+dx)}(B+A\cot(c+dx))}{ia+a\cot(c+dx)}\,dx$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{\int \frac{-\frac{1}{2}a(iA-B)+\frac{1}{2}a(3A-iB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{2a^2}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{\text{Subst}\left(\int \frac{\frac{1}{2}a(iA-B)-\frac{1}{2}a(3A-iB)x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{a^2d}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{((3+i)A-(1+i)B)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+d}\right.}{4ad}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} - \frac{((3+i)A-(1+i)B)\,\text{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2}\,dx, x, \sqrt{\cot(}\right.}{8\sqrt{2}ad}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} - \frac{((3+i)A-(1+i)B)\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(\right.}{8\sqrt{2}ad}$$

$$= \frac{\left(\frac{1}{4}-\frac{i}{4}\right)((2+i)A+B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}ad} - \frac{\left(\frac{1}{4}-\frac{i}{4}\right)((2+i)A+B)\,\text{t}}{}$$

Mathematica [A] time = 1.61484, size = 199, normalized size = 0.85

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(4(A+iB)\cos(c+dx)(\cos(dx)-i\sin(dx))+(1+i)(-\sin(c)+i\cos(c))\sqrt{\sin(2(\right.}{8d\sqrt{\cot(c+dx)}(a+ia\,\text{ta}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x]),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(4*(A + I*B)*Cos[c + d*x]*(Cos[d*x] - I*Sin[d*x])
+ (1 + I)*Csc[c + d*x]*(((2 + I)*A + B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]]
 + ((-1 - 2*I)*A + I*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d
*x)]]])*(I*Cos[c] - Sin[c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(
8*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d
*x]))
```

Maple [C] time = 0.431, size = 1139, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/4/a/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x+c)
-1)*(2*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ell
ipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2)
)-I*B*cos(d*x+c)^3*2^(1/2)-I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2+1/2*I,1/2*2^(1/2))-I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))+I*B*cos(d*x+c)^2*2^(1/2)+2*A*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2-1/2*I,1/2*2^(1/2))*sin(d*x+c)-3*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2*2^(1/2))+A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I
,1/2*2^(1/2))+I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-B*sin(d*x+c)*(-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*sin(d*x+c)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
```

```
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2*2^(1/2))-A*cos(d*x+c)^3*2^(1/2)-I*A*cos(d*x+c)*sin(d*x+c)
*2^(1/2)-B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+A*2^(1/2)*cos(d*x+c)^2+B*2^(1/2)
*cos(d*x+c)*sin(d*x+c))/sin(d*x+c)^3/cos(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.75824, size = 1470, normalized size = 6.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/8*(a*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(-
2*((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) + (A - I*B)*e^
(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a*d*sqrt((-I*A^2 - 2*A
*B + I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(2*((a*d*e^(2*I*d*x + 2*I*c)
- a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I
*A^2 - 2*A*B + I*B^2)/(a^2*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d
*x - 2*I*c)/(I*A + B)) - 2*a*d*sqrt(I*A^2/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*lo
g(-((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) - 1))*sqrt(I*A^2/(a^2*d^2)) + A)*e^(-2*I*d*x - 2*I*c)/(a*d))
 + 2*a*d*sqrt(I*A^2/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(((a*d*e^(2*I*d*x + 2
*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sq
rt(I*A^2/(a^2*d^2)) - A)*e^(-2*I*d*x - 2*I*c)/(a*d)) + 2*((-I*A + B)*e^(2*I
*d*x + 2*I*c) + I*A - B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
```

```
*c) - 1)))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{i\,a\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(I*a*tan(d*x + c) + a), x
)
```

3.522 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))}\,dx$

Optimal. Leaf size=237

$$\frac{(-B+iA)\sqrt{\cot(c+dx)}}{2d(a\cot(c+dx)+ia)}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{\sqrt{2}ad}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\log\left(c\right.}{}$$

```
[Out] ((1/4 - I/4)*(A + (2 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*a*d) - ((1/4 - I/4)*(A + (2 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(Sqrt[2]*a*d) + ((I*A - B)*Sqrt[Cot[c + d*x]])/(2*d*(I*a + a*Cot[c + d*
x])) + ((1/8 + I/8)*(A - (2 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Co
t[c + d*x]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*(A - (2 + I)*B)*Log[1 + Sqrt[2]*S
qrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a*d)
```

Rubi [A] time = 0.390393, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3581, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(-B+iA)\sqrt{\cot(c+dx)}}{2d(a\cot(c+dx)+ia)}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{\sqrt{2}ad}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\log\left(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])),x]
```


```
[Out] ((1/4 - I/4)*(A + (2 - I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*a*d) - ((1/4 - I/4)*(A + (2 - I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(Sqrt[2]*a*d) + ((I*A - B)*Sqrt[Cot[c + d*x]])/(2*d*(I*a + a*Cot[c + d*
x])) + ((1/8 + I/8)*(A - (2 + I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Co
t[c + d*x]])/(Sqrt[2]*a*d) - ((1/8 + I/8)*(A - (2 + I)*B)*Log[1 + Sqrt[2]*S
qrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))}\,dx = \int \frac{B+A\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}\,dx$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{\int \frac{\frac{1}{2}a(A-3iB)-\frac{1}{2}a(iA-B)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{2a^2}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{\text{Subst}\left(\int \frac{-\frac{1}{2}a(A-3iB)+\frac{1}{2}a(iA-B)x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{a^2d}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + -\frac{\left(\left(\frac{1}{4}+\frac{i}{4}\right)(A-(2+i)B)\right)\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(\right.}{ad}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{\left(\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\right)\text{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2}\,dx, x, \sqrt{\right.}{\sqrt{2}ad}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{2d(ia+a\cot(c+dx))} + \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-(2+i)B)\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\text{co}\right.}{\sqrt{2}ad}$$

$$= \frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}ad} - \frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A+(2-i)B)\,\text{ta}}{\sqrt{}}$$

Mathematica [A] time = 1.97698, size = 198, normalized size = 0.84

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(4(A+iB)\cos(c+dx)(\sin(dx)+i\cos(dx))+(1+i)(-\sin(c)+i\cos(c))\sqrt{\sin(2(\right.}{8d\sqrt{\cot(c+dx)}(a+ia\,\text{ta}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*(4*(A + I*B)*Cos[c + d*x]*(I*Cos[d*x] + Sin[d*x])
+ (1 + I)*Csc[c + d*x]*((A + (2 - I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]]
 + I*(A - (2 + I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)
]]])*(I*Cos[c] - Sin[c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(8*d
*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]
))
```

Maple [C] time = 0.398, size = 2963, normalized size = 12.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] 1/4/a/d*2^(1/2)*(cos(d*x+c)-1)*(2*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2-1/2*I,1/2*2^(1/2))-B*cos(d*x+c)^2*2^(1/2)+B*cos(d*x+c)*2^(1/2)-2*B
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+
c)+I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x
+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*
2^(1/2))-B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/
2))+A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-I*A*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticF((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-2*I*B*((cos(d*x+c)-1)/sin(d*x+
```

```
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*B*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticPi((-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-I*B*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-I*B*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-I*A*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*A*2^(1/2)*cos(d*x+c)^2-I*A*2^(1/2)
*cos(d*x+c)+I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c)
)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-A*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2*2^(1/2))+A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2+1/2*I,1/2*2^(1/2))+B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
-1/2*I,1/2*2^(1/2))-A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ell
ipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)
)+I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+A*cos(d*x+c)^2
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+B*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)
```

```
/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
,1/2-1/2*I,1/2*2^(1/2))+B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/
sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2))*(cos(d*x+c)+1)^2/(I*sin(d*x+c)+cos(d*x+c))/(cos(d*x+c)/si
n(d*x+c))^(1/2)/sin(d*x+c)^4
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.58725, size = 1497, normalized size = 6.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/8*(a*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1
/2*((4*I*a*d*e^(2*I*d*x + 2*I*c) - 4*I*a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2)) - 4*(A
 - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a*d*sqrt((I*
A^2 + 2*A*B - I*B^2)/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log(1/2*((-4*I*a*d*e^(2
*I*d*x + 2*I*c) + 4*I*a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2)) - 4*(A - I*B)*e^(2*I*d*
x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 2*a*d*sqrt(I*B^2/(a^2*d^2))*e
^(2*I*d*x + 2*I*c)*log(-((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt(I*B^2/(a^2*d^2)) + B)*e^(-2*
I*d*x - 2*I*c)/(a*d)) - 2*a*d*sqrt(I*B^2/(a^2*d^2))*e^(2*I*d*x + 2*I*c)*log
(((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) - 1))*sqrt(I*B^2/(a^2*d^2)) - B)*e^(-2*I*d*x - 2*I*c)/(a*d)) -
```

```
2*((A + I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt((I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(dx+c\right)+A}{\left(i\,a\tan\left(dx+c\right)+a\right)\sqrt{\cot\left(dx+c\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)*sqrt(cot(d*x + c))),
 x)
```

3.523 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx$

Optimal. Leaf size=276

$$\frac{-B+iA}{2d\sqrt{\cot(c+dx)}(a\cot(c+dx)+ia)}-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)((2+i)A+(1+4i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c\right.}}{\sqrt{2}ad}$$

```
[Out] (((1 - 3*I)*A + (3 + 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(4*Sqr
t[2]*a*d) + ((1/4 + I/4)*((1 + 2*I)*A - (4 + I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*a*d) - (A + (5*I)*B)/(2*a*d*Sqrt[Cot[c + d*x]]) +
(I*A - B)/(2*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])) - ((1/8 + I/8)*((
2 + I)*A + (1 + 4*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])
/(Sqrt[2]*a*d) + ((1/8 + I/8)*((2 + I)*A + (1 + 4*I)*B)*Log[1 + Sqrt[2]*Sqr
t[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a*d)
```

Rubi [A] time = 0.456515, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{-B+iA}{2d\sqrt{\cot(c+dx)}(a\cot(c+dx)+ia)}-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)((2+i)A+(1+4i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c\right.}}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])),x]
```


```
[Out] (((1 - 3*I)*A + (3 + 5*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(4*Sqr
t[2]*a*d) + ((1/4 + I/4)*((1 + 2*I)*A - (4 + I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*a*d) - (A + (5*I)*B)/(2*a*d*Sqrt[Cot[c + d*x]]) +
(I*A - B)/(2*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])) - ((1/8 + I/8)*((
2 + I)*A + (1 + 4*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])
/(Sqrt[2]*a*d) + ((1/8 + I/8)*((2 + I)*A + (1 + 4*I)*B)*Log[1 + Sqrt[2]*Sqr
t[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx=\int \frac{B+A\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}\,dx$$

$$=\frac{iA-B}{2d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}+\frac{\int \frac{-\frac{1}{2}a(A+5iB)-\frac{3}{2}a(iA-B)\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)}\,dx}{2a^2}$$

$$=-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}+\frac{\int \frac{-\frac{3}{2}a(iA-B)+\frac{1}{2}a(A+5}{\sqrt{\cot(c+d}}}{2a^2}$$

$$=-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}+\frac{\text{Subst}\left(\int \frac{\frac{3}{2}a(iA-B)-}{1}\right.}{}$$

$$=-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}+\frac{((1+3i)A-(3-5}{}$$

$$=-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}-\frac{((1+3i)A-(3-5}{}$$

$$=-\frac{A+5iB}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}-\frac{((1+3i)A-(3-5}{}$$

$$=\frac{((1-3i)A+(3+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{4\sqrt{2}ad}-\frac{((1-3i)A+(3+5i)B)\,\mathrm{t}}{4}$$

Mathematica [A] time = 2.17217, size = 214, normalized size = 0.78

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left((-4\cos(dx)+4i\sin(dx))(-4B\sin(c+dx)+(A+5iB)\cos(c+dx))-(\cos(c)+\right.}{8d\sqrt{\mathrm{c}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*((-4*Cos[d*x] + (4*I)*Sin[d*x])*((A + (5*I)*B)*Cos
[c + d*x] - 4*B*Sin[c + d*x]) - Csc[c + d*x]*(((1 - 3*I)*A + (3 + 5*I)*B)*A
rcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((2 + I)*A + (1 + 4*I)*B)*Log[
Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(Cos[c] + I*Sin[c])*
Sqrt[Sin[2*(c + d*x)]])*(A + B*Tan[c + d*x]))/(8*d*Sqrt[Cot[c + d*x]]*(A*Co
```

```
s[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [C] time = 0.416, size = 3717, normalized size = 13.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/4/a/d*2^(1/2)*(cos(d*x+c)-1)*(I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-4*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+4*
B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+5*I*B
*cos(d*x+c)^2*2^(1/2)-5*I*B*2^(1/2)*cos(d*x+c)-A*cos(d*x+c)*2^(1/2)+2*A*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)-4
*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*
x+c)+I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d
*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/
2*2^(1/2))+B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(
1/2))+A*2^(1/2)*cos(d*x+c)^2+2*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/
2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin
(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-5*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2
^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)+4*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c)
)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)+I*A*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
```

2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)^2-2*I*A*((cos(d*x+c)-1+sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)^2-5*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2)-I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2
^(1/2))-I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))+4*B*2^(1/2)*sin(d*x+c)+2*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2
2^(1/2))((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)-4*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)+
2*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)^2-I*A
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)-A*cos(d*x+c)*sin(d*x+c)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+B*cos(d*x+c)*sin(d*x+c)*(-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*A*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2-1/2*I,1/2*2^(1/2))-4*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I
,1/2*2^(1/2))+4*I*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ellip
ticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*
cos(d*x+c)^2+I*A*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2*2^(1/2))*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2-A
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(

```
1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+I*B*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+A*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+5*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2)-B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)))*cos(d*x+c
)*(cos(d*x+c)+1)^2/(I*sin(d*x+c)+cos(d*x+c))/sin(d*x+c)^5/(cos(d*x+c)/sin(d
*x+c))^(3/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")

[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.64564, size = 1823, normalized size = 6.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")

[Out] -1/8*((a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-I*A^2 - 2*
A*B + I*B^2)/(a^2*d^2))*log(-2*((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(
2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B
^2)/(a^2*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A +
```

```
 B)) - (a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-I*A^2 - 2
*A*B + I*B^2)/(a^2*d^2))*log(2*((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(
2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B
^2)/(a^2*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A +
 B)) + 2*(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 -
4*A*B - 4*I*B^2)/(a^2*d^2))*log(-((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 - 4*A*B - 4*
I*B^2)/(a^2*d^2)) + A + 2*I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*(a*d*e^(4*I*
d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 - 4*A*B - 4*I*B^2)/(a^2
*d^2))*log(((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 - 4*A*B - 4*I*B^2)/(a^2*d^2)) - A
- 2*I*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*((I*A - 9*B)*e^(4*I*d*x + 4*I*c) +
 8*B*e^(2*I*d*x + 2*I*c) - I*A + B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) - 1)))/(a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)*cot(d*x + c)^(3/2)),
 x)
```

3.524 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx$

Optimal. Leaf size=307

$$\frac{-B+iA}{2d\cot^{\frac{3}{2}}(c+dx)(a\cot(c+dx)+ia)}-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(-B+iA)}{2ad\sqrt{\cot(c+dx)}}+\frac{((3-5i)A+(5+7i)B)\log\left(\cot(c+dx)\right.}{8\sqrt{2}ad}$$

```
[Out] ((1/4 + I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(Sqrt[2]*a*d) - ((1/4 + I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*a*d) - (3*A + (7*I)*B)/(6*a*d*Cot[c + d*x]
^(3/2)) - (5*(I*A - B))/(2*a*d*Sqrt[Cot[c + d*x]]) + (I*A - B)/(2*d*Cot[c +
 d*x]^(3/2)*(I*a + a*Cot[c + d*x])) + (((3 - 5*I)*A + (5 + 7*I)*B)*Log[1 -
Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2]*a*d) + ((1/8 + I/8)*
((1 + 4*I)*A - (6 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]
])/(Sqrt[2]*a*d)
```

Rubi [A] time = 0.513184, antiderivative size = 307, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{-B+iA}{2d\cot^{\frac{3}{2}}(c+dx)(a\cot(c+dx)+ia)}-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(-B+iA)}{2ad\sqrt{\cot(c+dx)}}+\frac{((3-5i)A+(5+7i)B)\log\left(\cot(c+dx)\right.}{8\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])),x]
```

```
[Out] ((1/4 + I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(Sqrt[2]*a*d) - ((1/4 + I/4)*((4 + I)*A + (1 + 6*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*a*d) - (3*A + (7*I)*B)/(6*a*d*Cot[c + d*x]
^(3/2)) - (5*(I*A - B))/(2*a*d*Sqrt[Cot[c + d*x]]) + (I*A - B)/(2*d*Cot[c +
 d*x]^(3/2)*(I*a + a*Cot[c + d*x])) + (((3 - 5*I)*A + (5 + 7*I)*B)*Log[1 -
Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(8*Sqrt[2]*a*d) + ((1/8 + I/8)*
((1 + 4*I)*A - (6 + I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]
])/(Sqrt[2]*a*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))}\,dx=\int \frac{B+A\cot(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(ia+a\cot(c+dx))}\,dx$$

$$=\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}+\frac{\int \frac{-\frac{1}{2}a(3A+7iB)-\frac{5}{2}a(iA-B)\cot(c+dx)}{\cot^{\frac{5}{2}}(c+dx)}\,dx}{2a^2}$$

$$=-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}+\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}+\frac{\int \frac{-\frac{5}{2}a(iA-B)+\frac{1}{2}a(3A+}{\cot^{\frac{3}{2}}(c+}}{2a^2}$$

$$=-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(iA-B)}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}+$$

$$=-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(iA-B)}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}+$$

$$=-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(iA-B)}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}-$$

$$=-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(iA-B)}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}-$$

$$=-\frac{3A+7iB}{6ad\cot^{\frac{3}{2}}(c+dx)}-\frac{5(iA-B)}{2ad\sqrt{\cot(c+dx)}}+\frac{iA-B}{2d\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}+$$

$$=\frac{((3+5i)A-(5-7i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{4\sqrt{2}ad}-\frac{((3+5i)A-(5-7i)B)\,\mathrm{t}}{4}$$

Mathematica [A] time = 2.66013, size = 242, normalized size = 0.79

$$\frac{(\cos(dx)+i\sin(dx))(A+B\tan(c+dx))\left(\frac{2}{3}\sec(c+dx)(\cos(dx)-i\sin(dx))(4(3A+2iB)\sin(2(c+dx))+(11B-15iA)\,\mathrm{c}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])),
x]
```

```
[Out] ((Cos[d*x] + I*Sin[d*x])*((-1 - I)*Csc[c + d*x]*(((4 + I)*A + (1 + 6*I)*B)*
ArcSin[Cos[c + d*x] - Sin[c + d*x]] + ((-1 - 4*I)*A + (6 + I)*B)*Log[Cos[c
+ d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(Cos[c] + I*Sin[c])*Sqrt[S
in[2*(c + d*x)]] + (2*Sec[c + d*x]*(Cos[d*x] - I*Sin[d*x])*((-15*I)*A + 19*
B + ((-15*I)*A + 11*B)*Cos[2*(c + d*x)] + 4*(3*A + (2*I)*B)*Sin[2*(c + d*x)
]))/3)*(A + B*Tan[c + d*x]))/(8*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*Si
n[c + d*x])*(a + I*a*Tan[c + d*x]))
```

Maple [C] time = 0.533, size = 3871, normalized size = 12.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] -1/12/a/d*2^(1/2)*(cos(d*x+c)-1)*(-15*A*cos(d*x+c)^3*EllipticF((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2)-3*I*B*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)-12*A*cos(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2-1/2*I,1/2*2^(1/2))+15*A*cos(d*x+c)*EllipticF((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)+11*B*cos(d*x+c)^2*2^(1/2)-4*B*cos(d*x+c)*2^(1/2)+3*A*cos(d*x+c
)^3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*B*cos(d*x+c)^3
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+12*A*cos(d*x+c)^3*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/
2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)
)^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+18*B*cos(d*x+c)*(-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+15*I*A*cos(d*x+c)^3*2^(1/
2)-15*I*A*2^(1/2)*cos(d*x+c)^2+8*I*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)-8*I*B*co
```

s(d*x+c)^2*sin(d*x+c)*2^(1/2)+15*B*sin(d*x+c)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2-11*B*2^(1/2)*cos(d*x+c)^3-12*A*sin(d*x+c)*2^(1/2)*cos(d*x+c)^2+12*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)+3*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+4*B*2^(1/2)+12*I*A*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+3*I*A*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-15*I*A*cos(d*x+c)^2*sin(d*x+c)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-18*I*B*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-18*B*cos(d*x+c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+3*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)+3*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)+12*I*A*cos(d*x+c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-3*I*A*cos(d*x+c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+18*I*B*cos(d*x+c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-3*I*B*cos(d*x+c)^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-15*I*B*cos(d*x+c)^3*EllipticF((-(cos(d*x+c)-1-sin(d*x

```
+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)-12*I*A*cos(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)+3*I*A*cos(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)-18*I*B*cos(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)+3*I*B*cos(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+
sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
+15*I*B*cos(d*x+c)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-12*A*cos(d*x
+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-18*
B*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2))*cos(d*x+c)*(cos(d*x+c)+1)^2/(I*sin(d*x+c)+cos(d*x+c))/(cos(d*x+c)/si
n(d*x+c))^(5/2)/sin(d*x+c)^6
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.76437, size = 2148, normalized size = 7.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/24*(3*(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d
*x + 2*I*c))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2))*log(1/2*((4*I*a*d*e^(2
*I*d*x + 2*I*c) - 4*I*a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2
*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^2*d^2)) - 4*(A - I*B)*e^(2*I*d*
x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*(a*d*e^(6*I*d*x + 6*I*c) +
2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((I*A^2 + 2*A*B -
I*B^2)/(a^2*d^2))*log(1/2*((-4*I*a*d*e^(2*I*d*x + 2*I*c) + 4*I*a*d)*sqrt((I
*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B -
I*B^2)/(a^2*d^2)) - 4*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(
I*A + B)) - 6*(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^
(2*I*d*x + 2*I*c))*sqrt((-4*I*A^2 + 12*A*B + 9*I*B^2)/(a^2*d^2))*log(-((a*d
*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) - 1))*sqrt((-4*I*A^2 + 12*A*B + 9*I*B^2)/(a^2*d^2)) + 2*I*A - 3*B)*e
^(-2*I*d*x - 2*I*c)/(a*d)) + 6*(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x
+ 4*I*c) + a*d*e^(2*I*d*x + 2*I*c))*sqrt((-4*I*A^2 + 12*A*B + 9*I*B^2)/(a^2
*d^2))*log(((a*d*e^(2*I*d*x + 2*I*c) - a*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-4*I*A^2 + 12*A*B + 9*I*B^2)/(a^2*d^2))
- 2*I*A + 3*B)*e^(-2*I*d*x - 2*I*c)/(a*d)) - 2*((27*A + 19*I*B)*e^(6*I*d*x
+ 6*I*c) + (3*A + 19*I*B)*e^(4*I*d*x + 4*I*c) - (27*A + 35*I*B)*e^(2*I*d*x
+ 2*I*c) - 3*A - 3*I*B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) - 1)))/(a*d*e^(6*I*d*x + 6*I*c) + 2*a*d*e^(4*I*d*x + 4*I*c) + a*d*e^(2*I
*d*x + 2*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+I*a*tan(d*x+c)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(dx+c\right)+A}{\left(i\,a\tan\left(dx+c\right)+a\right)\cot\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)*cot(d*x + c)^(5/2)),
 x)
```

3.525 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=317

$$\frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(\cot(c+dx)+i)}-\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d}-\frac{\left(\frac{1}{32}-\frac{i}{32}\right)((23+2i)A+(2+7i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+\right.}}{\sqrt{2}a^2d}$$

```
[Out] ((-1/16 + I/16)*((2 + 23*I)*A - (7 + 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*a^2*d) + (((25 + 21*I)*A - (9 - 5*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^2*d) - (5*(5*A + I*B)*Sqrt[Cot[c + d*
x]])/(8*a^2*d) + ((7*A + (3*I)*B)*Cot[c + d*x]^(3/2))/(8*a^2*d*(I + Cot[c +
 d*x])) + ((A + I*B)*Cot[c + d*x]^(5/2))/(4*d*(I*a + a*Cot[c + d*x])^2) - (
(1/32 - I/32)*((23 + 2*I)*A + (2 + 7*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x
]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d) + ((1/32 - I/32)*((23 + 2*I)*A + (2 + 7
*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d)
```

Rubi [A] time = 0.684994, antiderivative size = 317, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(\cot(c+dx)+i)}-\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d}-\frac{\left(\frac{1}{32}-\frac{i}{32}\right)((23+2i)A+(2+7i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+\right.}}{\sqrt{2}a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] ((-1/16 + I/16)*((2 + 23*I)*A - (7 + 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*a^2*d) + (((25 + 21*I)*A - (9 - 5*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^2*d) - (5*(5*A + I*B)*Sqrt[Cot[c + d*
x]])/(8*a^2*d) + ((7*A + (3*I)*B)*Cot[c + d*x]^(3/2))/(8*a^2*d*(I + Cot[c +
 d*x])) + ((A + I*B)*Cot[c + d*x]^(5/2))/(4*d*(I*a + a*Cot[c + d*x])^2) - (
(1/32 - I/32)*((23 + 2*I)*A + (2 + 7*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x
]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d) + ((1/32 - I/32)*((23 + 2*I)*A + (2 + 7
*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \int \frac{\cot^{\frac{5}{2}}(c+dx)(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^2}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{\cot^{\frac{3}{2}}(c+dx)\left(-\frac{5}{2}a(iA-B)+\frac{1}{2}a(9A+iB)\cot(c+dx)\right)}{ia+a\cot(c+dx)}\,dx}{4a^2}$$

$$= \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} + \frac{\int \sqrt{\cot(c+dx)}\left(-\frac{3}{2}a^2(\right.}{}$$

$$= -\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d} + \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+d}{4d(ia+a\cot(c+dx}$$

$$= -\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d} + \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+d}{4d(ia+a\cot(c+dx}$$

$$= -\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d} + \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+d}{4d(ia+a\cot(c+dx}$$

$$= -\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d} + \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+d}{4d(ia+a\cot(c+dx}$$

$$= -\frac{5(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d} + \frac{(7A+3iB)\cot^{\frac{3}{2}}(c+dx)}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{5}{2}}(c+d}{4d(ia+a\cot(c+dx}$$

$$= -\frac{((25+21i)A-(9-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^2d} + \frac{((25+21i)A-(9}{}$$

Mathematica [A] time = 2.50236, size = 256, normalized size = 0.81

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(\cot(c+dx)(-2\cos(2dx)+2i\sin(2dx))((-7B+43iA)\sin(2(c+d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
2,x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(Csc[c + d*x]*(((21 - 25*I)*A + (5
+ 9*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((23 + 2*I)*A + (2
+ 7*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(I*Cos
```

```
[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]] + Cot[c + d*x]*(-2*Cos[2*d*x] + (2
*I)*Sin[2*d*x])*(-9*A - (5*I)*B + (41*A + (5*I)*B)*Cos[2*(c + d*x)] + ((43*
I)*A - 7*B)*Sin[2*(c + d*x)]))*(A + B*Tan[c + d*x]))/(32*d*Sqrt[Cot[c + d*x
]]*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2)
```

Maple [C] time = 0.652, size = 2507, normalized size = 7.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] 1/16/a^2/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(3/2)*sin(d*x+c)*(-9*B*cos(d*x+c
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+23*A*cos(d*x+c)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-7*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(
1/2)-5*I*B*2^(1/2)*cos(d*x+c)+5*A*cos(d*x+c)^3*2^(1/2)-25*A*cos(d*x+c)*2^(1
/2)-4*I*A*cos(d*x+c)^4*sin(d*x+c)*2^(1/2)+7*B*cos(d*x+c)*(-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+4*A*cos(d*x+c)^5*2^(1/2)+3*B*cos(d*x+c
)^2*sin(d*x+c)*2^(1/2)+23*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2
^(1/2))+7*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+21*I*A*E
llipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-23*I*A*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2-1/2*I,1/2*2^(1/2))+2*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2
*I,1/2*2^(1/2))+7*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ell
ipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2)
```

```
)-2*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+2*A*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*B*cos(d*x+c)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*A*cos(d*x+c)*((cos(d*x+c)-1+sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-9*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)+2*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+21*I*A
*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)-23*I*A*(-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)+2*I*A*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)+7*I*B*(-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)-2*I*B*(-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)+4*I*B*cos(d*x+c)^5*2^(1/2)+4*B
*cos(d*x+c)^4*sin(d*x+c)*2^(1/2)+I*B*cos(d*x+c)^3*2^(1/2))/cos(d*x+c)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.77258, size = 1783, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] 1/32*(2*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*l
og(1/4*((8*I*a^2*d*e^(2*I*d*x + 2*I*c) - 8*I*a^2*d)*sqrt((I*e^(2*I*d*x + 2*
I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)
) - 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a^
2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/4*((-
8*I*a^2*d*e^(2*I*d*x + 2*I*c) + 8*I*a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - 8*(A
- I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + a^2*d*sqrt((-
529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/8*((a^
2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) - 1))*sqrt((-529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2)) + 23*I*
A - 7*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) - a^2*d*sqrt((-529*I*A^2 + 322*A*B +
 49*I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I
*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sq
rt((-529*I*A^2 + 322*A*B + 49*I*B^2)/(a^4*d^2)) - 23*I*A + 7*B)*e^(-2*I*d*x
 - 2*I*c)/(a^2*d)) - 2*(6*(7*A + I*B)*e^(4*I*d*x + 4*I*c) - (9*A + 5*I*B)*e
^(2*I*d*x + 2*I*c) - A - I*B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1)))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(ia\tan(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(I*a*tan(d*x + c) + a)^2,
 x)
```

3.526 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=284

$$\frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(\cot(c+dx)+i)}+\frac{\left(\frac{1}{32}+\frac{i}{32}\right)((2+i)B-(7-2i)A)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{\sqrt{2}a^2d}+\frac{((9+5i)A-(1+3$$

```
[Out] (((9 - 5*I)*A + (1 - 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sq
rt[2]*a^2*d) + ((1/16 + I/16)*((-2 + 7*I)*A + (1 + 2*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*a^2*d) + ((5*A + I*B)*Sqrt[Cot[c + d*x]])/
(8*a^2*d*(I + Cot[c + d*x])) + ((A + I*B)*Cot[c + d*x]^(3/2))/(4*d*(I*a + a
*Cot[c + d*x])^2) + ((1/32 + I/32)*((-7 + 2*I)*A + (2 + I)*B)*Log[1 - Sqrt[
2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d) + (((9 + 5*I)*A - (1
 + 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*
a^2*d)
```

Rubi [A] time = 0.61032, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3581, 3595, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(\cot(c+dx)+i)}+\frac{\left(\frac{1}{32}+\frac{i}{32}\right)((2+i)B-(7-2i)A)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{\sqrt{2}a^2d}+\frac{((9+5i)A-(1+3$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^2,x]
```


```
[Out] (((9 - 5*I)*A + (1 - 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sq
rt[2]*a^2*d) + ((1/16 + I/16)*((-2 + 7*I)*A + (1 + 2*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*a^2*d) + ((5*A + I*B)*Sqrt[Cot[c + d*x]])/
(8*a^2*d*(I + Cot[c + d*x])) + ((A + I*B)*Cot[c + d*x]^(3/2))/(4*d*(I*a + a
*Cot[c + d*x])^2) + ((1/32 + I/32)*((-7 + 2*I)*A + (2 + I)*B)*Log[1 - Sqrt[
2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d) + (((9 + 5*I)*A - (1
 + 3*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*
a^2*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^2}\,dx = \int \frac{\cot^{\frac{3}{2}}(c+dx)(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^2}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{\sqrt{\cot(c+dx)}\left(-\frac{3}{2}a(iA-B)+\frac{1}{2}a(7A-iB)\cot(c+dx)\right)}{ia+a\cot(c+dx)}\,dx}{4a^2}$$

$$= \frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{-\frac{1}{2}a^2(5iA-B)+\frac{3}{2}a^2(3A-iB)\,c}{\sqrt{\cot(c+dx)}}}{8a^4}$$

$$= \frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} + \frac{\text{Subst}\left(\int \frac{\frac{1}{2}a^2(5iA-B)-\frac{3}{2}a^2}{1+x^4}\right.}{}$$

$$= \frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} + \frac{((9+5i)A-(1+3i)B)\,\mathrm{S}}{}$$

$$= \frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} - \frac{((9+5i)A-(1+3i)B)\,\mathrm{S}}{}$$

$$= \frac{(5A+iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{4d(ia+a\cot(c+dx))^2} - \frac{((9+5i)A-(1+3i)B)\,\mathrm{l}}{}$$

$$= \frac{((9-5i)A+(1-3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^2d} - \frac{((9-5i)A+(1-3i)B}{1}$$

Mathematica [A] time = 1.99752, size = 243, normalized size = 0.86

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(4\cos(c+dx)(\cos(2dx)-i\sin(2dx))((-B+5iA)\sin(c+dx)+(7\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
2,x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(4*Cos[c + d*x]*(Cos[2*d*x] - I*Sin
[2*d*x])*((7*A + (3*I)*B)*Cos[c + d*x] + ((5*I)*A - B)*Sin[c + d*x]) + Csc[
c + d*x]*(((5 + 9*I)*A + (3 + I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (
1 + I)*((2 + 7*I)*A + (1 - 2*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[S
in[2*(c + d*x)]]])*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]])*(A + B*T
an[c + d*x]))/(32*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a
```

```
+ I*a*Tan[c + d*x])^2)
```

Maple [C] time = 0.592, size = 1517, normalized size = 5.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] -1/16/a^2/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x
+c)-1)*(B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+7*A*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
,1/2-1/2*I,1/2*2^(1/2))*sin(d*x+c)-9*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2),1/2*2^(1/2))-5*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)+4*B*cos(d*x+c)^3*sin
(d*x+c)*2^(1/2)-3*A*cos(d*x+c)^3*2^(1/2)+3*A*2^(1/2)*cos(d*x+c)^2+2*A*sin(d
*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+4*A*cos(d*x+c)
^4*2^(1/2)+B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(d*x
+c)+4*I*A*cos(d*x+c)^4*sin(d*x+c)*2^(1/2)-4*I*A*cos(d*x+c)^3*sin(d*x+c)*2^(
1/2)-4*A*cos(d*x+c)^5*2^(1/2)-B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+3*I*B*sin(d
*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-2*I*A*sin(d*x+c)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+7*I*A*sin(d*x+c)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*I*B*sin(d*x+c)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+5*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-2
```

```
*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-I*B*2^
(1/2)*cos(d*x+c)^2-4*I*B*cos(d*x+c)^5*2^(1/2)+4*I*B*cos(d*x+c)^4*2^(1/2)-4*
B*cos(d*x+c)^4*sin(d*x+c)*2^(1/2)+I*B*cos(d*x+c)^3*2^(1/2))/sin(d*x+c)^3/co
s(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.55716, size = 1715, normalized size = 6.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] 1/32*(2*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*
log(-2*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) + (A
- I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a^2*d*sqrt(
(-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(2*((a^2*d*e^(2*
I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) - (A - I*B)*e^(2*I*d*x +
2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a^2*d*sqrt((49*I*A^2 + 14*A*B - I
*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) -
 a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((4
9*I*A^2 + 14*A*B - I*B^2)/(a^4*d^2)) + 7*A - I*B)*e^(-2*I*d*x - 2*I*c)/(a^2
*d)) + a^2*d*sqrt((49*I*A^2 + 14*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c
)*log(1/8*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c)
```

```
+ I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((49*I*A^2 + 14*A*B - I*B^2)/(a^4*d^2))
 - 7*A + I*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + 2*((-6*I*A + 2*B)*e^(4*I*d*x
+ 4*I*c) + (5*I*A - B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(i\,a\tan(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(I*a*tan(d*x + c) + a)^2,
 x)
```

3.527 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=274

$$\frac{(B+3iA)\sqrt{\cot(c+dx)}}{8a^2d(\cot(c+dx)+i)}+\frac{((1+3i)A+(1-3i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^2d}-\frac{((1+3i)A+(1-3i)B)\log}{}$$

```
[Out] -((((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*
Sqrt[2]*a^2*d) + (((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(16*Sqrt[2]*a^2*d) + (((3*I)*A + B)*Sqrt[Cot[c + d*x]])/(8*a^2*
d*(I + Cot[c + d*x])) + ((A + I*B)*Sqrt[Cot[c + d*x]])/(4*d*(I*a + a*Cot[c
+ d*x])^2) + (((1 + 3*I)*A + (1 - 3*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
] + Cot[c + d*x]])/(32*Sqrt[2]*a^2*d) - (((1 + 3*I)*A + (1 - 3*I)*B)*Log[1
+ Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^2*d)
```

Rubi [A] time = 0.575973, antiderivative size = 274, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(B+3iA)\sqrt{\cot(c+dx)}}{8a^2d(\cot(c+dx)+i)}+\frac{((1+3i)A+(1-3i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^2d}-\frac{((1+3i)A+(1-3i)B)\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^2),x]
```


```
[Out] -((((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*
Sqrt[2]*a^2*d) + (((-1 + 3*I)*A + (1 + 3*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(16*Sqrt[2]*a^2*d) + (((3*I)*A + B)*Sqrt[Cot[c + d*x]])/(8*a^2*
d*(I + Cot[c + d*x])) + ((A + I*B)*Sqrt[Cot[c + d*x]])/(4*d*(I*a + a*Cot[c
+ d*x])^2) + (((1 + 3*I)*A + (1 - 3*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
] + Cot[c + d*x]])/(32*Sqrt[2]*a^2*d) - (((1 + 3*I)*A + (1 - 3*I)*B)*Log[1
+ Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^2*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
```

```
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^2}\,dx = \int \frac{\sqrt{\cot(c+dx)}(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^2}\,dx$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{-\frac{1}{2}a(iA-B)+\frac{1}{2}a(5A-3iB)\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}\,dx}{4a^2}$$

$$= \frac{(3iA+B)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{\frac{1}{2}a^2(A-3iB)-\frac{1}{2}a^2(3iA+B)\cot}{\sqrt{\cot(c+dx)}}}{8a^4}$$

$$= \frac{(3iA+B)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\text{Subst}\left(\int \frac{-\frac{1}{2}a^2(A-3iB)+\frac{1}{2}a^2}{1+x^4}\right.}{}$$

$$= \frac{(3iA+B)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} - \frac{((1+3i)A+(1-3i)B)\,\text{S}}{}$$

$$= \frac{(3iA+B)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{((1+3i)A+(1-3i)B)\,\text{S}}{}$$

$$= \frac{(3iA+B)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(A+iB)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{((1+3i)A+(1-3i)B)\,\text{lo}}{}$$

$$= -\frac{((-1+3i)A+(1+3i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^2d} + \frac{((-1+3i)A+(1+}{}$$

Mathematica [A] time = 1.91462, size = 243, normalized size = 0.89

$$\frac{\csc(c+dx)(\cos(dx)+i\sin(dx))^2(A\cot(c+dx)+B)\left(4\cos(c+dx)(\sin(2dx)+i\cos(2dx))((3B+iA)\sin(c+dx)+(3A-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^2
),x]
```

```
[Out] ((B + A*Cot[c + d*x])*Csc[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(4*Cos[c + d*x
]*(I*Cos[2*d*x] + Sin[2*d*x])*((3*A - I*B)*Cos[c + d*x] + (I*A + 3*B)*Sin[c
 + d*x]) + (1 - I)*Csc[c + d*x]*(((1 + 2*I)*A + (2 + I)*B)*ArcSin[Cos[c + d
*x] - Sin[c + d*x]] + ((-2 - I)*A + (1 + 2*I)*B)*Log[Cos[c + d*x] + Sin[c +
 d*x] + Sqrt[Sin[2*(c + d*x)]]])*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*
x)]]))/(32*a^2*d*Sqrt[Cot[c + d*x]]*(I + Cot[c + d*x])^2*(A*Cos[c + d*x] +
```

```
B*Sin[c + d*x]))
```

Maple [C] time = 0.575, size = 5032, normalized size = 18.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.599, size = 1717, normalized size = 6.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] -1/32*(2*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*
log(1/4*((8*I*a^2*d*e^(2*I*d*x + 2*I*c) - 8*I*a^2*d)*sqrt((I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2
)) - 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a
^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/4*((
```

```
-8*I*a^2*d*e^(2*I*d*x + 2*I*c) + 8*I*a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - 8*(A
 - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - a^2*d*sqrt((
-I*A^2 + 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(1/8*((a^2*d*e^(2
*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1))*sqrt((-I*A^2 + 2*A*B + I*B^2)/(a^4*d^2)) + I*A - B)*e^(-2*I*d*x -
 2*I*c)/(a^2*d)) + a^2*d*sqrt((-I*A^2 + 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*
x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 + 2*A*B + I*B^2)/(a^
4*d^2)) - I*A + B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) - 2*(2*(A - I*B)*e^(4*I*d*
x + 4*I*c) - (A - 3*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt((I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^2\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^2*sqrt(cot(d*x + c))
), x)
```

3.528 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=284

$$\frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(\cot(c+dx)+i)}+\frac{((1-3i)A-(9-5i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^2d}+\frac{\left(\frac{1}{32}+\frac{i}{32}\right)((1+2i)A+(2-$$

```
[Out] ((-1/16 - I/16)*((2 + I)*A + (7 - 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d
*x]]])/(Sqrt[2]*a^2*d) + (((1 + 3*I)*A + (9 + 5*I)*B)*ArcTan[1 + Sqrt[2]*Sq
rt[Cot[c + d*x]]])/(16*Sqrt[2]*a^2*d) + ((A + (5*I)*B)*Sqrt[Cot[c + d*x]])/
(8*a^2*d*(I + Cot[c + d*x])) + ((I*A - B)*Sqrt[Cot[c + d*x]])/(4*d*(I*a + a
*Cot[c + d*x])^2) + (((1 - 3*I)*A - (9 - 5*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c
 + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^2*d) + ((1/32 + I/32)*((1 + 2*I)*A
+ (2 - 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]
*a^2*d)
```

Rubi [A] time = 0.600984, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3581, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(\cot(c+dx)+i)}+\frac{((1-3i)A-(9-5i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^2d}+\frac{\left(\frac{1}{32}+\frac{i}{32}\right)((1+2i)A+(2-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2),x]
```


```
[Out] ((-1/16 - I/16)*((2 + I)*A + (7 - 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d
*x]]])/(Sqrt[2]*a^2*d) + (((1 + 3*I)*A + (9 + 5*I)*B)*ArcTan[1 + Sqrt[2]*Sq
rt[Cot[c + d*x]]])/(16*Sqrt[2]*a^2*d) + ((A + (5*I)*B)*Sqrt[Cot[c + d*x]])/
(8*a^2*d*(I + Cot[c + d*x])) + ((I*A - B)*Sqrt[Cot[c + d*x]])/(4*d*(I*a + a
*Cot[c + d*x])^2) + (((1 - 3*I)*A - (9 - 5*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c
 + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^2*d) + ((1/32 + I/32)*((1 + 2*I)*A
+ (2 - 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]
*a^2*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx = \int \frac{B+A\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}\,dx$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{\frac{1}{2}a(A-7iB)-\frac{3}{2}a(iA-B)\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))}dx}{4a^2}$$

$$= \frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(iA-B)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\int \frac{-\frac{3}{2}a^2(iA+3B)-\frac{1}{2}a^2(A+5iB)\text{co}}{\sqrt{\cot(c+dx)}}}{8a^4}$$

$$= \frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(iA-B)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\text{Subst}\left(\int \frac{\frac{3}{2}a^2(iA+3B)+\frac{1}{2}a^2(}{1+x^4}\right.}{4}$$

$$= \frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(iA-B)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{\left(\left(\frac{1}{16}+\frac{i}{16}\right)((1+2i)A+(\right.}{}$$

$$= \frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(iA-B)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{((1-3i)A-(9-5i)B)\,\text{Su}}{}$$

$$= \frac{(A+5iB)\sqrt{\cot(c+dx)}}{8a^2d(i+\cot(c+dx))} + \frac{(iA-B)\sqrt{\cot(c+dx)}}{4d(ia+a\cot(c+dx))^2} + \frac{((1-3i)A-(9-5i)B)\log}{}$$

$$= -\frac{((1+3i)A+(9+5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^2d} + \frac{((1+3i)A+(9+5i)}{}$$

Mathematica [A] time = 2.4056, size = 241, normalized size = 0.85

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(4\cos(c+dx)(\cos(2dx)-i\sin(2dx))((-7B+3iA)\sin(c+dx)+(A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^2
),x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(4*Cos[c + d*x]*(Cos[2*d*x] - I*Sin
[2*d*x])*((A + (5*I)*B)*Cos[c + d*x] + ((3*I)*A - 7*B)*Sin[c + d*x]) - (1 +
 I)*Csc[c + d*x]*(((-1 + 2*I)*A + (2 + 7*I)*B)*ArcSin[Cos[c + d*x] - Sin[c
+ d*x]] + ((-2 + I)*A + (7 + 2*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt
[Sin[2*(c + d*x)]]])*(I*Cos[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]])*(A + B
*Tan[c + d*x]))/(32*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*Sin[c + d*x])*
```

```
(a + I*a*Tan[c + d*x])^2)
```

Maple [C] time = 0.493, size = 5040, normalized size = 17.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.57719, size = 1719, normalized size = 6.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] -1/32*(2*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)
*log(-2*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) + (A
 - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 2*a^2*d*sqrt
((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(2*((a^2*d*e^(2
```

```
*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^4*d^2)) - (A - I*B)*e^(2*I*d*x +
 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + a^2*d*sqrt((I*A^2 + 14*A*B - 49*
I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*c)*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c)
- a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((
I*A^2 + 14*A*B - 49*I*B^2)/(a^4*d^2)) + A - 7*I*B)*e^(-2*I*d*x - 2*I*c)/(a^
2*d)) - a^2*d*sqrt((I*A^2 + 14*A*B - 49*I*B^2)/(a^4*d^2))*e^(4*I*d*x + 4*I*
c)*log(1/8*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 14*A*B - 49*I*B^2)/(a^4*d^2)
) - A + 7*I*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) - 2*((-2*I*A + 6*B)*e^(4*I*d*x
 + 4*I*c) + (3*I*A - 7*B)*e^(2*I*d*x + 2*I*c) - I*A + B)*sqrt((I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^2\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^2*cot(d*x + c)^(3/2)
), x)
```

3.529 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx$

Optimal. Leaf size=319

$$\frac{5(-5B+iA)}{8a^2d\sqrt{\cot(c+dx)}}+\frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(\cot(c+dx)+i)}-\frac{\left(\frac{1}{32}-\frac{i}{32}\right)((7+2i)A+(2+23i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\text{co}}\right.}{\sqrt{2}a^2d}$$

```
[Out] ((-1/16 + I/16)*((2 + 7*I)*A - (23 + 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*a^2*d) + (((9 + 5*I)*A - (25 - 21*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^2*d) + (5*(I*A - 5*B))/(8*a^2*d*Sqrt[
Cot[c + d*x]]) + (3*A + (7*I)*B)/(8*a^2*d*Sqrt[Cot[c + d*x]]*(I + Cot[c + d
*x])) + (I*A - B)/(4*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])^2) - ((1/3
2 - I/32)*((7 + 2*I)*A + (2 + 23*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] +
 Cot[c + d*x]])/(Sqrt[2]*a^2*d) + ((1/32 - I/32)*((7 + 2*I)*A + (2 + 23*I)*
B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d)
```

Rubi [A] time = 0.680288, antiderivative size = 319, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{5(-5B+iA)}{8a^2d\sqrt{\cot(c+dx)}}+\frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(\cot(c+dx)+i)}-\frac{\left(\frac{1}{32}-\frac{i}{32}\right)((7+2i)A+(2+23i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\text{co}}\right.}{\sqrt{2}a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2),x]
```


```
[Out] ((-1/16 + I/16)*((2 + 7*I)*A - (23 + 2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*a^2*d) + (((9 + 5*I)*A - (25 - 21*I)*B)*ArcTan[1 + Sqrt[
2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^2*d) + (5*(I*A - 5*B))/(8*a^2*d*Sqrt[
Cot[c + d*x]]) + (3*A + (7*I)*B)/(8*a^2*d*Sqrt[Cot[c + d*x]]*(I + Cot[c + d
*x])) + (I*A - B)/(4*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])^2) - ((1/3
2 - I/32)*((7 + 2*I)*A + (2 + 23*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] +
 Cot[c + d*x]])/(Sqrt[2]*a^2*d) + ((1/32 - I/32)*((7 + 2*I)*A + (2 + 23*I)*
B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^2*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^2}\,dx = \int \frac{B+A\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))^2}\,dx$$

$$= \frac{iA-B}{4d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2} + \frac{\int \frac{-\frac{1}{2}a(A+9iB)-\frac{5}{2}a(iA-B)\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))}dx}{4a^2}$$

$$= \frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(i+\cot(c+dx))} + \frac{iA-B}{4d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2} + $$

$$= \frac{5(iA-5B)}{8a^2d\sqrt{\cot(c+dx)}} + \frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(i+\cot(c+dx))} + \frac{iA-}{4d\sqrt{\cot(c+dx)}(ia}$$

$$= \frac{5(iA-5B)}{8a^2d\sqrt{\cot(c+dx)}} + \frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(i+\cot(c+dx))} + \frac{iA-}{4d\sqrt{\cot(c+dx)}(ia}$$

$$= \frac{5(iA-5B)}{8a^2d\sqrt{\cot(c+dx)}} + \frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(i+\cot(c+dx))} + \frac{iA-}{4d\sqrt{\cot(c+dx)}(ia}$$

$$= \frac{5(iA-5B)}{8a^2d\sqrt{\cot(c+dx)}} + \frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(i+\cot(c+dx))} + \frac{iA-}{4d\sqrt{\cot(c+dx)}(ia}$$

$$= \frac{5(iA-5B)}{8a^2d\sqrt{\cot(c+dx)}} + \frac{3A+7iB}{8a^2d\sqrt{\cot(c+dx)}(i+\cot(c+dx))} + \frac{iA-}{4d\sqrt{\cot(c+dx)}(ia}$$

$$= -\frac{((9+5i)A-(25-21i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^2d} + \frac{((9+5i)A-(25-}{}$$

Mathematica [A] time = 2.75635, size = 249, normalized size = 0.78

$$\frac{\sec(c+dx)(\cos(dx)+i\sin(dx))^2(A+B\tan(c+dx))\left(2(\sin(2dx)+i\cos(2dx))((-43B+7iA)\sin(2(c+dx))+(5A+41i\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^2
),x]
```

```
[Out] (Sec[c + d*x]*(Cos[d*x] + I*Sin[d*x])^2*(Csc[c + d*x]*(((5 - 9*I)*A + (21 +
 25*I)*B)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((7 + 2*I)*A + (2 +
```

```
23*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(I*Cos
[2*c] - Sin[2*c])*Sqrt[Sin[2*(c + d*x)]] + 2*(I*Cos[2*d*x] + Sin[2*d*x])*(5
*A + (9*I)*B + (5*A + (41*I)*B)*Cos[2*(c + d*x)] + ((7*I)*A - 43*B)*Sin[2*(
c + d*x)]))*(A + B*Tan[c + d*x]))/(32*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x]
+ B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^2)
```

Maple [C] time = 0.497, size = 5063, normalized size = 15.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.67515, size = 2032, normalized size = 6.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="fricas")
```

```
[Out] 1/32*(2*(a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((I*A^2
 + 2*A*B - I*B^2)/(a^4*d^2))*log(1/4*((8*I*a^2*d*e^(2*I*d*x + 2*I*c) - 8*I*
```

```
a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*
A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - 8*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*
d*x - 2*I*c)/(I*A + B)) - 2*(a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x +
 4*I*c))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2))*log(1/4*((-8*I*a^2*d*e^(2*
I*d*x + 2*I*c) + 8*I*a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^4*d^2)) - 8*(A - I*B)*e^(2*I*d
*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + (a^2*d*e^(6*I*d*x + 6*I*c) +
 a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((-49*I*A^2 + 322*A*B + 529*I*B^2)/(a^4*d^2
))*log(1/8*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-49*I*A^2 + 322*A*B + 529*I*B^2)/(a^
4*d^2)) + 7*I*A - 23*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) - (a^2*d*e^(6*I*d*x +
 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*c))*sqrt((-49*I*A^2 + 322*A*B + 529*I*B^2)
/(a^4*d^2))*log(-1/8*((a^2*d*e^(2*I*d*x + 2*I*c) - a^2*d)*sqrt((I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-49*I*A^2 + 322*A*B + 529*
I*B^2)/(a^4*d^2)) - 7*I*A + 23*B)*e^(-2*I*d*x - 2*I*c)/(a^2*d)) + 2*(6*(A +
 7*I*B)*e^(6*I*d*x + 6*I*c) - (A + 33*I*B)*e^(4*I*d*x + 4*I*c) - 2*(3*A + 5
*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2
*I*d*x + 2*I*c) - 1)))/(a^2*d*e^(6*I*d*x + 6*I*c) + a^2*d*e^(4*I*d*x + 4*I*
c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^2\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^2,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^2*cot(d*x + c)^(5/2)
), x)
```

3.530 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=367

$$\frac{7(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{24d\left(a^3\cot(c+dx)+ia^3\right)}-\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d}-\frac{\left(\frac{1}{32}-\frac{i}{32}\right)((29+i)A+(1+6i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+\right.}{\sqrt{2}a^3d}$$

```
[Out] ((-1/16 + I/16)*((1 + 29*I)*A - (6 + I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c +
d*x]]])/(Sqrt[2]*a^3*d) + (((30 + 28*I)*A - (7 - 5*I)*B)*ArcTan[1 + Sqrt[2]
*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^3*d) - (5*(6*A + I*B)*Sqrt[Cot[c + d*x]
])/(8*a^3*d) + ((A + I*B)*Cot[c + d*x]^(7/2))/(6*d*(I*a + a*Cot[c + d*x])^3
) + ((5*A + (2*I)*B)*Cot[c + d*x]^(5/2))/(12*a*d*(I*a + a*Cot[c + d*x])^2)
+ (7*(4*A + I*B)*Cot[c + d*x]^(3/2))/(24*d*(I*a^3 + a^3*Cot[c + d*x])) - ((
1/32 - I/32)*((29 + I)*A + (1 + 6*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]
+ Cot[c + d*x]])/(Sqrt[2]*a^3*d) + ((1/32 - I/32)*((29 + I)*A + (1 + 6*I)*B
)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^3*d)
```

Rubi [A] time = 0.918336, antiderivative size = 367, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{7(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{24d\left(a^3\cot(c+dx)+ia^3\right)}-\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d}-\frac{\left(\frac{1}{32}-\frac{i}{32}\right)((29+i)A+(1+6i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+\right.}{\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] ((-1/16 + I/16)*((1 + 29*I)*A - (6 + I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c +
d*x]]])/(Sqrt[2]*a^3*d) + (((30 + 28*I)*A - (7 - 5*I)*B)*ArcTan[1 + Sqrt[2]
*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^3*d) - (5*(6*A + I*B)*Sqrt[Cot[c + d*x]
])/(8*a^3*d) + ((A + I*B)*Cot[c + d*x]^(7/2))/(6*d*(I*a + a*Cot[c + d*x])^3
) + ((5*A + (2*I)*B)*Cot[c + d*x]^(5/2))/(12*a*d*(I*a + a*Cot[c + d*x])^2)
+ (7*(4*A + I*B)*Cot[c + d*x]^(3/2))/(24*d*(I*a^3 + a^3*Cot[c + d*x])) - ((
1/32 - I/32)*((29 + I)*A + (1 + 6*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]
+ Cot[c + d*x]])/(Sqrt[2]*a^3*d) + ((1/32 - I/32)*((29 + I)*A + (1 + 6*I)*B
)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
```

```
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \int \frac{\cot^{\frac{7}{2}}(c+dx)(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^3}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{\int \frac{\cot^{\frac{5}{2}}(c+dx)\left(-\frac{7}{2}a(iA-B)+\frac{1}{2}a(13A+iB)\cot(c+dx)\right)}{(ia+a\cot(c+dx))^2}dx}{6a^2}$$

$$= \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{\int \frac{\cot^{\frac{3}{2}}(c+dx)\left(-5a^2(5iA-2B\right.}{ia+a\,\mathrm{co}}}{2}$$

$$= \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{7(4A+iB)\cot^{\frac{3}{2}}(c+}{24d\left(ia^3+a^3\cot(c+\right.}$$

$$= -\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d} + \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+}{12ad(ia+a\cot(c+d}$$

$$= -\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d} + \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+}{12ad(ia+a\cot(c+d}$$

$$= -\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d} + \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+}{12ad(ia+a\cot(c+d}$$

$$= -\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d} + \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+}{12ad(ia+a\cot(c+d}$$

$$= -\frac{5(6A+iB)\sqrt{\cot(c+dx)}}{8a^3d} + \frac{(A+iB)\cot^{\frac{7}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(5A+2iB)\cot^{\frac{5}{2}}(c+}{12ad(ia+a\cot(c+d}$$

$$= -\frac{((30+28i)A-(7-5i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^3d} + \frac{((30+28i)A-(7}{}$$

Mathematica [A] time = 3.57323, size = 284, normalized size = 0.77

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{2}{3}\cot(c+dx)(\cos(3dx)-i\sin(3dx))((49A+19iB)\cos(c+dx)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((2*Cot[c + d*x]*(Cos[3*d*x] - I*
Sin[3*d*x])*((49*A + (19*I)*B)*Cos[c + d*x] - (145*A + (19*I)*B)*Cos[3*(c +
 d*x)] + 6*((-19*I)*A + 2*B + 7*((-7*I)*A + B)*Cos[2*(c + d*x)])*Sin[c + d*
x]))/3 + Csc[c + d*x]*(((28 - 30*I)*A + (5 + 7*I)*B)*ArcSin[Cos[c + d*x] -
Sin[c + d*x]] - (1 + I)*((29 + I)*A + (1 + 6*I)*B)*Log[Cos[c + d*x] + Sin[c
 + d*x] + Sqrt[Sin[2*(c + d*x)]]])*(I*Cos[3*c] - Sin[3*c])*Sqrt[Sin[2*(c +
d*x)]])*(A + B*Tan[c + d*x]))/(32*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*
Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3)
```

Maple [C] time = 0.741, size = 2577, normalized size = 7.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] 1/48/a^3/d*2^(1/2)*sin(d*x+c)*(cos(d*x+c)/sin(d*x+c))^(3/2)*(-21*B*cos(d*x+
c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+87*A*cos(d*x+c)*(-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+18*A*cos(d*x+c)^3*2^(1/2)-90*A*c
os(d*x+c)*2^(1/2)-16*I*A*cos(d*x+c)^6*sin(d*x+c)*2^(1/2)-16*I*A*cos(d*x+c)^
4*sin(d*x+c)*2^(1/2)-28*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+18*B*cos(d*x+c)
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+16*A*cos(d*x+c)^7*2
^(1/2)+3*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-87*I*A*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+84*I*A*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2*2^(1/2))-3*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)+18*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*E
```

```
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/
2))+8*A*cos(d*x+c)^5*2^(1/2)+7*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+87*A*(-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+18*B*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+
1/2*I,1/2*2^(1/2))+3*B*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I
,1/2*2^(1/2))+3*A*cos(d*x+c)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*
2^(1/2))-21*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+3*B*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-4*I*B*cos(d*x+c)^5*2^(1/2)+16*I*B
*cos(d*x+c)^7*2^(1/2)+4*B*cos(d*x+c)^4*sin(d*x+c)*2^(1/2)+18*I*B*cos(d*x+c)
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-87*I*A*cos(d*x+c)*(
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+84*I*A*cos(d*x+c)*(-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-3*I*B*cos(d*x+c)*(-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+16*B*cos(d*x+c)^6*sin(d*x+c)*2^(1/2)+
3*I*B*cos(d*x+c)^3*2^(1/2)-15*I*B*cos(d*x+c)*2^(1/2)+3*I*A*cos(d*x+c)*Ellip
ticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2))/cos(d*x+c)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.67205, size = 1854, normalized size = 5.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*l
og(1/8*((16*I*a^3*d*e^(2*I*d*x + 2*I*c) - 16*I*a^3*d)*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^
2)) - 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3
*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*
((-16*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) -
16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3*a^3*d
*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(
1/8*((a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(
e^(2*I*d*x + 2*I*c) - 1))*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2))
 + 29*I*A - 6*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 3*a^3*d*sqrt((-841*I*A^2 +
 348*A*B + 36*I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*((a^3*d*e^(2*I
*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) - 1))*sqrt((-841*I*A^2 + 348*A*B + 36*I*B^2)/(a^6*d^2)) - 29*I*A + 6*B)*e
^(-2*I*d*x - 2*I*c)/(a^3*d)) - 2*(2*(73*A + 10*I*B)*e^(6*I*d*x + 6*I*c) - (
41*A + 14*I*B)*e^(4*I*d*x + 4*I*c) - (8*A + 5*I*B)*e^(2*I*d*x + 2*I*c) - A
- I*B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-6*I
*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(i\,a\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(I*a*tan(d*x + c) + a)^3,
 x)
```

3.531 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=318

$$-\frac{((7+5i)A-2iB)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}+\frac{((7+5i)A-2iB)\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}$$

```
[Out] -((((-7 + 5*I)*A + (2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt
[2]*a^3*d) + (((-7 + 5*I)*A + (2*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(16*Sqrt[2]*a^3*d) + ((A + I*B)*Cot[c + d*x]^(5/2))/(6*d*(I*a + a*Cot[c
 + d*x])^3) + ((4*A + I*B)*Cot[c + d*x]^(3/2))/(12*a*d*(I*a + a*Cot[c + d*x
])^2) + (5*A*Sqrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) - (((7 +
5*I)*A - (2*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*S
qrt[2]*a^3*d) + (((7 + 5*I)*A - (2*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
 + Cot[c + d*x]])/(32*Sqrt[2]*a^3*d)
```

Rubi [A] time = 0.774829, antiderivative size = 318, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3581, 3595, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{((7+5i)A-2iB)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}+\frac{((7+5i)A-2iB)\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^3,x]
```


```
[Out] -((((-7 + 5*I)*A + (2*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt
[2]*a^3*d) + (((-7 + 5*I)*A + (2*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]
]])/(16*Sqrt[2]*a^3*d) + ((A + I*B)*Cot[c + d*x]^(5/2))/(6*d*(I*a + a*Cot[c
 + d*x])^3) + ((4*A + I*B)*Cot[c + d*x]^(3/2))/(12*a*d*(I*a + a*Cot[c + d*x
])^2) + (5*A*Sqrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) - (((7 +
5*I)*A - (2*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*S
qrt[2]*a^3*d) + (((7 + 5*I)*A - (2*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
 + Cot[c + d*x]])/(32*Sqrt[2]*a^3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^3}\,dx = \int \frac{\cot^{\frac{5}{2}}(c+dx)(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^3}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{\int \frac{\cot^{\frac{3}{2}}(c+dx)\left(-\frac{5}{2}a(iA-B)+\frac{1}{2}a(11A-iB)\cot(c+dx)\right)}{(ia+a\cot(c+dx))^2}dx}{6a^2}$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{\int \frac{\sqrt{\cot(c+dx)}\left(-3a^2(4iA-B\right.}{ia+a\cot}}{24}$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{5A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{5A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{5A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{5A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(A+iB)\cot^{\frac{5}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{(4A+iB)\cot^{\frac{3}{2}}(c+dx)}{12ad(ia+a\cot(c+dx))^2} + \frac{5A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= -\frac{((-7+5i)A+2iB)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^3d} + \frac{((-7+5i)A+2iB)\tan^{}}{16\sqrt{}}$$

Mathematica [A] time = 2.44011, size = 258, normalized size = 0.81

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{4}{3}\cos(c+dx)(\cos(3dx)-i\sin(3dx))((-B+19iA)\sin(2(c+dx))\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
3,x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*(Csc[c + d*x]*(((5 + 7*I)*A + 2*B
)*ArcSin[Cos[c + d*x] - Sin[c + d*x]] - (1 + I)*((1 + 6*I)*A + (1 - I)*B)*L
```

```
og[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]]])*(I*Cos[3*c] - Sin
[3*c])*Sqrt[Sin[2*(c + d*x)]] + (4*Cos[c + d*x]*(Cos[3*d*x] - I*Sin[3*d*x])
*(6*A + (3*I)*B + 3*(7*A + I*B)*Cos[2*(c + d*x)] + ((19*I)*A - B)*Sin[2*(c
+ d*x)]))/3)*(A + B*Tan[c + d*x]))/(32*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x]
 + B*Sin[c + d*x])*(a + I*a*Tan[c + d*x])^3)
```

Maple [C] time = 0.645, size = 1581, normalized size = 5.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -1/48/a^3/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x
+c)-1)*(16*B*cos(d*x+c)^5*sin(d*x+c)*2^(1/2)-2*I*B*cos(d*x+c)^2*2^(1/2)-16*
I*B*cos(d*x+c)^7*2^(1/2)+16*I*B*cos(d*x+c)^6*2^(1/2)+8*I*B*cos(d*x+c)^5*2^(
1/2)-8*I*B*cos(d*x+c)^4*2^(1/2)+2*I*B*cos(d*x+c)^3*2^(1/2)+18*A*((cos(d*x+c
)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(d*x+c)-21*A*sin(d*x+c)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))-7*A*cos(d*x+c)^3*2^(1/2)+7*A*2^(1/2
)*cos(d*x+c)^2+3*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2
*2^(1/2))+4*A*cos(d*x+c)^4*2^(1/2)+3*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-
1/2*I,1/2*2^(1/2))*sin(d*x+c)-16*A*cos(d*x+c)^7*2^(1/2)-4*A*cos(d*x+c)^5*2^
(1/2)+16*A*cos(d*x+c)^6*2^(1/2)-3*I*A*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2),1/2+1/2*I,1/2*2^(1/2))-3*I*B*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2+1/2*I,1/2*2^(1/2))-15*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)+16*I*A*cos(d
*x+c)^6*sin(d*x+c)*2^(1/2)-16*I*A*cos(d*x+c)^5*sin(d*x+c)*2^(1/2)+12*I*A*co
s(d*x+c)^4*sin(d*x+c)*2^(1/2)-12*I*A*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)-3*B*si
n(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(co
```

```
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*A*2^(1
/2)*cos(d*x+c)^2*sin(d*x+c)+6*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2
))*sin(d*x+c)+18*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Elli
pticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))
*sin(d*x+c)-3*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x
+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*
2^(1/2))-16*B*cos(d*x+c)^6*sin(d*x+c)*2^(1/2))/sin(d*x+c)^3/cos(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.58309, size = 1771, normalized size = 5.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*
log(-2*((a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) + (A
- I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*a^3*d*sqrt(
(-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(2*((a^3*d*e^(2*
I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x +
2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*a^3*d*sqrt((36*I*A^2 + 12*A*B -
```

```
 I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*c)
 - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt(
(36*I*A^2 + 12*A*B - I*B^2)/(a^6*d^2)) + 6*A - I*B)*e^(-2*I*d*x - 2*I*c)/(a
^3*d)) + 3*a^3*d*sqrt((36*I*A^2 + 12*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6
*I*c)*log(1/8*((a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I
*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((36*I*A^2 + 12*A*B - I*B^2)/(a^6*d
^2)) - 6*A + I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 2*((-20*I*A + 2*B)*e^(6*I
*d*x + 6*I*c) + (14*I*A + B)*e^(4*I*d*x + 4*I*c) + (5*I*A - 2*B)*e^(2*I*d*x
 + 2*I*c) + I*A - B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
- 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(i\,a\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(I*a*tan(d*x + c) + a)^3,
 x)
```

3.532 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=316

$$\frac{(B+2iA)\sqrt{\cot(c+dx)}}{8d\left(a^3\cot(c+dx)+ia^3\right)}+\frac{(2iA+(1-i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}-\frac{(2iA+(1-i)B)\log\left(\cot(c+dx\right.}{32\sqrt{2}a^3}$$

```
[Out] ((-1/16 - I/16)*((1 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sq
rt[2]*a^3*d) + ((1/16 + I/16)*((1 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c
 + d*x]]])/(Sqrt[2]*a^3*d) + ((A + I*B)*Cot[c + d*x]^(3/2))/(6*d*(I*a + a*C
ot[c + d*x])^3) + (A*Sqrt[Cot[c + d*x]])/(4*a*d*(I*a + a*Cot[c + d*x])^2) +
 (((2*I)*A + B)*Sqrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) + (((2
*I)*A + (1 - I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*
Sqrt[2]*a^3*d) - (((2*I)*A + (1 - I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
+ Cot[c + d*x]])/(32*Sqrt[2]*a^3*d)
```

Rubi [A] time = 0.761368, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{(B+2iA)\sqrt{\cot(c+dx)}}{8d\left(a^3\cot(c+dx)+ia^3\right)}+\frac{(2iA+(1-i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}-\frac{(2iA+(1-i)B)\log\left(\cot(c+dx\right.}{32\sqrt{2}a^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^3),x]
```


```
[Out] ((-1/16 - I/16)*((1 + I)*A + B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sq
rt[2]*a^3*d) + ((1/16 + I/16)*((1 + I)*A + B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c
 + d*x]]])/(Sqrt[2]*a^3*d) + ((A + I*B)*Cot[c + d*x]^(3/2))/(6*d*(I*a + a*C
ot[c + d*x])^3) + (A*Sqrt[Cot[c + d*x]])/(4*a*d*(I*a + a*Cot[c + d*x])^2) +
 (((2*I)*A + B)*Sqrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) + (((2
*I)*A + (1 - I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*
Sqrt[2]*a^3*d) - (((2*I)*A + (1 - I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
+ Cot[c + d*x]])/(32*Sqrt[2]*a^3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^3}\,dx = \int \frac{\cot^{\frac{3}{2}}(c+dx)(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^3}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{\int \frac{\sqrt{\cot(c+dx)}\left(-\frac{3}{2}a(iA-B)+\frac{3}{2}a(3A-iB)\cot(c+dx)\right)}{(ia+a\cot(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{A\sqrt{\cot(c+dx)}}{4ad(ia+a\cot(c+dx))^2} + \frac{\int \frac{-3ia^2A+3a^2(3A-2iB)\cot(c\cdots}{\sqrt{\cot(c+dx)}(ia+a\cot(c+d\cdots}}{24a^4}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{A\sqrt{\cot(c+dx)}}{4ad(ia+a\cot(c+dx))^2} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx)\right.}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{A\sqrt{\cot(c+dx)}}{4ad(ia+a\cot(c+dx))^2} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx)\right.}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{A\sqrt{\cot(c+dx)}}{4ad(ia+a\cot(c+dx))^2} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx)\right.}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{A\sqrt{\cot(c+dx)}}{4ad(ia+a\cot(c+dx))^2} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx)\right.}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{6d(ia+a\cot(c+dx))^3} + \frac{A\sqrt{\cot(c+dx)}}{4ad(ia+a\cot(c+dx))^2} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx)\right.}$$

$$= -\frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+i)A+B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}a^3d} + \frac{\left(\frac{1}{16}+\frac{i}{16}\right)((1+i)A}{}$$

Mathematica [A] time = 3.78045, size = 272, normalized size = 0.86

$$\frac{e^{-4i(c+dx)}\sqrt{\cot(c+dx)}\sec(c+dx)(\cos(3(c+dx))-i\sin(3(c+dx)))\left(\left(-2e^{2i(c+dx)}+e^{4i(c+dx)}+2e^{6i(c+dx)}-1\right)\left(Ae^{2i(c+dx)}+\cdots\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^3
),x]
```

```
[Out] (((A + I*B + A*E^((2*I)*(c + d*x)) - (2*I)*B*E^((2*I)*(c + d*x)))*(-1 - 2*E
^((2*I)*(c + d*x)) + E^((4*I)*(c + d*x)) + 2*E^((6*I)*(c + d*x))) - 3*A*E^(
```

```
(6*I)*(c + d*x))*Sqrt[-1 + E^((4*I)*(c + d*x))]*ArcTan[Sqrt[-1 + E^((4*I)*(
c + d*x))]] - 6*(A - I*B)*E^((6*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))
]*Sqrt[1 + E^((2*I)*(c + d*x))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1
+ E^((2*I)*(c + d*x)))]])*Sqrt[Cot[c + d*x]]*Sec[c + d*x]*(Cos[3*(c + d*x)]
 - I*Sin[3*(c + d*x)]))/(96*a^3*d*E^((4*I)*(c + d*x)))
```

Maple [C] time = 0.602, size = 5075, normalized size = 16.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.56556, size = 1706, normalized size = 5.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] -1/96*(3*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*
log(1/8*((16*I*a^3*d*e^(2*I*d*x + 2*I*c) - 16*I*a^3*d)*sqrt((I*e^(2*I*d*x +
```

```
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d
^2)) - 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) -
3*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8
*((-16*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c
) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) -
16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 24*a^3
*d*sqrt(-1/64*I*A^2/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*(8*(a^3*d*e^(2*I
*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c
) - 1))*sqrt(-1/64*I*A^2/(a^6*d^2)) + I*A)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) +
24*a^3*d*sqrt(-1/64*I*A^2/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*(8*(a^3*d
*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))*sqrt(-1/64*I*A^2/(a^6*d^2)) - I*A)*e^(-2*I*d*x - 2*I*c)/(a^3
*d)) - 2*(2*(A - 2*I*B)*e^(6*I*d*x + 6*I*c) + (A + 4*I*B)*e^(4*I*d*x + 4*I*
c) - (2*A - I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**3,x)

[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^3\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")

[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^3*sqrt(cot(d*x + c))
), x)
```

3.533 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=308

$$-\frac{(2B-(1-i)A)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}+\frac{(2B-(1-i)A)\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}-$$

```
[Out] -(((1 + I)*A + 2*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^3
*d) + (((1 + I)*A + 2*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2
]*a^3*d) + ((A + I*B)*Sqrt[Cot[c + d*x]])/(6*d*(I*a + a*Cot[c + d*x])^3) +
(((2*I)*A + B)*Sqrt[Cot[c + d*x]])/(12*a*d*(I*a + a*Cot[c + d*x])^2) + (A*S
qrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) - (((-1 + I)*A + 2*B)*L
og[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^3*d) + (((
-1 + I)*A + 2*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sq
rt[2]*a^3*d)
```

Rubi [A] time = 0.725226, antiderivative size = 308, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3595, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(2B-(1-i)A)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}+\frac{(2B-(1-i)A)\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3),x]
```


```
[Out] -(((1 + I)*A + 2*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^3
*d) + (((1 + I)*A + 2*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2
]*a^3*d) + ((A + I*B)*Sqrt[Cot[c + d*x]])/(6*d*(I*a + a*Cot[c + d*x])^3) +
(((2*I)*A + B)*Sqrt[Cot[c + d*x]])/(12*a*d*(I*a + a*Cot[c + d*x])^2) + (A*S
qrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) - (((-1 + I)*A + 2*B)*L
og[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^3*d) + (((
-1 + I)*A + 2*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sq
rt[2]*a^3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx = \int \frac{\sqrt{\cot(c+dx)}(B+A\cot(c+dx))}{(ia+a\cot(c+dx))^3}\,dx$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{\int \frac{-\frac{1}{2}a(iA-B)+\frac{1}{2}a(7A-5iB)\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{\int \frac{-3ia^2B-3a^2(2iA+B)\cot(c+}{\sqrt{\cot(c+dx)}(ia+a\cot(c+d}}{24a^4}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx\right.}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx\right.}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx\right.}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx\right.}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(2iA+B)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{A\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+dx\right.}$$

$$= -\frac{((1+i)A+2B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^3d} + \frac{((1+i)A+2B)\tan^{-1}\left(1+\sqrt{\right.}}{16\sqrt{2}a^3d}$$

Mathematica [A] time = 3.35266, size = 274, normalized size = 0.89

$$\frac{e^{-4i(c+dx)}\sqrt{\cot(c+dx)}\sec(c+dx)(\cos(3(c+dx))-i\sin(3(c+dx)))\left(\left(-2e^{2i(c+dx)}-e^{4i(c+dx)}+2e^{6i(c+dx)}+1\right)\left(-iA\left(1+2e^{2\right.\right.\right.}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^3
),x]
```

```
[Out] (((1 - 2*E^((2*I)*(c + d*x)) - E^((4*I)*(c + d*x)) + 2*E^((6*I)*(c + d*x)))
*(B - B*E^((2*I)*(c + d*x)) - I*A*(1 + 2*E^((2*I)*(c + d*x)))) - 3*B*E^((6*
```

```
I)*(c + d*x))*Sqrt[-1 + E^((4*I)*(c + d*x))]*ArcTan[Sqrt[-1 + E^((4*I)*(c +
 d*x))]] + 6*(I*A + B)*E^((6*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*S
qrt[1 + E^((2*I)*(c + d*x))]*ArcTanh[Sqrt[(-1 + E^((2*I)*(c + d*x)))/(1 + E
^((2*I)*(c + d*x)))]])*Sqrt[Cot[c + d*x]]*Sec[c + d*x]*(Cos[3*(c + d*x)] -
I*Sin[3*(c + d*x)]))/(96*a^3*d*E^((4*I)*(c + d*x)))
```

Maple [C] time = 0.493, size = 4520, normalized size = 14.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] -1/48/a^3/d*2^(1/2)*(cos(d*x+c)-1)*(15*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*B*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)-12*I*
B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*x+c)
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(
1/2))+6*A*cos(d*x+c)^3*2^(1/2)-3*A*cos(d*x+c)*2^(1/2)-9*B*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)-15*B*cos(d*x+c)
^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*A*2^(1/2)*cos(d
*x+c)^2-6*A*cos(d*x+c)^4*2^(1/2)+3*I*A*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+
1/2*I,1/2*2^(1/2))-3*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)+2*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-9*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+9*A*cos(d*x+c)*sin(d*x+c)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-9*B*cos(d*x+c)*sin(d*x+c)*(-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
```

))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*B*(-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2
*I,1/2*2^(1/2))+15*I*A*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)-15*I*A*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))+15*I*B*cos(d*x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))-3*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin
(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-12*B*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticPi((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-15*A*cos(d*
x+c)^2*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+12*A*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+12*B*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*B*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-10*I*A*2^(1/2)*cos(d*x+c)^3*sin(d
*x+c)+10*I*A*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+12*A*cos(d*x+c)^3*sin(d*x+c)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+12*B*cos(d*x+c)^3*sin(d*x+c)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(
1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-12*A*cos(d*x+c)^3*sin(d
x+c)((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*
I,1/2*2^(1/2))*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)-3*I*A*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)

```
)^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+6*I*B*2^(1/2)*cos(d*x+c)^4-6*I*B*2^(1/2
)*cos(d*x+c)^3-6*I*B*2^(1/2)*cos(d*x+c)^2+6*I*B*2^(1/2)*cos(d*x+c)-12*I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-12*I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+15*I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+12*I*A*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-12*I*A*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^4*EllipticF((-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+12*B*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x
+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*x+c)*EllipticPi((-(c
os(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+12*I*B*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*x+c)*Elli
pticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))
+9*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x
+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*
2^(1/2))-9*I*B*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d
*x+c)*sin(d*x+c)+12*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*c
os(d*x+c)^3*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2+1/2*I,1/2*2^(1/2))-9*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*cos(d*x+c)*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)))*cos(d*x+c)*(cos(d*x+c)+1)^2/(4*I*sin(d
*x+c)*cos(d*x+c)^2+4*cos(d*x+c)^3-I*sin(d*x+c)-3*cos(d*x+c))/(cos(d*x+c)/si
n(d*x+c))^(3/2)/sin(d*x+c)^5
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.48389, size = 1675, normalized size = 5.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] -1/96*(3*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)
*log(-2*((a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) + (A
 - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*a^3*d*sqrt
((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(2*((a^3*d*e^(2
*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1))*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x +
 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 24*a^3*d*sqrt(-1/64*I*B^2/(a^6*d
^2))*e^(6*I*d*x + 6*I*c)*log(1/8*(8*(a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqr
t((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt(-1/64*I*B^2/(
a^6*d^2)) + I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 24*a^3*d*sqrt(-1/64*I*B^2/
(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*(8*(a^3*d*e^(2*I*d*x + 2*I*c) - a^3
*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt(-1/64*
I*B^2/(a^6*d^2)) - I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 2*((-4*I*A - 2*B)*e
^(6*I*d*x + 6*I*c) + (4*I*A + 5*B)*e^(4*I*d*x + 4*I*c) + (I*A - 4*B)*e^(2*I
*d*x + 2*I*c) - I*A + B)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^{3}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(3/2)
), x)
```

3.534 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=310

$$-\frac{(2A-(5+7i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}+\frac{(2A-(5+7i)B)\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}$$

```
[Out] -((2*A + (5 - 7*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a
^3*d) + ((2*A + (5 - 7*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sq
rt[2]*a^3*d) + ((I*A - B)*Sqrt[Cot[c + d*x]])/(6*d*(I*a + a*Cot[c + d*x])^3
) + ((A + (4*I)*B)*Sqrt[Cot[c + d*x]])/(12*a*d*(I*a + a*Cot[c + d*x])^2) +
(5*B*Sqrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) - ((2*A - (5 + 7*
I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^3*d
) + ((2*A - (5 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]]
)/(32*Sqrt[2]*a^3*d)
```

Rubi [A] time = 0.756826, antiderivative size = 310, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {3581, 3596, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(2A-(5+7i)B)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}+\frac{(2A-(5+7i)B)\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{32\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^3),x]
```



```
[Out] -((2*A + (5 - 7*I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a
^3*d) + ((2*A + (5 - 7*I)*B)*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(16*Sq
rt[2]*a^3*d) + ((I*A - B)*Sqrt[Cot[c + d*x]])/(6*d*(I*a + a*Cot[c + d*x])^3
) + ((A + (4*I)*B)*Sqrt[Cot[c + d*x]])/(12*a*d*(I*a + a*Cot[c + d*x])^2) +
(5*B*Sqrt[Cot[c + d*x]])/(8*d*(I*a^3 + a^3*Cot[c + d*x])) - ((2*A - (5 + 7*
I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(32*Sqrt[2]*a^3*d
) + ((2*A - (5 + 7*I)*B)*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]]
)/(32*Sqrt[2]*a^3*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] && !GtQ[n, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] || !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx = \int \frac{B+A\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3}\,dx$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{\int \frac{\frac{1}{2}a(A-11iB)-\frac{5}{2}a(iA-B)\cot(c+dx)}{\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(A+4iB)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{\int \frac{-3a^2(iA+6B)-3a^2(A+4iB}{\sqrt{\cot(c+dx)}(ia+a\cot}}{24a^4}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(A+4iB)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{5B\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(A+4iB)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{5B\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(A+4iB)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{5B\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(A+4iB)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{5B\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= \frac{(iA-B)\sqrt{\cot(c+dx)}}{6d(ia+a\cot(c+dx))^3} + \frac{(A+4iB)\sqrt{\cot(c+dx)}}{12ad(ia+a\cot(c+dx))^2} + \frac{5B\sqrt{\cot(c+dx)}}{8d\left(ia^3+a^3\cot(c+d\right.}$$

$$= -\frac{(2A+(5-7i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^3d} + \frac{(2A+(5-7i)B)\tan^{-1}\left(1\right.}{16\sqrt{2}a^3}$$

Mathematica [A] time = 4.22937, size = 415, normalized size = 1.34

$$\frac{\cot^{\frac{3}{2}}(c+dx)\csc^2(c+dx)\sec^3(c+dx)(A\cos(c+dx)+B\sin(c+dx))\left(-(A+19iB)\cos(4(c+dx))+(3+3i)((1+i)A+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^3
),x]
```

```
[Out] (Cot[c + d*x]^(3/2)*Csc[c + d*x]^2*Sec[c + d*x]^3*(A*Cos[c + d*x] + B*Sin[c
 + d*x])*(A + (19*I)*B - (A + (19*I)*B)*Cos[4*(c + d*x)] + 6*A*Cos[3*(c + d
*x)]*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]]*Sqrt[Sin[2*(
```

```
c + d*x)]] - (15 + 21*I)*B*Cos[3*(c + d*x)]*Log[Cos[c + d*x] + Sin[c + d*x]
 + Sqrt[Sin[2*(c + d*x)]]]*Sqrt[Sin[2*(c + d*x)]] + (6*I)*A*Sin[2*(c + d*x)
] - 12*B*Sin[2*(c + d*x)] + (6*I)*A*Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[
Sin[2*(c + d*x)]]]*Sqrt[Sin[2*(c + d*x)]]*Sin[3*(c + d*x)] + (21 - 15*I)*B*
Log[Cos[c + d*x] + Sin[c + d*x] + Sqrt[Sin[2*(c + d*x)]]]*Sqrt[Sin[2*(c + d
*x)]]*Sin[3*(c + d*x)] + (3 + 3*I)*((1 + I)*A + (6 - I)*B)*ArcSin[Cos[c + d
*x] - Sin[c + d*x]]*Sqrt[Sin[2*(c + d*x)]]*((-I)*Cos[3*(c + d*x)] + Sin[3*(
c + d*x)]) - (3*I)*A*Sin[4*(c + d*x)] + 21*B*Sin[4*(c + d*x)]))/(96*a^3*d*(
I + Cot[c + d*x])^3*(A + B*Tan[c + d*x]))
```

Maple [C] time = 0.506, size = 5731, normalized size = 18.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.61743, size = 1813, normalized size = 5.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*l
og(1/8*((16*I*a^3*d*e^(2*I*d*x + 2*I*c) - 16*I*a^3*d)*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^
2)) - 16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3
*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*
((-16*I*a^3*d*e^(2*I*d*x + 2*I*c) + 16*I*a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^6*d^2)) -
16*(A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 3*a^3*d
*sqrt((-I*A^2 - 12*A*B + 36*I*B^2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(1/8*(
(a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 12*A*B + 36*I*B^2)/(a^6*d^2)) + I*A + 6
*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 3*a^3*d*sqrt((-I*A^2 - 12*A*B + 36*I*B^
2)/(a^6*d^2))*e^(6*I*d*x + 6*I*c)*log(-1/8*((a^3*d*e^(2*I*d*x + 2*I*c) - a^
3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A
^2 - 12*A*B + 36*I*B^2)/(a^6*d^2)) - I*A - 6*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d
)) - 2*(2*(A + 10*I*B)*e^(6*I*d*x + 6*I*c) - (5*A + 26*I*B)*e^(4*I*d*x + 4*
I*c) + (4*A + 7*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt((I*e^(2*I*d*x + 2*
I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^3\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(5/2)
), x)
```

3.535 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx$

Optimal. Leaf size=367

$$-\frac{7(-4B+iA)}{24d\sqrt{\cot(c+dx)}\left(a^3\cot(c+dx)+ia^3\right)}+\frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}}+\frac{\left(\frac{1}{32}+\frac{i}{32}\right)((6+i)A+(1+29i)B)\log\left(\cot(c+dx)-\sqrt{}\right.}{\sqrt{2}a^3d}$$

```
[Out] ((1/16 + I/16)*((1 + 6*I)*A - (29 + I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d
*x]]])/(Sqrt[2]*a^3*d) + (((5 - 7*I)*A + (28 + 30*I)*B)*ArcTan[1 + Sqrt[2]*
Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^3*d) + (5*(A + (6*I)*B))/(8*a^3*d*Sqrt[C
ot[c + d*x]]) + (I*A - B)/(6*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])^3)
 + (2*A + (5*I)*B)/(12*a*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])^2) - (
7*(I*A - 4*B))/(24*d*Sqrt[Cot[c + d*x]]*(I*a^3 + a^3*Cot[c + d*x])) + ((1/3
2 + I/32)*((6 + I)*A + (1 + 29*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + C
ot[c + d*x]])/(Sqrt[2]*a^3*d) - ((1/32 + I/32)*((6 + I)*A + (1 + 29*I)*B)*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^3*d)
```

Rubi [A] time = 0.925566, antiderivative size = 367, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3581, 3596, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{7(-4B+iA)}{24d\sqrt{\cot(c+dx)}\left(a^3\cot(c+dx)+ia^3\right)}+\frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}}+\frac{\left(\frac{1}{32}+\frac{i}{32}\right)((6+i)A+(1+29i)B)\log\left(\cot(c+dx)-\sqrt{}\right.}{\sqrt{2}a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^3),x]
```



```
[Out] ((1/16 + I/16)*((1 + 6*I)*A - (29 + I)*B)*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d
*x]]])/(Sqrt[2]*a^3*d) + (((5 - 7*I)*A + (28 + 30*I)*B)*ArcTan[1 + Sqrt[2]*
Sqrt[Cot[c + d*x]]])/(16*Sqrt[2]*a^3*d) + (5*(A + (6*I)*B))/(8*a^3*d*Sqrt[C
ot[c + d*x]]) + (I*A - B)/(6*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])^3)
 + (2*A + (5*I)*B)/(12*a*d*Sqrt[Cot[c + d*x]]*(I*a + a*Cot[c + d*x])^2) - (
7*(I*A - 4*B))/(24*d*Sqrt[Cot[c + d*x]]*(I*a^3 + a^3*Cot[c + d*x])) + ((1/3
2 + I/32)*((6 + I)*A + (1 + 29*I)*B)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + C
ot[c + d*x]])/(Sqrt[2]*a^3*d) - ((1/32 + I/32)*((6 + I)*A + (1 + 29*I)*B)*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(Sqrt[2]*a^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^3}\,dx = \int \frac{B+A\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))^3}\,dx$$

$$= \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{\int \frac{-\frac{1}{2}a(A+13iB)-\frac{7}{2}a(iA-B)\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(ia+a\cot(c+dx))^2}\,dx}{6a^2}$$

$$= \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A+5iB}{12ad\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}$$

$$= \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A+5iB}{12ad\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^2}$$

$$= \frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}} + \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A}{12ad\sqrt{\cot(c+dx}}$$

$$= \frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}} + \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A}{12ad\sqrt{\cot(c+dx}}$$

$$= \frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}} + \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A}{12ad\sqrt{\cot(c+dx}}$$

$$= \frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}} + \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A}{12ad\sqrt{\cot(c+dx}}$$

$$= \frac{5(A+6iB)}{8a^3d\sqrt{\cot(c+dx)}} + \frac{iA-B}{6d\sqrt{\cot(c+dx)}(ia+a\cot(c+dx))^3} + \frac{2A}{12ad\sqrt{\cot(c+dx}}$$

$$= -\frac{((5-7i)A+(28+30i)B)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{16\sqrt{2}a^3d} + \frac{((5-7i)A+(28+}{}$$

Mathematica [A] time = 4.33462, size = 280, normalized size = 0.76

$$\frac{\sec^2(c+dx)(\cos(dx)+i\sin(dx))^3(A+B\tan(c+dx))\left(\frac{2}{3}(\cos(3dx)-i\sin(3dx))((9A+33iB)\cos(c+dx)+21(A+7iB)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^3
```

```
),x]
```

```
[Out] (Sec[c + d*x]^2*(Cos[d*x] + I*Sin[d*x])^3*((2*(Cos[3*d*x] - I*Sin[3*d*x])*(
(9*A + (33*I)*B)*Cos[c + d*x] + 21*(A + (7*I)*B)*Cos[3*(c + d*x)] + (2*I)*(
19*A + (97*I)*B + (19*A + (145*I)*B)*Cos[2*(c + d*x)])*Sin[c + d*x]))/3 - I
*Csc[c + d*x]*(((7 + 5*I)*A - (30 - 28*I)*B)*ArcSin[Cos[c + d*x] - Sin[c +
d*x]] + (1 - I)*((6 + I)*A + (1 + 29*I)*B)*Log[Cos[c + d*x] + Sin[c + d*x]
+ Sqrt[Sin[2*(c + d*x)]]])*(Cos[3*c] + I*Sin[3*c])*Sqrt[Sin[2*(c + d*x)]])*
(A + B*Tan[c + d*x]))/(32*d*Sqrt[Cot[c + d*x]]*(A*Cos[c + d*x] + B*Sin[c +
d*x])*(a + I*a*Tan[c + d*x])^3)
```

Maple [C] time = 0.635, size = 6350, normalized size = 17.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+I*a*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.767, size = 2064, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="fricas")
```

```
[Out] 1/96*(3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*sqrt((-I*A^
2 - 2*A*B + I*B^2)/(a^6*d^2))*log(-2*((a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*s
qrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((-I*A^2 - 2
*A*B + I*B^2)/(a^6*d^2)) + (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I
*c)/(I*A + B)) - 3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x + 6*I*c))*
sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2))*log(2*((a^3*d*e^(2*I*d*x + 2*I*c)
- a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*sqrt((
-I*A^2 - 2*A*B + I*B^2)/(a^6*d^2)) - (A - I*B)*e^(2*I*d*x + 2*I*c))*e^(-2*I
*d*x - 2*I*c)/(I*A + B)) + 3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^(6*I*d*x
+ 6*I*c))*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6*d^2))*log(1/8*((a^3*d*
e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x +
 2*I*c) - 1))*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6*d^2)) + 6*A + 29*I
*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) - 3*(a^3*d*e^(8*I*d*x + 8*I*c) + a^3*d*e^
(6*I*d*x + 6*I*c))*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6*d^2))*log(-1/
8*((a^3*d*e^(2*I*d*x + 2*I*c) - a^3*d)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^
(2*I*d*x + 2*I*c) - 1))*sqrt((36*I*A^2 - 348*A*B - 841*I*B^2)/(a^6*d^2)) -
6*A - 29*I*B)*e^(-2*I*d*x - 2*I*c)/(a^3*d)) + 2*((-20*I*A + 146*B)*e^(8*I*d
*x + 8*I*c) + (6*I*A - 105*B)*e^(6*I*d*x + 6*I*c) + (19*I*A - 49*B)*e^(4*I*
d*x + 4*I*c) + (-6*I*A + 9*B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt((I*e^(2*I
*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)))/(a^3*d*e^(8*I*d*x + 8*I*c) +
 a^3*d*e^(6*I*d*x + 6*I*c))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(7/2)/(a+I*a*tan(d*x+c))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^3\cot(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+I*a*tan(d*x+c))^3,x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^3*cot(d*x + c)^(7/2)
), x)
```

3.536 $\int \cot^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=198

$$-\frac{2(5B+iA)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d}+\frac{2(13A-5iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d}-\frac{(1+i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}}{}$$

```
[Out] ((-1 - I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sq
rt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(13
*A - (5*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) - (2*(I
*A + 5*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) - (2*A*Cot[
c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/(5*d)
```

Rubi [A] time = 0.668029, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {4241, 3598, 12, 3544, 205}

$$-\frac{2(5B+iA)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d}+\frac{2(13A-5iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d}-\frac{(1+i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((-1 - I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sq
rt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(13
*A - (5*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) - (2*(I
*A + 5*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) - (2*A*Cot[
c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/(5*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B}{\tan^{\frac{7}{2}}(c+dx)}$$

$$= -\frac{2A\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{5d} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{t\right.}{}$$

$$= -\frac{2(iA+5B)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2A\cot^{\frac{5}{2}}(c}{}$$

$$= \frac{2(13A-5iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2(iA+5B}{}$$

$$= \frac{2(13A-5iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2(iA+5B}{}$$

$$= \frac{2(13A-5iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2(iA+5B}{}$$

$$= -\frac{(1-i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{d}$$

Mathematica [A] time = 2.98304, size = 188, normalized size = 0.95

$$\frac{e^{-i(c+dx)}\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(-15(A-iB)\left(-1+e^{2i(c+dx)}\right)^{5/2}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)+2Ae^{i(c+dx)}\left(-20e^{2i(c+dx)}+\right.\right.}{15d\left(-1+e^{2i(c+dx)}\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (((-20*I)*B*E^((3*I)*(c + d*x))*(-1 + E^((2*I)*(c + d*x))) + 2*A*E^(I*(c +
d*x))*(15 - 20*E^((2*I)*(c + d*x)) + 17*E^((4*I)*(c + d*x))) - 15*(A - I*B)
*(-1 + E^((2*I)*(c + d*x)))^(5/2)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I
)*(c + d*x))]])*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d*E^(I*(
c + d*x))*(-1 + E^((2*I)*(c + d*x)))^2)
```

Maple [B] time = 0.667, size = 2243, normalized size = 11.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/30/d*2^(1/2)*(-10*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+30*I*A*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+1)+30*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*s
in(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+34*A*cos(d*x+
c)^3*2^(1/2)-28*A*cos(d*x+c)*2^(1/2)-32*A*2^(1/2)*cos(d*x+c)^2+26*A*2^(1/2)
-20*I*B*cos(d*x+c)^3*2^(1/2)+10*I*B*cos(d*x+c)^2*2^(1/2)-26*I*A*sin(d*x+c)*
2^(1/2)+20*I*B*cos(d*x+c)*2^(1/2)+30*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*si
n(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+15*A*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-10*I*B*2^(1/2)-30*I*A*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2)-1)-15*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+
1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x
+c)-1))-2*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)-30*I*B*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-30
*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)-1)-15*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x
+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+si
n(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c
)-sin(d*x+c)+1))-10*B*2^(1/2)*sin(d*x+c)+20*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/
2)+15*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)
/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c
)+1))+15*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)
+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*
x+c)-1))+30*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*a
rctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+30*I*B*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2)-1)-30*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-30*B*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-15*
B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin
```

```
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+30*A*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)+1)-30*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*
arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-30*A*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)-1)-15*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*
x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+s
in(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+
c)-sin(d*x+c)+1))+30*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d
*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+30*B*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)-1)+15*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*
sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*
x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+co
s(d*x+c)+sin(d*x+c)-1))+34*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-30*I*A*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)+1))*(cos(d*x+c)/sin(d*x+c))^(7/2)*(a*(I*sin(d*x+c)+cos(d*x+c)
)/cos(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^3
```

Maxima [B] time = 3.90849, size = 1875, normalized size = 9.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] -1/900*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) +
 1)*(((-(900*I + 900)*A + (900*I - 900)*B)*cos(3*d*x + 3*c) + ((1170*I + 11
70)*A - (750*I - 750)*B)*cos(d*x + c) + (-(900*I - 900)*A - (900*I + 900)*B
)*sin(3*d*x + 3*c) + ((1170*I - 1170)*A + (750*I + 750)*B)*sin(d*x + c))*co
s(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((900*I - 900)*A
+ (900*I + 900)*B)*cos(3*d*x + 3*c) + (-(1170*I - 1170)*A - (750*I + 750)*B
)*cos(d*x + c) + (-(900*I + 900)*A + (900*I - 900)*B)*sin(3*d*x + 3*c) + ((
1170*I + 1170)*A - (750*I - 750)*B)*sin(d*x + c))*sin(3/2*arctan2(sin(2*d*x
 + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a) + ((((900*I - 900)*A + (900*I + 90
0)*B)*cos(2*d*x + 2*c)^2 + ((900*I - 900)*A + (900*I + 900)*B)*sin(2*d*x +
2*c)^2 + (-(1800*I - 1800)*A - (1800*I + 1800)*B)*cos(2*d*x + 2*c) + (900*I
 - 900)*A + (900*I + 900)*B)*arctan2(2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*
c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(
2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*
```

```
c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(
2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + (((450*I + 450)*A - (450*I - 450)*B)
*cos(2*d*x + 2*c)^2 + ((450*I + 450)*A - (450*I - 450)*B)*sin(2*d*x + 2*c)^
2 + (-(900*I + 900)*A + (900*I - 900)*B)*cos(2*d*x + 2*c) + (450*I + 450)*A
 - (450*I - 450)*B)*log(4*cos(d*x + c)^2 + 4*sin(d*x + c)^2 + 4*sqrt(cos(2*
d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*(cos(1/2*arctan
2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2 + sin(1/2*arctan2(sin(2*d*x +
2*c), cos(2*d*x + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^
2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos(1/2*arctan2(sin(2*d*x +
 2*c), cos(2*d*x + 2*c) - 1)) + sin(d*x + c)*sin(1/2*arctan2(sin(2*d*x + 2*
c), cos(2*d*x + 2*c) - 1)))))*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*
cos(2*d*x + 2*c) + 1)^(1/4)*sqrt(a) + (((-(900*I + 900)*A + (900*I - 900)*B
)*cos(5*d*x + 5*c) + (-(150*I + 150)*A - (750*I - 750)*B)*cos(3*d*x + 3*c)
+ (-(390*I + 390)*A - (150*I - 150)*B)*cos(d*x + c) + (-(900*I - 900)*A - (
900*I + 900)*B)*sin(5*d*x + 5*c) + (-(150*I - 150)*A + (750*I + 750)*B)*sin
(3*d*x + 3*c) + (-(390*I - 390)*A + (150*I + 150)*B)*sin(d*x + c))*cos(5/2*
arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((-(240*I + 240)*A - (6
00*I - 600)*B)*cos(d*x + c) + (-(240*I - 240)*A + (600*I + 600)*B)*sin(d*x
+ c))*cos(2*d*x + 2*c)^2 + ((-(240*I + 240)*A - (600*I - 600)*B)*cos(d*x +
c) + (-(240*I - 240)*A + (600*I + 600)*B)*sin(d*x + c))*sin(2*d*x + 2*c)^2
+ (((480*I + 480)*A + (1200*I - 1200)*B)*cos(d*x + c) + ((480*I - 480)*A -
(1200*I + 1200)*B)*sin(d*x + c))*cos(2*d*x + 2*c) + (-(240*I + 240)*A - (60
0*I - 600)*B)*cos(d*x + c) + (-(240*I - 240)*A + (600*I + 600)*B)*sin(d*x +
 c))*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((900*I -
900)*A + (900*I + 900)*B)*cos(5*d*x + 5*c) + ((150*I - 150)*A - (750*I + 75
0)*B)*cos(3*d*x + 3*c) + ((390*I - 390)*A - (150*I + 150)*B)*cos(d*x + c) +
 (-(900*I + 900)*A + (900*I - 900)*B)*sin(5*d*x + 5*c) + (-(150*I + 150)*A
- (750*I - 750)*B)*sin(3*d*x + 3*c) + (-(390*I + 390)*A - (150*I - 150)*B)*
sin(d*x + c))*sin(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((
((240*I - 240)*A - (600*I + 600)*B)*cos(d*x + c) + (-(240*I + 240)*A - (600
*I - 600)*B)*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (((240*I - 240)*A - (600*I
+ 600)*B)*cos(d*x + c) + (-(240*I + 240)*A - (600*I - 600)*B)*sin(d*x + c))
*sin(2*d*x + 2*c)^2 + ((-(480*I - 480)*A + (1200*I + 1200)*B)*cos(d*x + c)
+ ((480*I + 480)*A + (1200*I - 1200)*B)*sin(d*x + c))*cos(2*d*x + 2*c) + ((
240*I - 240)*A - (600*I + 600)*B)*cos(d*x + c) + (-(240*I + 240)*A - (600*I
 - 600)*B)*sin(d*x + c))*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c)
 - 1)))*sqrt(a))/((cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x +
2*c) + 1)^(5/4)*d)
```

Fricas [B] time = 1.53342, size = 1337, normalized size = 6.75

$$4\sqrt{2}\Big((17A - 10iB)e^{(4i\,dx+4i\,c)} - 10(2A - iB)e^{(2i\,dx+2i\,c)} + 15A\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)} - 15\Big(de^{(4i\,dx+4i\,c)} - 2\,de^{($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/30*(4*sqrt(2)*((17*A - 10*I*B)*e^(4*I*d*x + 4*I*c) - 10*(2*A - I*B)*e^(2*
I*d*x + 2*I*c) + 15*A)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - 15*(d*e^(4*I*d*
x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*
a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*
I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
- 1))*e^(I*d*x + I*c) + I*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*
d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + 15*(d*e^(4*I*d*x + 4*I*c) -
 2*d*e^(2*I*d*x + 2*I*c) + d)*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((
sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*
c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d
*x + I*c) - I*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c)
)*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x
+ 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c) + A)\sqrt{i\,a\tan(dx+c) + a}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c)^(7/2
), x)
```

3.537 $\int \cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=155

$$-\frac{2(3B+iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d}+\frac{(1+i)\sqrt{a}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

```
[Out] ((1 + I)*Sqrt[a]*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(I*A
 + 3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(3*d) - (2*A*Cot[c +
 d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```

Rubi [A] time = 0.479759, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {4241, 3598, 12, 3544, 205}

$$-\frac{2(3B+iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d}+\frac{(1+i)\sqrt{a}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((1 + I)*Sqrt[a]*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(I*A
 + 3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(3*d) - (2*A*Cot[c +
 d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B}{\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{3d} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{t\right.}}{}$$

$$= -\frac{2(iA+3B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d} - \frac{2A\cot^{\frac{3}{2}}(c}{}$$

$$= -\frac{2(iA+3B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d} - \frac{2A\cot^{\frac{3}{2}}(c}{}$$

$$= -\frac{2(iA+3B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d} - \frac{2A\cot^{\frac{3}{2}}(c}{}$$

$$= \frac{(1+i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{}}{d}$$

Mathematica [A] time = 2.14502, size = 162, normalized size = 1.05

$$-\frac{e^{-i(c+dx)}\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(-3i(A-iB)\left(-1+e^{2i(c+dx)}\right)^{3/2}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)+4iAe^{3i(c+dx)}+6Be^{i(c+dx)}\right.}{3d\left(-1+e^{2i(c+dx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
),x]
```

```
[Out] -((((4*I)*A*E^((3*I)*(c + d*x)) + 6*B*E^(I*(c + d*x))*(-1 + E^((2*I)*(c + d*
x))) - (3*I)*(A - I*B)*(-1 + E^((2*I)*(c + d*x)))^(3/2)*ArcTanh[E^(I*(c + d
*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c
 + d*x]])/(3*d*E^(I*(c + d*x))*(-1 + E^((2*I)*(c + d*x))))
```

Maple [B] time = 0.647, size = 2016, normalized size = 13.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/6/d*2^(1/2)*(6*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+3*B*cos(d*x+c)^2*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+
c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(
d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+6*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-2*I*A*2^(1/2)*
sin(d*x+c)-6*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)
/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c
)+1))-6*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)+1)+6*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+6*I*B*2^(1/2)-3*I*
B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+4*I*A*2^(1/2)
*cos(d*x+c)*sin(d*x+c)+6*I*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+3*I*A*cos(d*x+c)^2*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/
2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+6*I*A*cos(d*x+c)^2*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-6
*I*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)-6*I*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-2*A*cos(d*x+c)*2
^(1/2)+6*I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)+6*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+3*I*B*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-
sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x
+c)+sin(d*x+c)-1))+6*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+6*A*cos(d*x+c)^2*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+
3*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+4*A*2^(1/2)
*cos(d*x+c)^2-2*A*2^(1/2)-6*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1
/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-6*A*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-3*A*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c
)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d
*x+c)+cos(d*x+c)+sin(d*x+c)-1))-6*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*B*((cos(d*x+c)-1)/sin(d*x+
```

```
c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x
+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos
(d*x+c)-sin(d*x+c)+1))-6*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-6*B*2^(1/2)*sin(d*x+c)-6*I*B*2^(1/2)*
cos(d*x+c)^2)*(cos(d*x+c)/sin(d*x+c))^(5/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/co
s(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^2
```

Maxima [B] time = 2.45879, size = 1546, normalized size = 9.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] -1/36*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) +
1)*((((36*I - 36)*A + (36*I + 36)*B)*cos(3*d*x + 3*c) + ((12*I - 12)*A - (3
6*I + 36)*B)*cos(d*x + c) + (-(36*I + 36)*A + (36*I - 36)*B)*sin(3*d*x + 3*
c) + (-(12*I + 12)*A - (36*I - 36)*B)*sin(d*x + c))*cos(3/2*arctan2(sin(2*d
*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((36*I + 36)*A - (36*I - 36)*B)*cos(3*
d*x + 3*c) + ((12*I + 12)*A + (36*I - 36)*B)*cos(d*x + c) + ((36*I - 36)*A
+ (36*I + 36)*B)*sin(3*d*x + 3*c) + ((12*I - 12)*A - (36*I + 36)*B)*sin(d*x
 + c))*sin(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a) +
((((36*I + 36)*A - (36*I - 36)*B)*cos(2*d*x + 2*c)^2 + ((36*I + 36)*A - (36
*I - 36)*B)*sin(2*d*x + 2*c)^2 + (-(72*I + 72)*A + (72*I - 72)*B)*cos(2*d*x
 + 2*c) + (36*I + 36)*A - (36*I - 36)*B)*arctan2(2*(cos(2*d*x + 2*c)^2 + si
n(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2*arctan2(sin(2*d*x
+ 2*c), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(2*d*x + 2*c)^2 + si
n(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2*arctan2(sin(2*d*x
+ 2*c), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + ((-(18*I - 18)*A - (18*I
 + 18)*B)*cos(2*d*x + 2*c)^2 + (-(18*I - 18)*A - (18*I + 18)*B)*sin(2*d*x +
 2*c)^2 + ((36*I - 36)*A + (36*I + 36)*B)*cos(2*d*x + 2*c) - (18*I - 18)*A
- (18*I + 18)*B)*log(4*cos(d*x + c)^2 + 4*sin(d*x + c)^2 + 4*sqrt(cos(2*d*x
 + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*(cos(1/2*arctan2(s
in(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2 + sin(1/2*arctan2(sin(2*d*x + 2*c
), cos(2*d*x + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 -
 2*cos(2*d*x + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos(1/2*arctan2(sin(2*d*x + 2*
c), cos(2*d*x + 2*c) - 1)) + sin(d*x + c)*sin(1/2*arctan2(sin(2*d*x + 2*c),
 cos(2*d*x + 2*c) - 1)))))*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos
(2*d*x + 2*c) + 1)^(1/4)*sqrt(a) + (((((12*I - 12)*A + (36*I + 36)*B)*cos(d
*x + c) + (-(12*I + 12)*A + (36*I - 36)*B)*sin(d*x + c))*cos(2*d*x + 2*c)^2
```

```
 + (((12*I - 12)*A + (36*I + 36)*B)*cos(d*x + c) + (-(12*I + 12)*A + (36*I
- 36)*B)*sin(d*x + c))*sin(2*d*x + 2*c)^2 + ((-(24*I - 24)*A - (72*I + 72)*
B)*cos(d*x + c) + ((24*I + 24)*A - (72*I - 72)*B)*sin(d*x + c))*cos(2*d*x +
 2*c) + ((12*I - 12)*A + (36*I + 36)*B)*cos(d*x + c) + (-(12*I + 12)*A + (3
6*I - 36)*B)*sin(d*x + c))*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*
c) - 1)) + ((((12*I + 12)*A - (36*I - 36)*B)*cos(d*x + c) + ((12*I - 12)*A
+ (36*I + 36)*B)*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (((12*I + 12)*A - (36*I
 - 36)*B)*cos(d*x + c) + ((12*I - 12)*A + (36*I + 36)*B)*sin(d*x + c))*sin(
2*d*x + 2*c)^2 + ((-(24*I + 24)*A + (72*I - 72)*B)*cos(d*x + c) + (-(24*I -
 24)*A - (72*I + 72)*B)*sin(d*x + c))*cos(2*d*x + 2*c) + ((12*I + 12)*A - (
36*I - 36)*B)*cos(d*x + c) + ((12*I - 12)*A + (36*I + 36)*B)*sin(d*x + c))*
sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a))/((cos(2*
d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(5/4)*d)
```

Fricas [B] time = 1.45756, size = 1175, normalized size = 7.58

$$\frac{\sqrt{2}\left((-8i\,A-12\,B)e^{(2i\,dx+2i\,c)}+12\,B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)}+3\left(de^{(2i\,dx+2i\,c)}-d\right)\sqrt{\frac{\left(-2i\,A^2-4\,AB+2i\,B^2\right)a}{d^2}}\log\left(\frac{\left(\sqrt{2}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/6*(sqrt(2)*((-8*I*A - 12*B)*e^(2*I*d*x + 2*I*c) + 12*B)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)
)*e^(I*d*x + I*c) + 3*(d*e^(2*I*d*x + 2*I*c) - d)*sqrt((-2*I*A^2 - 4*A*B +
2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))*e^(I*d*x + I*c) + d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)
*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) - 3*(d*e^(2*I*d*x + 2
*I*c) - d)*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)
*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - d*sqrt
((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I
*c)/(I*A + B)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{i\,a\tan(dx+c)+a}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c)^(5/2
), x)
```

3.538 $\int \cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=110

$$\frac{(1+i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d}$$

```
[Out] ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*A*Sq
rt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.314343, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {4241, 3598, 12, 3544, 205}

$$\frac{(1+i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*A*Sq
rt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
```

```
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{t\right.}}{}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + \left((iA+B)\sqrt{\cot(c+\right.$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{\left(2ia^2(iA+B)\sqrt{\mathrm{co}\right.}{}$$

$$= \frac{(1-i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{}}{d}$$

Mathematica [A] time = 2.20299, size = 112, normalized size = 1.02

$$\frac{e^{-i(c+dx)}\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}\left((A-iB)\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)-2Ae^{i(c+dx)}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
),x]
```

```
[Out] ((-2*A*E^(I*(c + d*x)) + (A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E
^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[Cot[c + d*x]]*Sqrt[a +
 I*a*Tan[c + d*x]])/(d*E^(I*(c + d*x)))
```

Maple [B] time = 0.606, size = 1048, normalized size = 9.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*2^(1/2)*(2*I*A*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+2*I*A*sin(d*x+c)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+I*A
*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+2*I*B*sin(d*x+c)
*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)+2*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos
(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)
-cos(d*x+c)-sin(d*x+c)+1))+2*I*A*2^(1/2)*sin(d*x+c)-2*A*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+
1)-2*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)-1)-A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)
*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d
*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-s
in(d*x+c)+1))+2*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+2*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/
```

```
2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+B*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+2*A*cos(d*x+c)*2^(1/2)-2
*A*2^(1/2))*(cos(d*x+c)/sin(d*x+c))^(3/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(
d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)
```

Maxima [B] time = 2.06923, size = 749, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] -1/2*(((-(2*I - 2)*A - (2*I + 2)*B)*arctan2(2*(cos(2*d*x + 2*c)^2 + sin(2*d
*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2*arctan2(sin(2*d*x + 2*c
), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(2*d*x + 2*c)^2 + sin(2*d
*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2*arctan2(sin(2*d*x + 2*c
), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + (-(I + 1)*A + (I - 1)*B)*log(
4*cos(d*x + c)^2 + 4*sin(d*x + c)^2 + 4*sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x
 + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*(cos(1/2*arctan2(sin(2*d*x + 2*c), cos(
2*d*x + 2*c) - 1))^2 + sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) -
 1))^2) + 8*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) +
 1)^(1/4)*(cos(d*x + c)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c)
- 1)) + sin(d*x + c)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1
)))))*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1
/4)*sqrt(a) + (((4*I + 4)*A*cos(d*x + c) + (4*I - 4)*A*sin(d*x + c))*cos(1/
2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (-(4*I - 4)*A*cos(d*x
+ c) + (4*I + 4)*A*sin(d*x + c))*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*
x + 2*c) - 1)))*sqrt(a))/((cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(
2*d*x + 2*c) + 1)^(1/4)*d)
```

Fricas [B] time = 1.44028, size = 1010, normalized size = 9.18

$$-\frac{4\sqrt{2}A\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)} - d\sqrt{\frac{\left(2i\,A^2+4\,AB-2i\,B^2\right)a}{d^2}}\log\left(\frac{\left(\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}-i\,A-B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx\cdots}\right.}{i\,A+B}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] -1/2*(4*sqrt(2)*A*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*
I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - d*sqrt((2*I*A^2 + 4*
A*B - 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B
)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*
I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)
*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + d*sqrt((2*I*
A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) -
 I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*d*sqrt((2*I*A^2 + 4*A*B -
2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{ia\tan(dx+c)+a}\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*cot(d*x + c)^(3/2
), x)
```

3.539 $\int \sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=152

$$\frac{(1-i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2(-1)^{3/4}\sqrt{a}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\right.}{d}$$

```
[Out] (-2*(-1)^(3/4)*Sqrt[a]*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((1 - I
)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I
*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d
```

Rubi [A] time = 0.458475, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21, Rules used = {4241, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(1-i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2(-1)^{3/4}\sqrt{a}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*(-1)^(3/4)*Sqrt[a]*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqr
t[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((1 - I
)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I
*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
```

```
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\ldots}{\sqrt{\tan(c+dx)}\ldots}$$

$$= -\left(\left((-A+iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(\ldots}}{\sqrt{\tan(c+\ldots}}\right.$$

$$= \frac{\left(2ia^2(-A+iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{-ia-2\ldots}\right.}{d}$$

$$= \frac{(1-i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\ldots}{d}$$

$$= \frac{(1-i)\sqrt{a}(A-iB)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\ldots}{d}$$

$$= -\frac{2(-1)^{3/4}\sqrt{a}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan\ldots}}{d}$$

Mathematica [A] time = 42.8472, size = 241, normalized size = 1.59

$$\frac{e^{-i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\sqrt{a+ia\tan(c+dx)}\left((-4B-4iA)\log\left(\sqrt{-1+e^{2i(c+dx)}}+e^{i(c+dx)}\right)+\sqrt{2}B\left(\log\left(-2\sqrt{2}e^{\ldots}\right.\right.\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^
((2*I)*(c + d*x)))]*(((-4*I)*A - 4*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2
*I)*(c + d*x))]] + Sqrt[2]*B*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(
I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)
) + 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]))*Sqrt[a + I*
a*Tan[c + d*x]])/(4*d*E^(I*(c + d*x)))
```

Maple [B] time = 0.543, size = 895, normalized size = 5.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/c
os(d*x+c))^(1/2)*(cos(d*x+c)-1)*(-2*I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)-1)-2*I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+
2*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*I*A*arctan(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+I*A*ln(-(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+2*I*B*arctan(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)-I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)+1)*2^(1/2)-I*B*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+
c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(
d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1
)*2^(1/2)-2*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)-B*ln(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)+B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)-1)*2^(1/2)+2*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+A*ln(
-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c
)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d
*x+c)-1))+2*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*B*arcta
n(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+B*ln(-(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+2*B*arctan(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1))/(I*sin(d*x+c)+cos(d*x+c)-1)/((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{ia\tan(dx+c)+a}\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*sqrt(cot(d*x + c)
), x)
```

Fricas [B] time = 1.50771, size = 1501, normalized size = 9.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] -1/2*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*
I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + d*sqrt((-2*I
*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I
*A + B)) + 1/2*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A
+ B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(
(I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - d*
sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
 2*I*c)/(I*A + B)) + 1/2*sqrt(4*I*B^2*a/d^2)*log((sqrt(2)*(B*e^(2*I*d*x + 2
*I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + sqrt(4*I*B^2*a/d^2)*d*e^(2*
I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/B) - 1/2*sqrt(4*I*B^2*a/d^2)*log((sqrt
(2)*(B*e^(2*I*d*x + 2*I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - sqrt(4
*I*B^2*a/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/B)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)\sqrt{\cot\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))*sqrt(cot(c + d*x
)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(dx+c\right)+A\right)\sqrt{i\,a\tan\left(dx+c\right)+a}\sqrt{\cot\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)*sqrt(cot(d*x + c)
), x)
```

3.540 $\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=192

$$-\frac{(-1)^{3/4}\sqrt{a}(2A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{(1+i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

```
[Out] -(((-1)^(3/4)*Sqrt[a]*(2*A - I*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d
*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d)
 - ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (B*S
qrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.614432, antiderivative size = 192, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}\sqrt{a}(2A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{(1+i)\sqrt{a}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```

```
[Out] -(((-1)^(3/4)*Sqrt[a]*(2*A - I*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d
*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d)
 - ((1 + I)*Sqrt[a]*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (B*S
qrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Cot[c + d*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}(A+$$

$$= \frac{B\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}\left(-\right.}{\sqrt{}}}{a}$$

$$= \frac{B\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \left((iA+B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+}}{\sqrt{t}}$$

$$= \frac{B\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(2ia^2(iA+B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subs}}{d}$$

$$= -\frac{(1-i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{d}$$

$$= -\frac{(1-i)\sqrt{a}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{d}$$

$$= -\frac{\sqrt[4]{-1}\sqrt{a}(2iA+B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{d}$$

Mathematica [F] time = 8.87314, size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+ia\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*
x]],x]
```

```
[Out] Integrate[(Sqrt[a + I*a*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*
x]], x]
```

Maple [B] time = 0.609, size = 3889, normalized size = 20.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/4/d*2^(1/2)*(B*cos(d*x+c)*sin(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)-1)-2*A*cos(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)
*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(
1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+4*B*cos(d*x+c)^2*arctan(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+4*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*B*cos(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+4*A*cos(d*x+c)*
arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+4*A*cos(d*x+c)*arctan((
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*A*cos(d*x+c)*ln(-(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-4*B
*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-4*B*cos(d*x
+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-2*B*cos(d*x+c)*ln(-
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)
+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*
x+c)-1))-2*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+I*B*cos(d*x+c)^2*2^(
1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+2*I*B*cos(d*x+c)*2^(1/2)*arcta
n(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-I*B*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)-1)+2*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)+2*I*A*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)
-4*I*A*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-2*I*A
*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-2*I*B*cos(d*x
+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-I*B*cos(d*x+c)^2*2^(1/2)*ln
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-2*I*B*cos(d*x+c)^2*2^(1/2)*arctan(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2))-4*I*A*cos(d*x+c)*sin(d*x+c)*arctan(((cos(d*
```

x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-4*I*A*cos(d*x+c)*sin(d*x+c)*arctan(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-2*I*A*cos(d*x+c)*sin(d*x+c)*ln(-(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+
1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x
+c)-1))-2*I*A*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+4*
I*A*cos(d*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-4*A*cos(d*
x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+I*B*cos(d*x+c)*s
in(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-4*A*cos(d*x+c)^2*
arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-2*I*A*cos(d*x+c)*sin(d*
x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+4*A*cos(d*x+c)*sin(d*x
+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+4*A*cos(d*x+c)*sin(
d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*A*cos(d*x+c)*s
in(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x
+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos
(d*x+c)-sin(d*x+c)+1))-2*A*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)+1)-4*A*cos(d*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))
+2*A*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-4*B*cos(d*x
+c)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-4*B*cos(
d*x+c)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-2*B*c
os(d*x+c)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x
+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin
(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-B*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)+1)+2*B*cos(d*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2))+B*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-2*B*
sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+4*I*A*cos(d*x+c)^2*arc
tan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+4*I*A*cos(d*x+c)^2*arctan(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*I*A*cos(d*x+c)^2*ln(-(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)
)+4*I*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+4*
I*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*I*B*
cos(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(
d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-
cos(d*x+c)-sin(d*x+c)+1))-4*I*A*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+1)-4*I*A*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2)-1)-2*I*A*cos(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/
2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-4*I*B*cos(d*x+c)*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-4*I*B*cos(d*x+c)*arctan(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-2*I*B*cos(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+2*I*B*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+2*I*A*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)-1)-4*I*B*cos(d*x+c)*sin(d*x+c)*arctan(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)+1)-4*I*B*cos(d*x+c)*sin(d*x+c)*arctan(((cos(d*x+

```
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-2*I*B*cos(d*x+c)*sin(d*x+c)*ln(-(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))
-2*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-
4*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))
+2*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+
I*B*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+2*B*cos(d*x+
c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-B*cos(d*x+c)*sin(d*
x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+2*B*cos(d*x+c)*sin(d*x
+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))+4*I*A*cos(d*x+c)*sin(
d*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))+2*I*A*cos(d*x+c)*s
in(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+2*I*B*cos(d*x+c)*
sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+2*I*B*cos(d*x+c)*sin(d
*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-I*B*cos(d*x+c)*sin(
d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+2*B*cos(d*x+c)^2*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+2*A*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)+1)+4*A*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2))-2*A*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)-1)+B*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-2
*B*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-B*cos(d*x
+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1))*(a*(I*sin(d*x+c)+cos
(d*x+c))/cos(d*x+c))^(1/2)/(I*cos(d*x+c)+I*sin(d*x+c)-1+I+cos(d*x+c)-sin(d*
x+c))/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)/(cos(d*x+c)/sin(d*x+c))^(1/2)/sin(d
*x+c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{ia\tan(dx+c)+a}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)/sqrt(cot(d*x + c)
), x)
```

Fricas [B] time = 1.55832, size = 2071, normalized size = 10.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(-2*I*B*e^(2*I*d*x + 2*I*c) + 2*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*
c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d
*x + I*c) + (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((4*I*A^2 + 4*A*B - I*B^2)*a/d^
2)*log((sqrt(2)*((2*I*A + B)*e^(2*I*d*x + 2*I*c) - 2*I*A - B)*sqrt(a/(e^(2*
I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
- 1))*e^(I*d*x + I*c) + 2*I*d*sqrt((4*I*A^2 + 4*A*B - I*B^2)*a/d^2)*e^(2*I*
d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(2*I*A + B)) - (d*e^(2*I*d*x + 2*I*c) +
d)*sqrt((4*I*A^2 + 4*A*B - I*B^2)*a/d^2)*log((sqrt(2)*((2*I*A + B)*e^(2*I*d
*x + 2*I*c) - 2*I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d
*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - 2*I*d*sqrt((4
*I*A^2 + 4*A*B - I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(2
*I*A + B)) - (d*e^(2*I*d*x + 2*I*c) + d)*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a
/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) -
 1))*e^(I*d*x + I*c) + I*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d
*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A + B)) + (d*e^(2*I*d*x + 2*I*c) + d)*
sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)*a/d^2)*log((sqrt(2)*((I*A + B)*e^(2*I*d*x
+ 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*d*sqrt((2*I*A^2
+ 4*A*B - 2*I*B^2)*a/d^2)*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(I*A +
B)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a\left(i\tan\left(c+dx\right)+1\right)}\left(A+B\tan\left(c+dx\right)\right)}{\sqrt{\cot\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Integral(sqrt(a*(I*tan(c + d*x) + 1))*(A + B*tan(c + d*x))/sqrt(cot(c + d*x
)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{ia\tan(dx+c)+a}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(I*a*tan(d*x + c) + a)/sqrt(cot(d*x + c)
), x)
```

3.541 $\int \cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=245

$$\frac{(2-2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(7B+8iA)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+d}}{35d}$$

```
[Out] ((2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (4*a*
((67*I)*A + 63*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(105*d) +
(4*a*(19*A - (21*I)*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(105*
d) - (2*a*((8*I)*A + 7*B)*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3
5*d) - (2*a*A*Cot[c + d*x]^(7/2)*Sqrt[a + I*a*Tan[c + d*x]])/(7*d)
```

Rubi [A] time = 0.89362, antiderivative size = 245, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3593, 3598, 12, 3544, 205}

$$\frac{(2-2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(7B+8iA)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+d}}{35d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (4*a*
((67*I)*A + 63*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(105*d) +
(4*a*(19*A - (21*I)*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(105*
d) - (2*a*((8*I)*A + 7*B)*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3
5*d) - (2*a*A*Cot[c + d*x]^(7/2)*Sqrt[a + I*a*Tan[c + d*x]])/(7*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{3/2}(A}{\tan^{\frac{9}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{7d} + \frac{1}{7}\left(2\sqrt{\cot(c+\right.$$

$$= -\frac{2a(8iA+7B)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d} - \frac{2aA\,c}{}$$

$$= \frac{4a(19A-21iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d} - \frac{2a(8i}{}$$

$$= \frac{4a(67iA+63B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{105d} + \frac{4a(1}{}$$

$$= \frac{4a(67iA+63B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{105d} + \frac{4a(1}{}$$

$$= \frac{4a(67iA+63B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{105d} + \frac{4a(1}{}$$

$$= -\frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

Mathematica [A] time = 7.45957, size = 320, normalized size = 1.31

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(-2i\sqrt{2}(A-iB)e^{-2i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e^{i(c}}{\sqrt{-1+e}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] ((((-2*I)*Sqrt[2]*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d
*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^
((2*I)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]]
)/E^((2*I)*(c + d*x)) - (Sqrt[Cot[c + d*x]]*Csc[c + d*x]^3*Sqrt[Sec[c + d*x
]]*(Cos[c + d*x] - I*Sin[c + d*x])*(7*(A + (6*I)*B)*Cos[c + d*x] + (53*A -
```

```
(42*I)*B)*Cos[3*(c + d*x)] + 2*((-110*I)*A - 105*B + ((158*I)*A + 147*B)*Co
s[2*(c + d*x)])*Sin[c + d*x]))/210)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan
[c + d*x]))/(d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.505, size = 3124, normalized size = 12.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/105/d*a*2^(1/2)*(-420*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-210*B*cos(d*x+c)^2*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)
*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(
1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-420*B*cos(d*x+c)^2*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-168
*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+189*B*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)-53*A
*cos(d*x+c)^3*2^(1/2)+38*A*cos(d*x+c)*2^(1/2)-420*A*cos(d*x+c)^2*arctan(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
-420*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)+1)-210*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+
c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(
d*x+c)+sin(d*x+c)-1))-330*A*2^(1/2)*cos(d*x+c)^2+211*A*cos(d*x+c)^4*2^(1/2)
+134*A*2^(1/2)+210*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)+210*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arc
tan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+105*A*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos
(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)
+cos(d*x+c)+sin(d*x+c)-1))+210*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+105*B*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+
c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(
d*x+c)-sin(d*x+c)+1))+210*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-126*I*B*2^(1/2)+126*B*2^(1/2)*sin(d*
x+c)-147*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+210*A*cos(d*x+c)^4*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+10
5*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+105*B*cos(d
```

*x+c)^4*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c
)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d
*x+c)-sin(d*x+c)+1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+210*B*cos(d*x+c)^4*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)+1)+210*B*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-189*I*B*2^(1/2)*cos(d*x+c)^4+42*I*B
*2^(1/2)*cos(d*x+c)^3+315*I*B*2^(1/2)*cos(d*x+c)^2+134*I*A*2^(1/2)*sin(d*x+
c)+105*I*A*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*
x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-co
s(d*x+c)-sin(d*x+c)+1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+210*I*A*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1
)+210*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)-1)-42*I*B*2^(1/2)*cos(d*x+c)-210*I*B*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-210*I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)-1)-210*I*B*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-105*I*B*cos(d*x+c)^4*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*
x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*si
n(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+211*I*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)-
158*I*A*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)-210*I*A*cos(d*x+c)^2*ln(-(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)-420*I*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-420*I*A*co
s(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)-1)+420*I*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+420*I*B*cos(d*x+c)^2*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2)-1)+210*I*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-
1))-172*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)+105*I*A*cos(d*x+c)^4*ln(-(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+210*I*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+210*I*A*
cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)-1)-210*I*B*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-105*I*B*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d
*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*s
in(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+210*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1))*(cos(d*x
+c)/sin(d*x+c))^(9/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*sin(d*

```
x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^4
```

Maxima [B] time = 14.4057, size = 5021, normalized size = 20.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] 1/176400*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c)
 + 1)*((((352800*I - 352800)*A + (352800*I + 352800)*B)*a*cos(7*d*x + 7*c)
+ (-(176400*I - 176400)*A - (529200*I + 529200)*B)*a*cos(5*d*x + 5*c) + ((1
67580*I - 167580)*A + (255780*I + 255780)*B)*a*cos(3*d*x + 3*c) + ((59220*I
 - 59220)*A - (79380*I + 79380)*B)*a*cos(d*x + c) + (-(352800*I + 352800)*A
 + (352800*I - 352800)*B)*a*sin(7*d*x + 7*c) + ((176400*I + 176400)*A - (52
9200*I - 529200)*B)*a*sin(5*d*x + 5*c) + (-(167580*I + 167580)*A + (255780*
I - 255780)*B)*a*sin(3*d*x + 3*c) + (-(59220*I + 59220)*A - (79380*I - 7938
0)*B)*a*sin(d*x + c))*cos(7/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) -
1)) + (((-(236880*I - 236880)*A - (199920*I + 199920)*B)*a*cos(d*x + c) + (
(236880*I + 236880)*A - (199920*I - 199920)*B)*a*sin(d*x + c))*cos(2*d*x +
2*c)^2 + (-(236880*I - 236880)*A - (199920*I + 199920)*B)*a*cos(d*x + c) +
((-(236880*I - 236880)*A - (199920*I + 199920)*B)*a*cos(d*x + c) + ((236880
*I + 236880)*A - (199920*I - 199920)*B)*a*sin(d*x + c))*sin(2*d*x + 2*c)^2
+ ((236880*I + 236880)*A - (199920*I - 199920)*B)*a*sin(d*x + c) + (((35280
0*I - 352800)*A + (352800*I + 352800)*B)*a*cos(2*d*x + 2*c)^2 + ((352800*I
- 352800)*A + (352800*I + 352800)*B)*a*sin(2*d*x + 2*c)^2 + (-(705600*I - 7
05600)*A - (705600*I + 705600)*B)*a*cos(2*d*x + 2*c) + ((352800*I - 352800)
*A + (352800*I + 352800)*B)*a)*cos(3*d*x + 3*c) + (((473760*I - 473760)*A +
 (399840*I + 399840)*B)*a*cos(d*x + c) + (-(473760*I + 473760)*A + (399840*
I - 399840)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c) + ((-(352800*I + 352800)*A
+ (352800*I - 352800)*B)*a*cos(2*d*x + 2*c)^2 + (-(352800*I + 352800)*A + (
352800*I - 352800)*B)*a*sin(2*d*x + 2*c)^2 + ((705600*I + 705600)*A - (7056
00*I - 705600)*B)*a*cos(2*d*x + 2*c) + (-(352800*I + 352800)*A + (352800*I
- 352800)*B)*a)*sin(3*d*x + 3*c))*cos(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d
*x + 2*c) - 1)) + (((352800*I + 352800)*A - (352800*I - 352800)*B)*a*cos(7*
d*x + 7*c) + (-(176400*I + 176400)*A + (529200*I - 529200)*B)*a*cos(5*d*x +
 5*c) + ((167580*I + 167580)*A - (255780*I - 255780)*B)*a*cos(3*d*x + 3*c)
+ ((59220*I + 59220)*A + (79380*I - 79380)*B)*a*cos(d*x + c) + ((352800*I -
 352800)*A + (352800*I + 352800)*B)*a*sin(7*d*x + 7*c) + (-(176400*I - 1764
00)*A - (529200*I + 529200)*B)*a*sin(5*d*x + 5*c) + ((167580*I - 167580)*A
```

```
+ (255780*I + 255780)*B)*a*sin(3*d*x + 3*c) + ((59220*I - 59220)*A - (79380
*I + 79380)*B)*a*sin(d*x + c))*sin(7/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x
+ 2*c) - 1)) + (((-(236880*I + 236880)*A + (199920*I - 199920)*B)*a*cos(d*x
 + c) + (-(236880*I - 236880)*A - (199920*I + 199920)*B)*a*sin(d*x + c))*co
s(2*d*x + 2*c)^2 + (-(236880*I + 236880)*A + (199920*I - 199920)*B)*a*cos(d
*x + c) + ((-(236880*I + 236880)*A + (199920*I - 199920)*B)*a*cos(d*x + c)
+ (-(236880*I - 236880)*A - (199920*I + 199920)*B)*a*sin(d*x + c))*sin(2*d*
x + 2*c)^2 + (-(236880*I - 236880)*A - (199920*I + 199920)*B)*a*sin(d*x + c
) + (((352800*I + 352800)*A - (352800*I - 352800)*B)*a*cos(2*d*x + 2*c)^2 +
 ((352800*I + 352800)*A - (352800*I - 352800)*B)*a*sin(2*d*x + 2*c)^2 + (-(
705600*I + 705600)*A + (705600*I - 705600)*B)*a*cos(2*d*x + 2*c) + ((352800
*I + 352800)*A - (352800*I - 352800)*B)*a)*cos(3*d*x + 3*c) + (((473760*I +
 473760)*A - (399840*I - 399840)*B)*a*cos(d*x + c) + ((473760*I - 473760)*A
 + (399840*I + 399840)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c) + (((352800*I -
352800)*A + (352800*I + 352800)*B)*a*cos(2*d*x + 2*c)^2 + ((352800*I - 3528
00)*A + (352800*I + 352800)*B)*a*sin(2*d*x + 2*c)^2 + (-(705600*I - 705600)
*A - (705600*I + 705600)*B)*a*cos(2*d*x + 2*c) + ((352800*I - 352800)*A + (
352800*I + 352800)*B)*a)*sin(3*d*x + 3*c))*sin(3/2*arctan2(sin(2*d*x + 2*c)
, cos(2*d*x + 2*c) - 1)))*sqrt(a) + ((((352800*I + 352800)*A - (352800*I -
352800)*B)*a*cos(2*d*x + 2*c)^4 + ((352800*I + 352800)*A - (352800*I - 3528
00)*B)*a*sin(2*d*x + 2*c)^4 + (-(1411200*I + 1411200)*A + (1411200*I - 1411
200)*B)*a*cos(2*d*x + 2*c)^3 + ((2116800*I + 2116800)*A - (2116800*I - 2116
800)*B)*a*cos(2*d*x + 2*c)^2 + (-(1411200*I + 1411200)*A + (1411200*I - 141
1200)*B)*a*cos(2*d*x + 2*c) + (((705600*I + 705600)*A - (705600*I - 705600)
*B)*a*cos(2*d*x + 2*c)^2 + (-(1411200*I + 1411200)*A + (1411200*I - 1411200
)*B)*a*cos(2*d*x + 2*c) + ((705600*I + 705600)*A - (705600*I - 705600)*B)*a
)*sin(2*d*x + 2*c)^2 + ((352800*I + 352800)*A - (352800*I - 352800)*B)*a)*a
rctan2(2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)
^(1/4)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x
 + c), 2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)
^(1/4)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x
 + c)) + ((-(176400*I - 176400)*A - (176400*I + 176400)*B)*a*cos(2*d*x + 2*
c)^4 + (-(176400*I - 176400)*A - (176400*I + 176400)*B)*a*sin(2*d*x + 2*c)^
4 + ((705600*I - 705600)*A + (705600*I + 705600)*B)*a*cos(2*d*x + 2*c)^3 +
(-(1058400*I - 1058400)*A - (1058400*I + 1058400)*B)*a*cos(2*d*x + 2*c)^2 +
 ((705600*I - 705600)*A + (705600*I + 705600)*B)*a*cos(2*d*x + 2*c) + ((-(3
52800*I - 352800)*A - (352800*I + 352800)*B)*a*cos(2*d*x + 2*c)^2 + ((70560
0*I - 705600)*A + (705600*I + 705600)*B)*a*cos(2*d*x + 2*c) + (-(352800*I -
 352800)*A - (352800*I + 352800)*B)*a)*sin(2*d*x + 2*c)^2 + (-(176400*I - 1
76400)*A - (176400*I + 176400)*B)*a)*log(4*cos(d*x + c)^2 + 4*sin(d*x + c)^
2 + 4*sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1
)*(cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2 + sin(1/2*arc
tan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*c)^2 +
sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos(1/2*ar
ctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + sin(d*x + c)*sin(1/2*arcta
```

n2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))))*(cos(2*d*x + 2*c)^2 + sin(2*
d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sqrt(a) + (((((524580*I - 5245
80)*A + (496860*I + 496860)*B)*a*cos(d*x + c) + (-(524580*I + 524580)*A + (
496860*I - 496860)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((524580*I - 524
580)*A + (496860*I + 496860)*B)*a*cos(d*x + c) + (((524580*I - 524580)*A +
(496860*I + 496860)*B)*a*cos(d*x + c) + (-(524580*I + 524580)*A + (496860*I
 - 496860)*B)*a*sin(d*x + c))*sin(2*d*x + 2*c)^2 + (-(524580*I + 524580)*A
+ (496860*I - 496860)*B)*a*sin(d*x + c) + (((352800*I - 352800)*A + (352800
*I + 352800)*B)*a*cos(2*d*x + 2*c)^2 + ((352800*I - 352800)*A + (352800*I +
 352800)*B)*a*sin(2*d*x + 2*c)^2 + (-(705600*I - 705600)*A - (705600*I + 70
5600)*B)*a*cos(2*d*x + 2*c) + ((352800*I - 352800)*A + (352800*I + 352800)*
B)*a)*cos(5*d*x + 5*c) + ((-(823200*I - 823200)*A - (823200*I + 823200)*B)*
a*cos(2*d*x + 2*c)^2 + (-(823200*I - 823200)*A - (823200*I + 823200)*B)*a*s
in(2*d*x + 2*c)^2 + ((1646400*I - 1646400)*A + (1646400*I + 1646400)*B)*a*c
os(2*d*x + 2*c) + (-(823200*I - 823200)*A - (823200*I + 823200)*B)*a)*cos(3
*d*x + 3*c) + ((-(1049160*I - 1049160)*A - (993720*I + 993720)*B)*a*cos(d*x
 + c) + ((1049160*I + 1049160)*A - (993720*I - 993720)*B)*a*sin(d*x + c))*c
os(2*d*x + 2*c) + ((-(352800*I + 352800)*A + (352800*I - 352800)*B)*a*cos(2
*d*x + 2*c)^2 + (-(352800*I + 352800)*A + (352800*I - 352800)*B)*a*sin(2*d*
x + 2*c)^2 + ((705600*I + 705600)*A - (705600*I - 705600)*B)*a*cos(2*d*x +
2*c) + (-(352800*I + 352800)*A + (352800*I - 352800)*B)*a)*sin(5*d*x + 5*c)
 + (((823200*I + 823200)*A - (823200*I - 823200)*B)*a*cos(2*d*x + 2*c)^2 +
((823200*I + 823200)*A - (823200*I - 823200)*B)*a*sin(2*d*x + 2*c)^2 + (-(1
646400*I + 1646400)*A + (1646400*I - 1646400)*B)*a*cos(2*d*x + 2*c) + ((823
200*I + 823200)*A - (823200*I - 823200)*B)*a)*sin(3*d*x + 3*c))*cos(5/2*arc
tan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((-(349440*I - 349440)*A -
 (423360*I + 423360)*B)*a*cos(d*x + c) + ((349440*I + 349440)*A - (423360*I
 - 423360)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^4 + ((-(349440*I - 349440)*A
 - (423360*I + 423360)*B)*a*cos(d*x + c) + ((349440*I + 349440)*A - (423360
*I - 423360)*B)*a*sin(d*x + c))*sin(2*d*x + 2*c)^4 + (((1397760*I - 1397760
)*A + (1693440*I + 1693440)*B)*a*cos(d*x + c) + (-(1397760*I + 1397760)*A +
 (1693440*I - 1693440)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^3 + ((-(2096640*
I - 2096640)*A - (2540160*I + 2540160)*B)*a*cos(d*x + c) + ((2096640*I + 20
96640)*A - (2540160*I - 2540160)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (-
(349440*I - 349440)*A - (423360*I + 423360)*B)*a*cos(d*x + c) + (((-(698880
*I - 698880)*A - (846720*I + 846720)*B)*a*cos(d*x + c) + ((698880*I + 69888
0)*A - (846720*I - 846720)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (-(69888
0*I - 698880)*A - (846720*I + 846720)*B)*a*cos(d*x + c) + ((698880*I + 6988
80)*A - (846720*I - 846720)*B)*a*sin(d*x + c) + (((1397760*I - 1397760)*A +
 (1693440*I + 1693440)*B)*a*cos(d*x + c) + (-(1397760*I + 1397760)*A + (169
3440*I - 1693440)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c))*sin(2*d*x + 2*c)^2 +
 ((349440*I + 349440)*A - (423360*I - 423360)*B)*a*sin(d*x + c) + (((139776
0*I - 1397760)*A + (1693440*I + 1693440)*B)*a*cos(d*x + c) + (-(1397760*I +
 1397760)*A + (1693440*I - 1693440)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c))*co
s(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((((524580*I + 524

580)*A - (496860*I - 496860)*B)*a*cos(d*x + c) + ((524580*I - 524580)*A + (
496860*I + 496860)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((524580*I + 524
580)*A - (496860*I - 496860)*B)*a*cos(d*x + c) + (((524580*I + 524580)*A -
(496860*I - 496860)*B)*a*cos(d*x + c) + ((524580*I - 524580)*A + (496860*I
+ 496860)*B)*a*sin(d*x + c))*sin(2*d*x + 2*c)^2 + ((524580*I - 524580)*A +
(496860*I + 496860)*B)*a*sin(d*x + c) + (((352800*I + 352800)*A - (352800*I
 - 352800)*B)*a*cos(2*d*x + 2*c)^2 + ((352800*I + 352800)*A - (352800*I - 3
52800)*B)*a*sin(2*d*x + 2*c)^2 + (-(705600*I + 705600)*A + (705600*I - 7056
00)*B)*a*cos(2*d*x + 2*c) + ((352800*I + 352800)*A - (352800*I - 352800)*B)
*a)*cos(5*d*x + 5*c) + ((-(823200*I + 823200)*A + (823200*I - 823200)*B)*a*
cos(2*d*x + 2*c)^2 + (-(823200*I + 823200)*A + (823200*I - 823200)*B)*a*sin
(2*d*x + 2*c)^2 + ((1646400*I + 1646400)*A - (1646400*I - 1646400)*B)*a*cos
(2*d*x + 2*c) + (-(823200*I + 823200)*A + (823200*I - 823200)*B)*a)*cos(3*d
*x + 3*c) + ((-(1049160*I + 1049160)*A + (993720*I - 993720)*B)*a*cos(d*x +
 c) + (-(1049160*I - 1049160)*A - (993720*I + 993720)*B)*a*sin(d*x + c))*co
s(2*d*x + 2*c) + (((352800*I - 352800)*A + (352800*I + 352800)*B)*a*cos(2*d
*x + 2*c)^2 + ((352800*I - 352800)*A + (352800*I + 352800)*B)*a*sin(2*d*x +
 2*c)^2 + (-(705600*I - 705600)*A - (705600*I + 705600)*B)*a*cos(2*d*x + 2*
c) + ((352800*I - 352800)*A + (352800*I + 352800)*B)*a)*sin(5*d*x + 5*c) +
((-(823200*I - 823200)*A - (823200*I + 823200)*B)*a*cos(2*d*x + 2*c)^2 + (-
(823200*I - 823200)*A - (823200*I + 823200)*B)*a*sin(2*d*x + 2*c)^2 + ((164
6400*I - 1646400)*A + (1646400*I + 1646400)*B)*a*cos(2*d*x + 2*c) + (-(8232
00*I - 823200)*A - (823200*I + 823200)*B)*a)*sin(3*d*x + 3*c))*sin(5/2*arct
an2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((-(349440*I + 349440)*A +
(423360*I - 423360)*B)*a*cos(d*x + c) + (-(349440*I - 349440)*A - (423360*I
 + 423360)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^4 + ((-(349440*I + 349440)*A
 + (423360*I - 423360)*B)*a*cos(d*x + c) + (-(349440*I - 349440)*A - (42336
0*I + 423360)*B)*a*sin(d*x + c))*sin(2*d*x + 2*c)^4 + (((1397760*I + 139776
0)*A - (1693440*I - 1693440)*B)*a*cos(d*x + c) + ((1397760*I - 1397760)*A +
 (1693440*I + 1693440)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^3 + ((-(2096640*
I + 2096640)*A + (2540160*I - 2540160)*B)*a*cos(d*x + c) + (-(2096640*I - 2
096640)*A - (2540160*I + 2540160)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (
-(349440*I + 349440)*A + (423360*I - 423360)*B)*a*cos(d*x + c) + (((-(69888
0*I + 698880)*A + (846720*I - 846720)*B)*a*cos(d*x + c) + (-(698880*I - 698
880)*A - (846720*I + 846720)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (-(698
880*I + 698880)*A + (846720*I - 846720)*B)*a*cos(d*x + c) + (-(698880*I - 6
98880)*A - (846720*I + 846720)*B)*a*sin(d*x + c) + (((1397760*I + 1397760)*
A - (1693440*I - 1693440)*B)*a*cos(d*x + c) + ((1397760*I - 1397760)*A + (1
693440*I + 1693440)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c))*sin(2*d*x + 2*c)^2
 + (-(349440*I - 349440)*A - (423360*I + 423360)*B)*a*sin(d*x + c) + (((139
7760*I + 1397760)*A - (1693440*I - 1693440)*B)*a*cos(d*x + c) + ((1397760*I
 - 1397760)*A + (1693440*I + 1693440)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c))*
sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a))/((cos(2*
d*x + 2*c)^4 + sin(2*d*x + 2*c)^4 - 4*cos(2*d*x + 2*c)^3 + 2*(cos(2*d*x + 2
*c)^2 - 2*cos(2*d*x + 2*c) + 1)*sin(2*d*x + 2*c)^2 + 6*cos(2*d*x + 2*c)^2 -

```
 4*cos(2*d*x + 2*c) + 1)*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2
*d*x + 2*c) + 1)^(1/4)*d)
```

Fricas [B] time = 1.50792, size = 1619, normalized size = 6.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/210*(sqrt(2)*((844*I*A + 756*B)*a*e^(6*I*d*x + 6*I*c) + (-1484*I*A - 1596
*B)*a*e^(4*I*d*x + 4*I*c) + (1540*I*A + 1260*B)*a*e^(2*I*d*x + 2*I*c) + (-4
20*I*A - 420*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2
*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - 105*sqrt((-8*I*A^2
- 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*
c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x
+ 2*I*c) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2
*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + sqrt((-8*
I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I
*c)/((2*I*A + 2*B)*a)) + 105*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d
*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) -
d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 2*B)*a)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) - 1))*e^(I*d*x + I*c) - sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d
^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(6
*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(9
/2), x)
```

3.542 $\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=201

$$-\frac{(2+2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(5B+6iA)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d}$$

```
[Out] ((-2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (4*a
*(9*A - (10*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) - (
2*a*((6*I)*A + 5*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) -
 (2*a*A*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/(5*d)
```

Rubi [A] time = 0.710295, antiderivative size = 201, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3593, 3598, 12, 3544, 205}

$$-\frac{(2+2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(5B+6iA)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((-2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (4*a
*(9*A - (10*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) - (
2*a*((6*I)*A + 5*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(15*d) -
 (2*a*A*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c + d*x]])/(5*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{3/2}(}{\tan^{\frac{7}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{5d} + \frac{1}{5}\left(2\sqrt{\cot(c+\right.$$

$$= -\frac{2a(6iA+5B)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2aA}{}$$

$$= \frac{4a(9A-10iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2a(6}{}$$

$$= \frac{4a(9A-10iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2a(6}{}$$

$$= \frac{4a(9A-10iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2a(6}{}$$

$$= -\frac{(2-2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}{d}$$

Mathematica [A] time = 5.24672, size = 289, normalized size = 1.44

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\frac{(-1+i\tan(c+dx))\sqrt{\cot(c+dx)}\csc^2(c+dx)((5B+6iA)\sin(2(c+dx))+(21A-20iB)\cos(2(c+dx))-15A+2}{15\sqrt{\sec(c+dx)}}\right.}{d\sec^{\frac{5}{2}}(c+dx)(A\cos(c+dx)+B\sin(}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (((-2*Sqrt[2]*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))
/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*
I)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/E^
((2*I)*(c + d*x)) + (Sqrt[Cot[c + d*x]]*Csc[c + d*x]^2*(-15*A + (20*I)*B +
(21*A - (20*I)*B)*Cos[2*(c + d*x)] + ((6*I)*A + 5*B)*Sin[2*(c + d*x)])*(-1
+ I*Tan[c + d*x]))/(15*Sqrt[Sec[c + d*x]]))*(a + I*a*Tan[c + d*x])^(3/2)*(A
 + B*Tan[c + d*x]))/(d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x])
)
```

Maple [B] time = 0.585, size = 2244, normalized size = 11.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/15/d*a*2^(1/2)*(-5*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+30*I*A*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)+1)+30*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*
sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+27*A*cos(d*x
+c)^3*2^(1/2)-24*A*cos(d*x+c)*2^(1/2)-25*I*B*2^(1/2)*cos(d*x+c)^3+20*I*B*2^
(1/2)*cos(d*x+c)^2-18*I*A*2^(1/2)*sin(d*x+c)+25*I*B*2^(1/2)*cos(d*x+c)-21*A
*2^(1/2)*cos(d*x+c)^2-20*I*B*2^(1/2)+18*A*2^(1/2)+30*A*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1
)+15*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-30*I*A*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)-1)-15*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)
+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*
x+c)-1))-30*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-30*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-15*I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-20*B*2^(1/2)*sin(d
*x+c)+25*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+27*I*A*2^(1/2)*cos(d*x+c)^2*sin(
d*x+c)-6*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)+15*I*B*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(
1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+15*I*A*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+30*I*B*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)+1)+30*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d
*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-30*B*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)+1)-30*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-15*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
```

```
*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d
*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+c
os(d*x+c)+sin(d*x+c)-1))+30*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*
arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-30*A*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)+1)-30*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*
x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-15*A*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+30*B*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)+1)+30*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*
sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+15*B*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-30*I*A*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2)+1))*(cos(d*x+c)/sin(d*x+c))^(7/2)*(a*(I*sin(d*x+c)+cos(d*x+c
))/cos(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^3
```

Maxima [B] time = 3.37154, size = 1940, normalized size = 9.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] -1/225*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) +
 1)*(((-(450*I + 450)*A + (450*I - 450)*B)*a*cos(3*d*x + 3*c) + ((480*I + 4
80)*A - (450*I - 450)*B)*a*cos(d*x + c) + (-(450*I - 450)*A - (450*I + 450)
*B)*a*sin(3*d*x + 3*c) + ((480*I - 480)*A + (450*I + 450)*B)*a*sin(d*x + c)
)*cos(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((450*I - 450
)*A + (450*I + 450)*B)*a*cos(3*d*x + 3*c) + (-(480*I - 480)*A - (450*I + 45
0)*B)*a*cos(d*x + c) + (-(450*I + 450)*A + (450*I - 450)*B)*a*sin(3*d*x + 3
*c) + ((480*I + 480)*A - (450*I - 450)*B)*a*sin(d*x + c))*sin(3/2*arctan2(s
in(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a) + ((((450*I - 450)*A + (45
0*I + 450)*B)*a*cos(2*d*x + 2*c)^2 + ((450*I - 450)*A + (450*I + 450)*B)*a*
sin(2*d*x + 2*c)^2 + (-(900*I - 900)*A - (900*I + 900)*B)*a*cos(2*d*x + 2*c
) + ((450*I - 450)*A + (450*I + 450)*B)*a)*arctan2(2*(cos(2*d*x + 2*c)^2 +
sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2*arctan2(sin(2*d*
```

```
x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(2*d*x + 2*c)^2 +
sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2*arctan2(sin(2*d*
x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + (((225*I + 225)*A - (2
25*I - 225)*B)*a*cos(2*d*x + 2*c)^2 + ((225*I + 225)*A - (225*I - 225)*B)*a
*sin(2*d*x + 2*c)^2 + (-(450*I + 450)*A + (450*I - 450)*B)*a*cos(2*d*x + 2*
c) + ((225*I + 225)*A - (225*I - 225)*B)*a)*log(4*cos(d*x + c)^2 + 4*sin(d*
x + c)^2 + 4*sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2
*c) + 1)*(cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2 + sin(
1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*
c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos
(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + sin(d*x + c)*sin(1/
2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))))*(cos(2*d*x + 2*c)^2 +
 sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sqrt(a) + (((-(450*I +
450)*A + (450*I - 450)*B)*a*cos(5*d*x + 5*c) + ((150*I + 150)*A - (600*I -
600)*B)*a*cos(3*d*x + 3*c) + (-(60*I + 60)*A + (150*I - 150)*B)*a*cos(d*x +
 c) + (-(450*I - 450)*A - (450*I + 450)*B)*a*sin(5*d*x + 5*c) + ((150*I - 1
50)*A + (600*I + 600)*B)*a*sin(3*d*x + 3*c) + (-(60*I - 60)*A - (150*I + 15
0)*B)*a*sin(d*x + c))*cos(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) -
1)) + ((((90*I + 90)*A - (150*I - 150)*B)*a*cos(d*x + c) + ((90*I - 90)*A +
 (150*I + 150)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((90*I + 90)*A - (15
0*I - 150)*B)*a*cos(d*x + c) + (((90*I + 90)*A - (150*I - 150)*B)*a*cos(d*x
 + c) + ((90*I - 90)*A + (150*I + 150)*B)*a*sin(d*x + c))*sin(2*d*x + 2*c)^
2 + ((90*I - 90)*A + (150*I + 150)*B)*a*sin(d*x + c) + ((-(180*I + 180)*A +
 (300*I - 300)*B)*a*cos(d*x + c) + (-(180*I - 180)*A - (300*I + 300)*B)*a*s
in(d*x + c))*cos(2*d*x + 2*c))*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x
+ 2*c) - 1)) + (((450*I - 450)*A + (450*I + 450)*B)*a*cos(5*d*x + 5*c) + (-
(150*I - 150)*A - (600*I + 600)*B)*a*cos(3*d*x + 3*c) + ((60*I - 60)*A + (1
50*I + 150)*B)*a*cos(d*x + c) + (-(450*I + 450)*A + (450*I - 450)*B)*a*sin(
5*d*x + 5*c) + ((150*I + 150)*A - (600*I - 600)*B)*a*sin(3*d*x + 3*c) + (-(
60*I + 60)*A + (150*I - 150)*B)*a*sin(d*x + c))*sin(5/2*arctan2(sin(2*d*x +
 2*c), cos(2*d*x + 2*c) - 1)) + (((-(90*I - 90)*A - (150*I + 150)*B)*a*cos(
d*x + c) + ((90*I + 90)*A - (150*I - 150)*B)*a*sin(d*x + c))*cos(2*d*x + 2*
c)^2 + (-(90*I - 90)*A - (150*I + 150)*B)*a*cos(d*x + c) + ((-(90*I - 90)*A
 - (150*I + 150)*B)*a*cos(d*x + c) + ((90*I + 90)*A - (150*I - 150)*B)*a*si
n(d*x + c))*sin(2*d*x + 2*c)^2 + ((90*I + 90)*A - (150*I - 150)*B)*a*sin(d*
x + c) + (((180*I - 180)*A + (300*I + 300)*B)*a*cos(d*x + c) + (-(180*I + 1
80)*A + (300*I - 300)*B)*a*sin(d*x + c))*cos(2*d*x + 2*c))*sin(1/2*arctan2(
sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a))/((cos(2*d*x + 2*c)^2 + s
in(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(5/4)*d)
```

Fricas [B] time = 1.44653, size = 1436, normalized size = 7.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/30*(4*sqrt(2)*((27*A - 25*I*B)*a*e^(4*I*d*x + 4*I*c) - 10*(3*A - 4*I*B)*a
*e^(2*I*d*x + 2*I*c) + 15*(A - I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sq
rt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) -
 15*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d
*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c)
 + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt((8*I*A^2 +
 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2
*I*A + 2*B)*a)) + 15*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d
*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^
(2*I*d*x + 2*I*c) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqr
t((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) -
I*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I
*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x +
 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(7
/2), x)
```

3.543 $\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=157

$$\frac{(2+2i)a^{3/2}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(3B+4iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+}}{3d}$$

```
[Out] ((2 + 2*I)*a^(3/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a*
((4*I)*A + 3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(3*d) - (2*a
*A*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```

Rubi [A] time = 0.511212, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3593, 3598, 12, 3544, 205}

$$\frac{(2+2i)a^{3/2}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}-\frac{2a(3B+4iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((2 + 2*I)*a^(3/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a*
((4*I)*A + 3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(3*d) - (2*a
*A*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{3/2}(}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{3d} + \frac{1}{3}\left(2\sqrt{\cot(c+\right.$$

$$= -\frac{2a(4iA+3B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= -\frac{2a(4iA+3B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= -\frac{2a(4iA+3B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= \frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

Mathematica [A] time = 4.64293, size = 259, normalized size = 1.65

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(2\sqrt{2}(B+iA)e^{-2i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e^{i(c-}}{\sqrt{-1+e}}\right.\right.}{d\sec^{\frac{5}{2}}(c+dx)(A\cos(c+dx)+B\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (((2*Sqrt[2]*(I*A + B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/
(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I
)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/E^(
(2*I)*(c + d*x)) - (2*(-I + Cot[c + d*x])*(A*Csc[c + d*x] + ((4*I)*A + 3*B)
*Sec[c + d*x]))/(3*Sqrt[Cot[c + d*x]]*Sec[c + d*x]^(3/2)))*(a + I*a*Tan[c +
 d*x])^(3/2)*(A + B*Tan[c + d*x]))/(d*Sec[c + d*x]^(5/2)*(A*Cos[c + d*x] +
B*Sin[c + d*x]))
```

Maple [B] time = 0.592, size = 2017, normalized size = 12.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/3/d*a*2^(1/2)*(6*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+3*B*cos(d*x+c)^2*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*
x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*si
n(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+6*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-6*I*A*arctan
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)-3*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-6*I*A*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+
3*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)-3*I*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d
*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+c
os(d*x+c)+sin(d*x+c)-1))+6*I*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+3*I*A*cos(d*x+c)^2*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(
1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+6*I*A*cos(d*x+c)^2*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)
-6*I*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)-6*I*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-A*cos(d*x+c)*2
^(1/2)-3*I*B*2^(1/2)*cos(d*x+c)^2+6*I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+6*I*B*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+3*I*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(
1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+6*A*cos(d*x+c)^2*arctan(((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+6
*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)+1)+3*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin
(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)
+sin(d*x+c)-1))+5*A*2^(1/2)*cos(d*x+c)^2+3*I*2^(1/2)*B-4*A*2^(1/2)-6*A*arct
an(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)-6*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)+1)-3*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-6*
```

```
B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)-3*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-6*B*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)
+1)-3*B*2^(1/2)*sin(d*x+c)+5*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)-4*I*A*2^(1/2
)*sin(d*x+c))*(cos(d*x+c)/sin(d*x+c))^(5/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/co
s(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^2
```

Maxima [B] time = 2.31883, size = 1486, normalized size = 9.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] -1/9*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1
)*((((18*I - 18)*A + (18*I + 18)*B)*a*cos(3*d*x + 3*c) + (-(6*I - 6)*A - (1
8*I + 18)*B)*a*cos(d*x + c) + (-(18*I + 18)*A + (18*I - 18)*B)*a*sin(3*d*x
+ 3*c) + ((6*I + 6)*A - (18*I - 18)*B)*a*sin(d*x + c))*cos(3/2*arctan2(sin(
2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((18*I + 18)*A - (18*I - 18)*B)*a*c
os(3*d*x + 3*c) + (-(6*I + 6)*A + (18*I - 18)*B)*a*cos(d*x + c) + ((18*I -
18)*A + (18*I + 18)*B)*a*sin(3*d*x + 3*c) + (-(6*I - 6)*A - (18*I + 18)*B)*
a*sin(d*x + c))*sin(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*s
qrt(a) + ((((18*I + 18)*A - (18*I - 18)*B)*a*cos(2*d*x + 2*c)^2 + ((18*I +
18)*A - (18*I - 18)*B)*a*sin(2*d*x + 2*c)^2 + (-(36*I + 36)*A + (36*I - 36)
*B)*a*cos(2*d*x + 2*c) + ((18*I + 18)*A - (18*I - 18)*B)*a)*arctan2(2*(cos(
2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2
*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(
2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2
*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + ((-(9
*I - 9)*A - (9*I + 9)*B)*a*cos(2*d*x + 2*c)^2 + (-(9*I - 9)*A - (9*I + 9)*B
)*a*sin(2*d*x + 2*c)^2 + ((18*I - 18)*A + (18*I + 18)*B)*a*cos(2*d*x + 2*c)
 + (-(9*I - 9)*A - (9*I + 9)*B)*a)*log(4*cos(d*x + c)^2 + 4*sin(d*x + c)^2
+ 4*sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*
(cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2 + sin(1/2*arcta
n2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*c)^2 + si
n(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos(1/2*arct
an2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + sin(d*x + c)*sin(1/2*arctan2
(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))))*(cos(2*d*x + 2*c)^2 + sin(2*d*
```

```
x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sqrt(a) + ((((12*I - 12)*A*a*cos
(d*x + c) - (12*I + 12)*A*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (12*I - 12)*
A*a*cos(d*x + c) + ((12*I - 12)*A*a*cos(d*x + c) - (12*I + 12)*A*a*sin(d*x
+ c))*sin(2*d*x + 2*c)^2 - (12*I + 12)*A*a*sin(d*x + c) + (-(24*I - 24)*A*a
*cos(d*x + c) + (24*I + 24)*A*a*sin(d*x + c))*cos(2*d*x + 2*c))*cos(1/2*arc
tan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((12*I + 12)*A*a*cos(d*x +
 c) + (12*I - 12)*A*a*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (12*I + 12)*A*a*co
s(d*x + c) + ((12*I + 12)*A*a*cos(d*x + c) + (12*I - 12)*A*a*sin(d*x + c))*
sin(2*d*x + 2*c)^2 + (12*I - 12)*A*a*sin(d*x + c) + (-(24*I + 24)*A*a*cos(d
*x + c) - (24*I - 24)*A*a*sin(d*x + c))*cos(2*d*x + 2*c))*sin(1/2*arctan2(s
in(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a))/((cos(2*d*x + 2*c)^2 + si
n(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(5/4)*d)
```

Fricas [B] time = 1.43004, size = 1274, normalized size = 8.11

$$\sqrt{2}\Big((-20i\,A-12\,B)ae^{(2i\,dx+2i\,c)}+(12i\,A+12\,B)a\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{ie^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)}+3\sqrt{\frac{\left(-8i\,A^2-16\,AB+8i\,B^2\right)a^3}{d^2}}\Big(de^{(2i\,dx+2i\,c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/6*(sqrt(2)*((-20*I*A - 12*B)*a*e^(2*I*d*x + 2*I*c) + (12*I*A + 12*B)*a)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 3*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^
3/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x
 + 2*I*c) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(
2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + sqrt((-8
*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*
I*c)/((2*I*A + 2*B)*a)) - 3*sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*
e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c)
+ (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - sqrt((-8*I*A^2 - 1
6*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I
*A + 2*B)*a)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(5
/2), x)
```

3.544 $\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=186

$$\frac{(2+2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2\sqrt[4]{-1}a^{3/2}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}}{d}$$

```
[Out] (2*(-1)^(1/4)*a^(3/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((2 + 2*
I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a +
I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a*A*Sqrt[C
ot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rubi [A] time = 0.633773, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3593, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(2+2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{2\sqrt[4]{-1}a^{3/2}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*(-1)^(1/4)*a^(3/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((2 + 2*
I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a +
I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a*A*Sqrt[C
ot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{3/2}(A}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} + \left(2\sqrt{\cot(c+dx}\right.$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \left(B\sqrt{\cot(c+dx}\right.$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{\left(a^2B\sqrt{\cot(c+\right.}{}$$

$$= \frac{(2-2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}{d}$$

$$= \frac{(2-2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}{d}$$

$$= \frac{2\sqrt[4]{-1}a^{3/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(}{d}$$

Mathematica [A] time = 4.29414, size = 286, normalized size = 1.54

$$-\frac{a\cos(c+dx)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}\left(-4\sqrt{2}(A-iB)\sqrt{-1+e^{2i(c+dx)}}\log\left(\sqrt{-1+e^{2i(c+dx)}}+e^{i(c+dx)}\right)+4\sqrt{2}Ae^{i(c}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] -((a*Cos[c + d*x]*Sqrt[Cot[c + d*x]]*(4*Sqrt[2]*A*E^(I*(c + d*x)) - 4*Sqrt[
2]*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[E^(I*(c + d*x)) + Sqrt[-1 +
 E^((2*I)*(c + d*x))]] - I*B*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[1 - 3*E^((2
*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]
+ I*B*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt
[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[a + I*a*Tan[c + d
*x]])/(Sqrt[2]*d*(1 + E^((2*I)*(c + d*x)))))
```

Maple [B] time = 0.534, size = 1366, normalized size = 7.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*a*2^(1/2)*(2*I*A*2^(1/2)*sin(d*x+c)+2*I*A*sin(d*x+c)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c
)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d
*x+c)+cos(d*x+c)+sin(d*x+c)-1))+2*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c
)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d
*x+c)-sin(d*x+c)+1))-2*I*B*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)+4*I*A*arctan(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)+
I*B*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*sin(d*x+c)-2*B*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)-B*2^(1/2)*ln(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)+B*2^(1/2)
*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
sin(d*x+c)-I*B*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*sin(d*x+c)+4*I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)+4*I*B*arctan((
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*sin(d*x+c)+4*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)-4*A*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-4*A*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)-1)-2*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((
```

```
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)
/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c
)+1))+4*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+2*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d
*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-
sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x
+c)+sin(d*x+c)-1))+4*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*A*cos(d*x+c)*2^(1/2)-2*A*2^(
1/2))*(cos(d*x+c)/sin(d*x+c))^(3/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c)
)^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.5478, size = 1793, normalized size = 9.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] -1/2*(4*sqrt(2)*A*a*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - sqrt((8*I*A^2 + 16
*A*B - 8*I*B^2)*a^3/d^2)*d*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c
) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt((8*I*A^2
+ 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((
2*I*A + 2*B)*a)) + sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*log((sqrt(2
)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d
*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1
```

```
))*e^(I*d*x + I*c) - I*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*d*e^(2*I*
d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) + sqrt(-4*I*B^2*a^3/d
^2)*d*log((sqrt(2)*(B*a*e^(2*I*d*x + 2*I*c) - B*a)*sqrt(a/(e^(2*I*d*x + 2*I
*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*
d*x + I*c) + I*sqrt(-4*I*B^2*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
2*I*c)/(B*a)) - sqrt(-4*I*B^2*a^3/d^2)*d*log((sqrt(2)*(B*a*e^(2*I*d*x + 2*I
*c) - B*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*sqrt(-4*I*B^2*a^3/d^2)*d*
e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/(B*a)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(3
/2), x)
```

3.545 $\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=196

$$-\frac{(-1)^{3/4}a^{3/2}(3B+2iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{(2-2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

```
[Out] -(((-1)^(3/4)*a^(3/2)*((2*I)*A + 3*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d) + ((2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d
*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d
+ (I*a*B*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.653957, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3594, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{3/2}(3B+2iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{(2-2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((-1)^(3/4)*a^(3/2)*((2*I)*A + 3*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d) + ((2 - 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d
*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d
+ (I*a*B*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{3/2}(A}{\sqrt{\tan(c+}}$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \left(2a(A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan}\right.$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{\left(4ia^3(A-iB)\sqrt{\cot(c+dx)}\sqrt{t}\right.}{}$$

$$= -\frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{d}$$

$$= -\frac{(2+2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{d}$$

$$= \frac{\sqrt[4]{-1}a^{3/2}(2A-3iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

Mathematica [A] time = 7.01089, size = 360, normalized size = 1.84

$$\frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(\sqrt{2}e^{-2i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\left(\sqrt{2}(3B+2iA)\left(\log\left(-2\sqrt{\right.\right.\right.}{8d\,\mathrm{se}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] ((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x])*((Sqrt[2]*Sqrt[-1 + E^((
2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1
 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I)*(c + d*x)))]*((-16*I)*(A - I*B)*Log
[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] + Sqrt[2]*((2*I)*A + 3*B
)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((
2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*E^(I*(c + d*x
))*Sqrt[-1 + E^((2*I)*(c + d*x))]])))/E^((2*I)*(c + d*x)) + (8*B*(I + Tan[c
 + d*x]))/(Sqrt[Cot[c + d*x]]*Sqrt[Sec[c + d*x]])))/(8*d*Sec[c + d*x]^(5/2)
*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.522, size = 1306, normalized size = 6.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4/d*2^(1/2)*a*(cos(d*x+c)-1)*(-4*A*cos(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-4*B*cos(d*x+c)
*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d
*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-s
in(d*x+c)+1))-8*A*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/
2)+1)-8*A*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-8*
B*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-8*B*cos(d*
x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+2*B*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)+2*I*A*2^(1/2)*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)+1)-2*I*A*2^(1/2)*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)-1)+3*I*B*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-6*
I*B*2^(1/2)*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-3*I*B*2^(1
/2)*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+2*I*B*sin(d*x+c)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+4*I*A*cos(d*x+c)*2^(1/2)*arctan(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2))-8*I*A*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*2^(1/2)+1)-8*I*A*cos(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)-1)-4*I*A*cos(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1
```

```
/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+8*I*B*cos(d*x+c)*arctan(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+8*I*B*cos(d*x+c)*arctan(((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+4*I*B*cos(d*x+c)*ln(-(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+2*B*2^(1
/2)*cos(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-2*A*cos(d*x+c)*2^(1/2)*ln(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+4*A*cos(d*x+c)*2^(1/2)*arctan(((cos(d*
x+c)-1)/sin(d*x+c))^(1/2))+2*A*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)-1)+3*B*cos(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+
1)+6*B*cos(d*x+c)*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-3*B*cos
(d*x+c)*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1))*(a*(I*sin(d*x+c)+c
os(d*x+c))/cos(d*x+c))^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)/(I*sin(d*x+c)+co
s(d*x+c)-1)/cos(d*x+c)/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")

[Out] Timed out
```

Fricas [B] time = 1.61806, size = 2218, normalized size = 11.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")

[Out] 1/2*(2*sqrt(2)*(B*a*e^(2*I*d*x + 2*I*c) - B*a)*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x
+ I*c) + sqrt((-4*I*A^2 - 12*A*B + 9*I*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c)
 + d)*log((sqrt(2)*((2*I*A + 3*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 3*B)*a)
*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I
*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 2*sqrt((-4*I*A^2 - 12*A*B + 9*I*B^2)*
```

```
a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 3*B)*a)) - s
qrt((-4*I*A^2 - 12*A*B + 9*I*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log(
(sqrt(2)*((2*I*A + 3*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 3*B)*a)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1))*e^(I*d*x + I*c) - 2*sqrt((-4*I*A^2 - 12*A*B + 9*I*B^2)*a^3/d^2)*d
*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 3*B)*a)) - sqrt((-8*I*
A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*(
(2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x
+ 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*
e^(I*d*x + I*c) + sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x
+ 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) + sqrt((-8*I*A^2 - 16*A*B
 + 8*I*B^2)*a^3/d^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B
)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1
))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I
*c) - sqrt((-8*I*A^2 - 16*A*B + 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^
(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x +
c)), x)
```

3.546 $\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=244

$$-\frac{(-1)^{3/4}a^{3/2}(12A-11iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{(2+2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(}{d}$$

```
[Out] -((-1)^(3/4)*a^(3/2)*(12*A - (11*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(4*d) - ((2 + 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d + ((I/2)*a*B*Sqrt[a + I*a*Tan[c + d*x]])/(d*Cot[c + d*x]^(3/2)) + (a*((
4*I)*A + 5*B)*Sqrt[a + I*a*Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.857799, antiderivative size = 244, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4241, 3594, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{3/2}(12A-11iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{(2+2i)a^{3/2}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(}{d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
x]
```


```
[Out] -((-1)^(3/4)*a^(3/2)*(12*A - (11*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(4*d) - ((2 + 2*I)*a^(3/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d + ((I/2)*a*B*Sqrt[a + I*a*Tan[c + d*x]])/(d*Cot[c + d*x]^(3/2)) + (a*((
4*I)*A + 5*B)*Sqrt[a + I*a*Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

]

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{1}{2}\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(}$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{a(4iA+5B)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\mathrm{co}\right.}{}$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{a(4iA+5B)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} - \left(2a(iA\right.$$

$$= \frac{iaB\sqrt{a+ia\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{a(4iA+5B)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{\left(4ia^3\right.}{}$$

$$= -\frac{(2-2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(}}{d}$$

$$= -\frac{(2-2i)a^{3/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(}}{d}$$

$$= -\frac{\sqrt[4]{-1}a^{3/2}(12iA+11B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan}}{4d}$$

Mathematica [A] time = 6.21254, size = 441, normalized size = 1.81

$$\frac{\cos^2(c+dx)\sqrt{\cot(c+dx)}(\cos(dx)-i\sin(dx))(a+ia\tan(c+dx))^{3/2}(A+B\tan(c+dx))\left(4(\sin(c)+i\cos(c))\tan(c+d\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c +
d*x]],x]
```

```
[Out] (Cos[c + d*x]^2*Sqrt[Cot[c + d*x]]*(Cos[d*x] - I*Sin[d*x])*(a + I*a*Tan[c +
 d*x])^(3/2)*(A + B*Tan[c + d*x])*(-(Sqrt[2]*(Sqrt[2]*(12*A - (11*I)*B)*Log
[(2*E^(((5*I)/2)*c)*(Sqrt[2] - I*Sqrt[2]*E^(I*(c + d*x)) + (2*I)*Sqrt[-1 +
E^((2*I)*(c + d*x))]))/((12*A - (11*I)*B)*(-I + E^(I*(c + d*x))))] + Sqrt[2
```

```
]*(-12*A + (11*I)*B)*Log[(2*E^(((5*I)/2)*c)*((-I)*Sqrt[2] + Sqrt[2]*E^(I*(c
 + d*x)) + 2*Sqrt[-1 + E^((2*I)*(c + d*x))]))/(((12*I)*A + 11*B)*(I + E^(I*
(c + d*x))))] + 32*(A - I*B)*Log[(Cos[c] - I*Sin[c])*(Cos[c + d*x] + I*Sin[
c + d*x] + Sqrt[-1 + Cos[2*(c + d*x)] + I*Sin[2*(c + d*x)]])])*Sqrt[I*(I +
Cot[c + d*x])*Sin[c + d*x]^2]*(Cos[2*c + d*x] - I*Sin[2*c + d*x])) + 4*(I*C
os[c] + Sin[c])*Tan[c + d*x]*(4*A - (5*I)*B + 2*B*Tan[c + d*x])))/(16*d*(A*
Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.571, size = 4490, normalized size = 18.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/16/d*2^(1/2)*a*(-32*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)
*cos(d*x+c)^2*sin(d*x+c)-16*B*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2
)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^2*sin(d*x+c)+8*A*2^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3+14*B*2^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3+24*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2))*2^(1/2)*cos(d*x+c)^3-12*A*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2
^(1/2)*cos(d*x+c)^3+8*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x
+c)^2*sin(d*x+c)-4*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)
-8*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)-8*A*
2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-12*A*ln(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)-24*A*arct
an(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+12*A*
ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)-11*
B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+2
2*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^2*sin(d*x+
c)+11*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^2*sin(d*
x+c)+11*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^2*si
n(d*x+c)-32*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c
)^3-32*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-3
2*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-16*B*c
os(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d
*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+c
os(d*x+c)+sin(d*x+c)-1))+32*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1
/2)-1)*cos(d*x+c)^3+32*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1
)*cos(d*x+c)^3+16*B*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+
```

c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(
d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^3-4*B*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+14*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^
2*sin(d*x+c)+12*I*A*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x
+c)^3-24*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^3
-12*I*A*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^3+8*I*A*
2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3-11*I*B*ln(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^3-22*I*B*arctan(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^3+11*I*B*ln(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^3-14*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*cos(d*x+c)^3-32*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1
/2)-1)*cos(d*x+c)^2*sin(d*x+c)-32*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2)+1)*cos(d*x+c)^2*sin(d*x+c)-16*I*A*ln(-(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^2*sin
(d*x+c)-12*I*A*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^2
+24*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^2+12*I
*A*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^2-32*I*B*arct
an(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2*sin(d*x+c)-32*
I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^2*sin(d*
x+c)-16*I*B*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d
*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-c
os(d*x+c)-sin(d*x+c)+1))*cos(d*x+c)^2*sin(d*x+c)+11*I*B*ln(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^2+22*I*B*arctan(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^2-11*I*B*cos(d*x+c)^2*2^(1/2)*ln(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)-1)+4*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*cos(d*x+c)^2-8*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)+
14*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)-10*B*cos(d*x+c)
*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-32*A*arctan(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^3-16*A*ln(-(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*cos(d*x+
c)^3+32*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+
32*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+16*A*
cos(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(
d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-
cos(d*x+c)-sin(d*x+c)+1))+11*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1
/2)*cos(d*x+c)^3-22*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)*cos
(d*x+c)^3-11*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^3
-4*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+4*B*cos(d*x+c)^2*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-12*A*cos(d*x+c)^2*2^(1/2)*ln(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-24*A*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2))+12*A*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)-1)-11*B*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)+1)+22*B*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))

```
+11*B*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-8*A*2^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)+12*A*ln(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^3+32*I*A*arctan(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^3+32*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^3+16*I*A*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^3+32*I*B*a
rctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^3+32*I*B*arct
an(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^3+16*I*B*ln(-(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)
/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c
)+1))*cos(d*x+c)^3-32*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-
1)*cos(d*x+c)^2-32*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*
cos(d*x+c)^2-16*I*A*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+
c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(
d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^2-32*I*B*arctan(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2-32*I*B*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^2-16*I*B*ln(-(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*cos(d*x+c)^2-4*
I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+32*A*arctan(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2*sin(d*x+c)+32*A*arctan(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^2*sin(d*x+c)+16*A*ln(-(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))
*cos(d*x+c)^2*sin(d*x+c)-32*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1
/2)-1)*cos(d*x+c)^2*sin(d*x+c)+22*I*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2))*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)-11*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)-1)*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+14*I*B*2^(1/2)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)-8*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)+10*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*cos(d*x+c)*sin(d*x+c)-12*I*A*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1
)*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+24*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2))*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)+12*I*A*ln(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)-1)*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)-14*B*2^(1/2)*cos(d*x+c)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2))*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/
(I*cos(d*x+c)+I*sin(d*x+c)-1+I+cos(d*x+c)-sin(d*x+c))/cos(d*x+c)/(cos(d*x+c
)/sin(d*x+c))^(1/2)/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)/sin(d*x+c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{3}{2}}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)/sqrt(cot(d*x +
c)), x)
```

Fricas [B] time = 1.55949, size = 2515, normalized size = 10.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((4*A - 7*I*B)*a*e^(4*I*d*x + 4*I*c) + 4*I*B*a*e^(2*I*d*x +
2*I*c) - (4*A - 3*I*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + sqrt((144*I*
A^2 + 264*A*B - 121*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x
 + 2*I*c) + d)*log((sqrt(2)*((12*I*A + 11*B)*a*e^(2*I*d*x + 2*I*c) + (-12*I
*A - 11*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 2*I*sqrt((144*I*A^2 + 26
4*A*B - 121*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((1
2*I*A + 11*B)*a)) - sqrt((144*I*A^2 + 264*A*B - 121*I*B^2)*a^3/d^2)*(d*e^(4
*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((12*I*A + 11*B
)*a*e^(2*I*d*x + 2*I*c) + (-12*I*A - 11*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x +
 I*c) - 2*I*sqrt((144*I*A^2 + 264*A*B - 121*I*B^2)*a^3/d^2)*d*e^(2*I*d*x +
2*I*c))*e^(-2*I*d*x - 2*I*c)/((12*I*A + 11*B)*a)) - 4*sqrt((8*I*A^2 + 16*A*
B - 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*A - 2*B)*a)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt((8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^
2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*B)*a)) + 4*sqrt(
```

```
(8*I*A^2 + 16*A*B - 8*I*B^2)*a^3/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d
*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 2*B)*a*e^(2*I*d*x + 2*I*c) + (-2*I*
A - 2*B)*a)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*sqrt((8*I*A^2 + 16*A*B -
 8*I*B^2)*a^3/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((2*I*A + 2*
B)*a)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{3}{2}}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(3/2)/sqrt(cot(d*x +
c)), x)
```

3.547 $\int \cot^{\frac{11}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=297

$$-\frac{2a^2(3B+4iA)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{21d}+\frac{2a^2(46A-45iB)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d}+\frac{8a^2(60B+59}{}$$

```
[Out] ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (8*a^
2*(197*A - (195*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(315*d
) + (8*a^2*((59*I)*A + 60*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])
/(315*d) + (2*a^2*(46*A - (45*I)*B)*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c +
 d*x]])/(105*d) - (2*a^2*((4*I)*A + 3*B)*Cot[c + d*x]^(7/2)*Sqrt[a + I*a*Ta
n[c + d*x]])/(21*d) - (2*a*A*Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^(3/2
))/(9*d)
```

Rubi [A] time = 1.1288, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3593, 3598, 12, 3544, 205}

$$-\frac{2a^2(3B+4iA)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{21d}+\frac{2a^2(46A-45iB)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d}+\frac{8a^2(60B+59}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(11/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x
]
```


```
[Out] ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (8*a^
2*(197*A - (195*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(315*d
) + (8*a^2*((59*I)*A + 60*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])
/(315*d) + (2*a^2*(46*A - (45*I)*B)*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c +
 d*x]])/(105*d) - (2*a^2*((4*I)*A + 3*B)*Cot[c + d*x]^(7/2)*Sqrt[a + I*a*Ta
n[c + d*x]])/(21*d) - (2*a*A*Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^(3/2
))/(9*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{11}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{5/2}}{\tan^{\frac{11}{2}}(c}$$

$$= -\frac{2aA\cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}{9d} + \frac{1}{9}\left(2\sqrt{\cot(}\right.$$

$$= -\frac{2a^2(4iA+3B)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{21d} - \frac{2a}{}$$

$$= \frac{2a^2(46A-45iB)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d} - \frac{2a}{}$$

$$= \frac{8a^2(59iA+60B)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{315d} + \frac{2}{}$$

$$= -\frac{8a^2(197A-195iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{315d}$$

$$= -\frac{8a^2(197A-195iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{315d}$$

$$= -\frac{8a^2(197A-195iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{315d}$$

$$= \frac{(4-4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{d}$$

Mathematica [A] time = 11.5458, size = 354, normalized size = 1.19

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(4\sqrt{2}(A-iB)e^{-3i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e^{i(c+}}{\sqrt{-1+e^{}}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(11/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d
*x]),x]
```

```
[Out] (((4*Sqrt[2]*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/
(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I
)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]]])/E^(
(3*I)*(c + d*x)) + (Sqrt[Cot[c + d*x]]*Csc[c + d*x]^4*Sqrt[Sec[c + d*x]]*(C
os[2*c] - I*Sin[2*c])*(-2331*A + (2205*I)*B + 12*(251*A - (260*I)*B)*Cos[2*
(c + d*x)] + (-961*A + (915*I)*B)*Cos[4*(c + d*x)] + (282*I)*A*Sin[2*(c + d
*x)] + 390*B*Sin[2*(c + d*x)] - (331*I)*A*Sin[4*(c + d*x)] - 285*B*Sin[4*(c
 + d*x)]))/(1260*(Cos[d*x] + I*Sin[d*x])^2))*(a + I*a*Tan[c + d*x])^(5/2)*(
A + B*Tan[c + d*x]))/(d*Sec[c + d*x]^(7/2)*(A*Cos[c + d*x] + B*Sin[c + d*x]
))
```

Maple [B] time = 0.566, size = 3412, normalized size = 11.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(11/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/315/d*a^2*2^(1/2)*(240*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+630*I*A*ln(-(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-
1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^4*sin(d*x+c)-285*B*cos(d*x
+c)^3*sin(d*x+c)*2^(1/2)+1260*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^4*sin(d*x+c)-2281*A
*cos(d*x+c)^3*2^(1/2)+1024*A*cos(d*x+c)*2^(1/2)+1714*A*2^(1/2)*cos(d*x+c)^2
+1260*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^4*sin(d*x+c)+1260*I*B*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)
^4*sin(d*x+c)+1260*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^4*sin(d*x+c)+630*I*B*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin
(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)
*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*cos(d*x+c)^4*sin(d*x+c)-1260*I*A*ln(-
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)
+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*
x+c)-1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)-2520*I*A
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)+1)*cos(d*x+c)^2*sin(d*x+c)-961*A*cos(d*x+c)^4*2^(1/2)-788*A*2^(1/2
)-1260*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)-1)-630*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(
d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)
```

+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+780*I*B*2^(1/2)-2520*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2*sin(d*x+c)-2520*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^2*sin(d*x+c)-2520*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2*sin(d*x+c)-1260*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*cos(d*x+c)^2*sin(d*x+c)+780*B*2^(1/2)*sin(d*x+c)+1292*A*cos(d*x+c)^5*2^(1/2)-1935*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-1200*I*B*cos(d*x+c)^5*2^(1/2)+915*I*B*cos(d*x+c)^4*2^(1/2)+2220*I*B*cos(d*x+c)^3*2^(1/2)-1695*I*B*cos(d*x+c)^2*2^(1/2)+788*I*A*sin(d*x+c)*2^(1/2)-1020*I*B*cos(d*x+c)*2^(1/2)+1260*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*sin(d*x+c)+1260*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*sin(d*x+c)+630*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*sin(d*x+c)-1260*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^4*sin(d*x+c)-1260*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^4*sin(d*x+c)-630*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*cos(d*x+c)^4*sin(d*x+c)+630*B*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^4*sin(d*x+c)+1260*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d*x+c)^4*sin(d*x+c)+1260*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^4*sin(d*x+c)+1292*I*A*cos(d*x+c)^4*sin(d*x+c)*2^(1/2)-331*I*A*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)-1950*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+630*I*A*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)+1260*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*sin(d*x+c)+1260*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*sin(d*x+c)+236*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)+1260*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+1260*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+630*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-1260*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)

```
*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+2520*A*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+1)+2520*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*s
in(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+1260*A*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-2520*B*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-2520*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*co
s(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-1
260*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*ln(-(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)
)+1200*B*cos(d*x+c)^4*sin(d*x+c)*2^(1/2))*(cos(d*x+c)/sin(d*x+c))^(11/2)*(a
*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d
*x+c)-1)/cos(d*x+c)^5
```

Maxima [B] time = 26.9287, size = 6020, normalized size = 20.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, al
gorithm="maxima")
```

```
[Out] 1/1587600*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c
) + 1)*(((-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*cos(7*d*x
 + 7*c) + ((21168000*I + 21168000)*A - (21168000*I - 21168000)*B)*a^2*cos(5
*d*x + 5*c) + (-(25824960*I + 25824960)*A + (25824960*I - 25824960)*B)*a^2*
cos(3*d*x + 3*c) + ((11429460*I + 11429460)*A - (11139660*I - 11139660)*B)*
a^2*cos(d*x + c) + (-(6350400*I - 6350400)*A - (6350400*I + 6350400)*B)*a^2
*sin(7*d*x + 7*c) + ((21168000*I - 21168000)*A + (21168000*I + 21168000)*B)
*a^2*sin(5*d*x + 5*c) + (-(25824960*I - 25824960)*A - (25824960*I + 2582496
0)*B)*a^2*sin(3*d*x + 3*c) + ((11429460*I - 11429460)*A + (11139660*I + 111
39660)*B)*a^2*sin(d*x + c))*cos(7/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2
*c) - 1)) + (((1219680*I + 1219680)*A - (756000*I - 756000)*B)*a^2*cos(d*x
+ c) + ((1219680*I - 1219680)*A + (756000*I + 756000)*B)*a^2*sin(d*x + c) +
 (((1219680*I + 1219680)*A - (756000*I - 756000)*B)*a^2*cos(d*x + c) + ((12
19680*I - 1219680)*A + (756000*I + 756000)*B)*a^2*sin(d*x + c))*cos(2*d*x +
 2*c)^2 + (((1219680*I + 1219680)*A - (756000*I - 756000)*B)*a^2*cos(d*x +
c) + ((1219680*I - 1219680)*A + (756000*I + 756000)*B)*a^2*sin(d*x + c))*si
```

n(2*d*x + 2*c)^2 + ((-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^
2*cos(2*d*x + 2*c)^2 + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)
*a^2*sin(2*d*x + 2*c)^2 + ((12700800*I + 12700800)*A - (12700800*I - 127008
00)*B)*a^2*cos(2*d*x + 2*c) + (-(6350400*I + 6350400)*A + (6350400*I - 6350
400)*B)*a^2)*cos(3*d*x + 3*c) + ((-(2439360*I + 2439360)*A + (1512000*I - 1
512000)*B)*a^2*cos(d*x + c) + (-(2439360*I - 2439360)*A - (1512000*I + 1512
000)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c) + ((-(6350400*I - 6350400)*A - (
6350400*I + 6350400)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(6350400*I - 6350400)*A
- (6350400*I + 6350400)*B)*a^2*sin(2*d*x + 2*c)^2 + ((12700800*I - 12700800
)*A + (12700800*I + 12700800)*B)*a^2*cos(2*d*x + 2*c) + (-(6350400*I - 6350
400)*A - (6350400*I + 6350400)*B)*a^2)*sin(3*d*x + 3*c))*cos(3/2*arctan2(si
n(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((6350400*I - 6350400)*A + (63504
00*I + 6350400)*B)*a^2*cos(7*d*x + 7*c) + (-(21168000*I - 21168000)*A - (21
168000*I + 21168000)*B)*a^2*cos(5*d*x + 5*c) + ((25824960*I - 25824960)*A +
 (25824960*I + 25824960)*B)*a^2*cos(3*d*x + 3*c) + (-(11429460*I - 11429460
)*A - (11139660*I + 11139660)*B)*a^2*cos(d*x + c) + (-(6350400*I + 6350400)
*A + (6350400*I - 6350400)*B)*a^2*sin(7*d*x + 7*c) + ((21168000*I + 2116800
0)*A - (21168000*I - 21168000)*B)*a^2*sin(5*d*x + 5*c) + (-(25824960*I + 25
824960)*A + (25824960*I - 25824960)*B)*a^2*sin(3*d*x + 3*c) + ((11429460*I
+ 11429460)*A - (11139660*I - 11139660)*B)*a^2*sin(d*x + c))*sin(7/2*arctan
2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((-(1219680*I - 1219680)*A - (
756000*I + 756000)*B)*a^2*cos(d*x + c) + ((1219680*I + 1219680)*A - (756000
*I - 756000)*B)*a^2*sin(d*x + c) + ((-(1219680*I - 1219680)*A - (756000*I +
 756000)*B)*a^2*cos(d*x + c) + ((1219680*I + 1219680)*A - (756000*I - 75600
0)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(1219680*I - 1219680)*A - (
756000*I + 756000)*B)*a^2*cos(d*x + c) + ((1219680*I + 1219680)*A - (756000
*I - 756000)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^2 + (((6350400*I - 63504
00)*A + (6350400*I + 6350400)*B)*a^2*cos(2*d*x + 2*c)^2 + ((6350400*I - 635
0400)*A + (6350400*I + 6350400)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(12700800*I -
 12700800)*A - (12700800*I + 12700800)*B)*a^2*cos(2*d*x + 2*c) + ((6350400*
I - 6350400)*A + (6350400*I + 6350400)*B)*a^2)*cos(3*d*x + 3*c) + (((243936
0*I - 2439360)*A + (1512000*I + 1512000)*B)*a^2*cos(d*x + c) + (-(2439360*I
 + 2439360)*A + (1512000*I - 1512000)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)
 + ((-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*cos(2*d*x + 2*
c)^2 + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*sin(2*d*x +
 2*c)^2 + ((12700800*I + 12700800)*A - (12700800*I - 12700800)*B)*a^2*cos(2
*d*x + 2*c) + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2)*sin
(3*d*x + 3*c))*sin(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sq
rt(a) + ((((6350400*I - 6350400)*A + (6350400*I + 6350400)*B)*a^2*cos(2*d*x
 + 2*c)^4 + ((6350400*I - 6350400)*A + (6350400*I + 6350400)*B)*a^2*sin(2*d
*x + 2*c)^4 + (-(25401600*I - 25401600)*A - (25401600*I + 25401600)*B)*a^2*
cos(2*d*x + 2*c)^3 + ((38102400*I - 38102400)*A + (38102400*I + 38102400)*B
)*a^2*cos(2*d*x + 2*c)^2 + (-(25401600*I - 25401600)*A - (25401600*I + 2540
1600)*B)*a^2*cos(2*d*x + 2*c) + ((6350400*I - 6350400)*A + (6350400*I + 635
0400)*B)*a^2 + (((12700800*I - 12700800)*A + (12700800*I + 12700800)*B)*a^2

```
*cos(2*d*x + 2*c)^2 + (-(25401600*I - 25401600)*A - (25401600*I + 25401600)
*B)*a^2*cos(2*d*x + 2*c) + ((12700800*I - 12700800)*A + (12700800*I + 12700
800)*B)*a^2)*sin(2*d*x + 2*c)^2)*arctan2(2*(cos(2*d*x + 2*c)^2 + sin(2*d*x
+ 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2*arctan2(sin(2*d*x + 2*c),
cos(2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(2*d*x + 2*c)^2 + sin(2*d*x
+ 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2*arctan2(sin(2*d*x + 2*c),
cos(2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + (((3175200*I + 3175200)*A - (317
5200*I - 3175200)*B)*a^2*cos(2*d*x + 2*c)^4 + ((3175200*I + 3175200)*A - (3
175200*I - 3175200)*B)*a^2*sin(2*d*x + 2*c)^4 + (-(12700800*I + 12700800)*A
 + (12700800*I - 12700800)*B)*a^2*cos(2*d*x + 2*c)^3 + ((19051200*I + 19051
200)*A - (19051200*I - 19051200)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(12700800*I
+ 12700800)*A + (12700800*I - 12700800)*B)*a^2*cos(2*d*x + 2*c) + ((3175200
*I + 3175200)*A - (3175200*I - 3175200)*B)*a^2 + (((6350400*I + 6350400)*A
- (6350400*I - 6350400)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(12700800*I + 1270080
0)*A + (12700800*I - 12700800)*B)*a^2*cos(2*d*x + 2*c) + ((6350400*I + 6350
400)*A - (6350400*I - 6350400)*B)*a^2)*sin(2*d*x + 2*c)^2)*log(4*cos(d*x +
c)^2 + 4*sin(d*x + c)^2 + 4*sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 -
2*cos(2*d*x + 2*c) + 1)*(cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c)
 - 1))^2 + sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2) + 8*
(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*(c
os(d*x + c)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + sin(
d*x + c)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))))*(cos(2
*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sqrt(a)
+ (((-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*cos(9*d*x + 9*
c) + ((7408800*I + 7408800)*A - (13759200*I - 13759200)*B)*a^2*cos(7*d*x +
7*c) + (-(8414280*I + 8414280)*A + (13177080*I - 13177080)*B)*a^2*cos(5*d*x
 + 5*c) + ((631260*I + 631260)*A - (6717060*I - 6717060)*B)*a^2*cos(3*d*x +
 3*c) + ((1079820*I + 1079820)*A + (948780*I - 948780)*B)*a^2*cos(d*x + c)
+ (-(6350400*I - 6350400)*A - (6350400*I + 6350400)*B)*a^2*sin(9*d*x + 9*c)
 + ((7408800*I - 7408800)*A + (13759200*I + 13759200)*B)*a^2*sin(7*d*x + 7*
c) + (-(8414280*I - 8414280)*A - (13177080*I + 13177080)*B)*a^2*sin(5*d*x +
 5*c) + ((631260*I - 631260)*A + (6717060*I + 6717060)*B)*a^2*sin(3*d*x + 3
*c) + ((1079820*I - 1079820)*A - (948780*I + 948780)*B)*a^2*sin(d*x + c))*c
os(9/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((-(7159320*I + 7
159320)*A + (6811560*I - 6811560)*B)*a^2*cos(d*x + c) + (-(7159320*I - 7159
320)*A - (6811560*I + 6811560)*B)*a^2*sin(d*x + c) + ((-(7159320*I + 715932
0)*A + (6811560*I - 6811560)*B)*a^2*cos(d*x + c) + (-(7159320*I - 7159320)*
A - (6811560*I + 6811560)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(715
9320*I + 7159320)*A + (6811560*I - 6811560)*B)*a^2*cos(d*x + c) + (-(715932
0*I - 7159320)*A - (6811560*I + 6811560)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2
*c)^2 + ((-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*cos(2*d*x
 + 2*c)^2 + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*sin(2*
d*x + 2*c)^2 + ((12700800*I + 12700800)*A - (12700800*I - 12700800)*B)*a^2*
cos(2*d*x + 2*c) + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2
)*cos(5*d*x + 5*c) + (((14817600*I + 14817600)*A - (14817600*I - 14817600)*
```

B)*a^2*cos(2*d*x + 2*c)^2 + ((14817600*I + 14817600)*A - (14817600*I - 1481
7600)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(29635200*I + 29635200)*A + (29635200*I
 - 29635200)*B)*a^2*cos(2*d*x + 2*c) + ((14817600*I + 14817600)*A - (148176
00*I - 14817600)*B)*a^2)*cos(3*d*x + 3*c) + (((14318640*I + 14318640)*A - (
13623120*I - 13623120)*B)*a^2*cos(d*x + c) + ((14318640*I - 14318640)*A + (
13623120*I + 13623120)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c) + ((-(6350400*
I - 6350400)*A - (6350400*I + 6350400)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(63504
00*I - 6350400)*A - (6350400*I + 6350400)*B)*a^2*sin(2*d*x + 2*c)^2 + ((127
00800*I - 12700800)*A + (12700800*I + 12700800)*B)*a^2*cos(2*d*x + 2*c) + (
-(6350400*I - 6350400)*A - (6350400*I + 6350400)*B)*a^2)*sin(5*d*x + 5*c) +
 (((14817600*I - 14817600)*A + (14817600*I + 14817600)*B)*a^2*cos(2*d*x + 2
*c)^2 + ((14817600*I - 14817600)*A + (14817600*I + 14817600)*B)*a^2*sin(2*d
*x + 2*c)^2 + (-(29635200*I - 29635200)*A - (29635200*I + 29635200)*B)*a^2*
cos(2*d*x + 2*c) + ((14817600*I - 14817600)*A + (14817600*I + 14817600)*B)*
a^2)*sin(3*d*x + 3*c))*cos(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) -
 1)) + ((((12378240*I + 12378240)*A - (13305600*I - 13305600)*B)*a^2*cos(d*
x + c) + ((12378240*I - 12378240)*A + (13305600*I + 13305600)*B)*a^2*sin(d*
x + c))*cos(2*d*x + 2*c)^4 + (((12378240*I + 12378240)*A - (13305600*I - 13
305600)*B)*a^2*cos(d*x + c) + ((12378240*I - 12378240)*A + (13305600*I + 13
305600)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^4 + ((-(49512960*I + 49512960
)*A + (53222400*I - 53222400)*B)*a^2*cos(d*x + c) + (-(49512960*I - 4951296
0)*A - (53222400*I + 53222400)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^3 + ((
12378240*I + 12378240)*A - (13305600*I - 13305600)*B)*a^2*cos(d*x + c) + ((
12378240*I - 12378240)*A + (13305600*I + 13305600)*B)*a^2*sin(d*x + c) + ((
(74269440*I + 74269440)*A - (79833600*I - 79833600)*B)*a^2*cos(d*x + c) + (
(74269440*I - 74269440)*A + (79833600*I + 79833600)*B)*a^2*sin(d*x + c))*co
s(2*d*x + 2*c)^2 + (((24756480*I + 24756480)*A - (26611200*I - 26611200)*B)
*a^2*cos(d*x + c) + ((24756480*I - 24756480)*A + (26611200*I + 26611200)*B)
*a^2*sin(d*x + c) + (((24756480*I + 24756480)*A - (26611200*I - 26611200)*B
)*a^2*cos(d*x + c) + ((24756480*I - 24756480)*A + (26611200*I + 26611200)*B
)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(49512960*I + 49512960)*A + (53
222400*I - 53222400)*B)*a^2*cos(d*x + c) + (-(49512960*I - 49512960)*A - (5
3222400*I + 53222400)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*sin(2*d*x + 2*
c)^2 + ((-(49512960*I + 49512960)*A + (53222400*I - 53222400)*B)*a^2*cos(d*
x + c) + (-(49512960*I - 49512960)*A - (53222400*I + 53222400)*B)*a^2*sin(d
*x + c))*cos(2*d*x + 2*c))*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*
c) - 1)) + (((6350400*I - 6350400)*A + (6350400*I + 6350400)*B)*a^2*cos(9*d
*x + 9*c) + (-(7408800*I - 7408800)*A - (13759200*I + 13759200)*B)*a^2*cos(
7*d*x + 7*c) + ((8414280*I - 8414280)*A + (13177080*I + 13177080)*B)*a^2*co
s(5*d*x + 5*c) + (-(631260*I - 631260)*A - (6717060*I + 6717060)*B)*a^2*cos
(3*d*x + 3*c) + (-(1079820*I - 1079820)*A + (948780*I + 948780)*B)*a^2*cos(
d*x + c) + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*sin(9*d
*x + 9*c) + ((7408800*I + 7408800)*A - (13759200*I - 13759200)*B)*a^2*sin(7
*d*x + 7*c) + (-(8414280*I + 8414280)*A + (13177080*I - 13177080)*B)*a^2*si
n(5*d*x + 5*c) + ((631260*I + 631260)*A - (6717060*I - 6717060)*B)*a^2*sin(

3*d*x + 3*c) + ((1079820*I + 1079820)*A + (948780*I - 948780)*B)*a^2*sin(d*
x + c))*sin(9/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((71593
20*I - 7159320)*A + (6811560*I + 6811560)*B)*a^2*cos(d*x + c) + (-(7159320*
I + 7159320)*A + (6811560*I - 6811560)*B)*a^2*sin(d*x + c) + (((7159320*I -
 7159320)*A + (6811560*I + 6811560)*B)*a^2*cos(d*x + c) + (-(7159320*I + 71
59320)*A + (6811560*I - 6811560)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 +
(((7159320*I - 7159320)*A + (6811560*I + 6811560)*B)*a^2*cos(d*x + c) + (-(
7159320*I + 7159320)*A + (6811560*I - 6811560)*B)*a^2*sin(d*x + c))*sin(2*d
*x + 2*c)^2 + (((6350400*I - 6350400)*A + (6350400*I + 6350400)*B)*a^2*cos(
2*d*x + 2*c)^2 + ((6350400*I - 6350400)*A + (6350400*I + 6350400)*B)*a^2*si
n(2*d*x + 2*c)^2 + (-(12700800*I - 12700800)*A - (12700800*I + 12700800)*B)
*a^2*cos(2*d*x + 2*c) + ((6350400*I - 6350400)*A + (6350400*I + 6350400)*B)
*a^2)*cos(5*d*x + 5*c) + ((-(14817600*I - 14817600)*A - (14817600*I + 14817
600)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(14817600*I - 14817600)*A - (14817600*I
+ 14817600)*B)*a^2*sin(2*d*x + 2*c)^2 + ((29635200*I - 29635200)*A + (29635
200*I + 29635200)*B)*a^2*cos(2*d*x + 2*c) + (-(14817600*I - 14817600)*A - (
14817600*I + 14817600)*B)*a^2)*cos(3*d*x + 3*c) + ((-(14318640*I - 14318640
)*A - (13623120*I + 13623120)*B)*a^2*cos(d*x + c) + ((14318640*I + 14318640
)*A - (13623120*I - 13623120)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c) + ((-(6
350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*cos(2*d*x + 2*c)^2 + (
-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2*sin(2*d*x + 2*c)^2
+ ((12700800*I + 12700800)*A - (12700800*I - 12700800)*B)*a^2*cos(2*d*x + 2
*c) + (-(6350400*I + 6350400)*A + (6350400*I - 6350400)*B)*a^2)*sin(5*d*x +
 5*c) + (((14817600*I + 14817600)*A - (14817600*I - 14817600)*B)*a^2*cos(2*
d*x + 2*c)^2 + ((14817600*I + 14817600)*A - (14817600*I - 14817600)*B)*a^2*
sin(2*d*x + 2*c)^2 + (-(29635200*I + 29635200)*A + (29635200*I - 29635200)*
B)*a^2*cos(2*d*x + 2*c) + ((14817600*I + 14817600)*A - (14817600*I - 148176
00)*B)*a^2)*sin(3*d*x + 3*c))*sin(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x +
 2*c) - 1)) + (((-(12378240*I - 12378240)*A - (13305600*I + 13305600)*B)*a^
2*cos(d*x + c) + ((12378240*I + 12378240)*A - (13305600*I - 13305600)*B)*a^
2*sin(d*x + c))*cos(2*d*x + 2*c)^4 + ((-(12378240*I - 12378240)*A - (133056
00*I + 13305600)*B)*a^2*cos(d*x + c) + ((12378240*I + 12378240)*A - (133056
00*I - 13305600)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^4 + (((49512960*I -
49512960)*A + (53222400*I + 53222400)*B)*a^2*cos(d*x + c) + (-(49512960*I +
 49512960)*A + (53222400*I - 53222400)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c
)^3 + (-(12378240*I - 12378240)*A - (13305600*I + 13305600)*B)*a^2*cos(d*x
+ c) + ((12378240*I + 12378240)*A - (13305600*I - 13305600)*B)*a^2*sin(d*x
+ c) + ((-(74269440*I - 74269440)*A - (79833600*I + 79833600)*B)*a^2*cos(d*
x + c) + ((74269440*I + 74269440)*A - (79833600*I - 79833600)*B)*a^2*sin(d*
x + c))*cos(2*d*x + 2*c)^2 + ((-(24756480*I - 24756480)*A - (26611200*I + 2
6611200)*B)*a^2*cos(d*x + c) + ((24756480*I + 24756480)*A - (26611200*I - 2
6611200)*B)*a^2*sin(d*x + c) + ((-(24756480*I - 24756480)*A - (26611200*I +
 26611200)*B)*a^2*cos(d*x + c) + ((24756480*I + 24756480)*A - (26611200*I -
 26611200)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (((49512960*I - 495129
60)*A + (53222400*I + 53222400)*B)*a^2*cos(d*x + c) + (-(49512960*I + 49512

```
960)*A + (53222400*I - 53222400)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*sin
(2*d*x + 2*c)^2 + (((49512960*I - 49512960)*A + (53222400*I + 53222400)*B)*
a^2*cos(d*x + c) + (-(49512960*I + 49512960)*A + (53222400*I - 53222400)*B)
*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(
2*d*x + 2*c) - 1)))*sqrt(a))/((cos(2*d*x + 2*c)^4 + sin(2*d*x + 2*c)^4 - 4*
cos(2*d*x + 2*c)^3 + 2*(cos(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*sin(2*
d*x + 2*c)^2 + 6*cos(2*d*x + 2*c)^2 - 4*cos(2*d*x + 2*c) + 1)*(cos(2*d*x +
2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*d)
```

Fricas [B] time = 1.54211, size = 1813, normalized size = 6.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, al
gorithm="fricas")
```

```
[Out] -1/630*(8*sqrt(2)*(2*(323*A - 300*I*B)*a^2*e^(8*I*d*x + 8*I*c) - 27*(61*A -
 65*I*B)*a^2*e^(6*I*d*x + 6*I*c) + 63*(37*A - 35*I*B)*a^2*e^(4*I*d*x + 4*I*
c) - 1365*(A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + 315*(A - I*B)*a^2)*sqrt(a/(e^
(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) - 1))*e^(I*d*x + I*c) - 315*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)
*(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c)
 - 4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x
+ 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt(
(32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
- 2*I*c)/((4*I*A + 4*B)*a^2)) + 315*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5
/d^2)*(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x + 6*I*c) + 6*d*e^(4*I*d*x + 4
*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I
*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt(
(I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*
sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I
*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(8*I*d*x + 8*I*c) - 4*d*e^(6*I*d*x
 + 6*I*c) + 6*d*e^(4*I*d*x + 4*I*c) - 4*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(11/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{11}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, al
gorithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(1
1/2), x)
```

3.548 $\int \cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=251

$$-\frac{2a^2(7B+10iA)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d}+\frac{2a^2(80A-77iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d}+\frac{4a^2(133B+$$

```
[Out] ((4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (4*a^
2*((130*I)*A + 133*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(105*d
) + (2*a^2*(80*A - (77*I)*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])
/(105*d) - (2*a^2*((10*I)*A + 7*B)*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c +
d*x]])/(35*d) - (2*a*A*Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^(3/2))/(7*
d)
```

Rubi [A] time = 0.94605, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3593, 3598, 12, 3544, 205}

$$-\frac{2a^2(7B+10iA)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d}+\frac{2a^2(80A-77iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d}+\frac{4a^2(133B+$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/S
qrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (4*a^
2*((130*I)*A + 133*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(105*d
) + (2*a^2*(80*A - (77*I)*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])
/(105*d) - (2*a^2*((10*I)*A + 7*B)*Cot[c + d*x]^(5/2)*Sqrt[a + I*a*Tan[c +
d*x]])/(35*d) - (2*a*A*Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^(3/2))/(7*
d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

```
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{5/2}(}{\tan^{\frac{9}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}{7d} + \frac{1}{7}\left(2\sqrt{\cot(}\right.$$

$$= -\frac{2a^2(10iA+7B)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{35d} - \frac{2a}{}$$

$$= \frac{2a^2(80A-77iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{105d} - \frac{2a}{}$$

$$= \frac{4a^2(130iA+133B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{105d} +$$

$$= \frac{4a^2(130iA+133B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{105d} +$$

$$= \frac{4a^2(130iA+133B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{105d} +$$

$$= -\frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{d}$$

Mathematica [A] time = 9.69823, size = 332, normalized size = 1.32

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(-4i\sqrt{2}(A-iB)e^{-3i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e}{\sqrt{-1}}\right.\right.}{d\sec^{\frac{7}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] ((((-4*I)*Sqrt[2]*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d
*x))/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^
((2*I)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]]
)/E^((3*I)*(c + d*x)) - (Sqrt[Cot[c + d*x]]*Csc[c + d*x]^3*Sqrt[Sec[c + d*x
]]*(Cos[2*c] - I*Sin[2*c])*((-35*A + (77*I)*B)*Cos[c + d*x] + (95*A - (77*I
```

```
)*B)*Cos[3*(c + d*x)] + 2*((-215*I)*A - 245*B + ((305*I)*A + 287*B)*Cos[2*(
c + d*x)])*Sin[c + d*x]))/(210*(Cos[d*x] + I*Sin[d*x])^2))*(a + I*a*Tan[c +
 d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*Sec[c + d*x]^(7/2)*(A*Cos[c + d*x] +
B*Sin[c + d*x]))
```

Maple [B] time = 0.507, size = 3126, normalized size = 12.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/105/d*a^2*2^(1/2)*(-840*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-420*B*cos(d*x+c)^2*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/
2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2
^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-840*B*cos(d*x+c)^2*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-3
43*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+400*I*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)-
305*I*A*2^(1/2)*cos(d*x+c)^2*sin(d*x+c)-840*I*A*cos(d*x+c)^2*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-840
*I*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)-1)-420*I*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+
c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(
d*x+c)-sin(d*x+c)+1))+840*I*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+840*I*B*cos(d*x+c)^2*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2)-1)+420*I*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-
1))-340*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)+420*I*A*cos(d*x+c)^4*arctan(((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+4
20*I*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)-1)+210*I*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*
x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-co
s(d*x+c)-sin(d*x+c)+1))-420*I*B*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-420*I*B*cos(d*x+c)^
4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)-1)-210*I*B*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((
```

cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)
/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c
)-1))+364*B*cos(d*x+c)^3*sin(d*x+c)*2^(1/2)-95*A*cos(d*x+c)^3*2^(1/2)+80*A*
cos(d*x+c)*2^(1/2)-266*I*B*2^(1/2)-840*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-840*A*cos(
d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+1)-420*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln
(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+
c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(
d*x+c)-1))-645*A*2^(1/2)*cos(d*x+c)^2+400*A*cos(d*x+c)^4*2^(1/2)+260*A*2^(1
/2)+420*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)+420*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+210*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin
(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)
+sin(d*x+c)-1))+420*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)+210*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln
(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+
c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(
d*x+c)+1))+420*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)+1)+266*B*2^(1/2)*sin(d*x+c)-287*B*cos(d*x+c)^2*sin
(d*x+c)*2^(1/2)+420*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+210*A*cos(d*x+c)^4*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(
d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*
sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+210*B*cos(d*x+c)^4*ln(-(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)+420*B*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+420*B*cos(d*x+c)^
4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)-1)+420*A*cos(d*x+c)^4*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-364*I*B*2^(1/2)*cos(d*x+c)^4+77*
I*B*2^(1/2)*cos(d*x+c)^3+630*I*B*2^(1/2)*cos(d*x+c)^2+260*I*A*2^(1/2)*sin(d
*x+c)+420*I*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)+420*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan((
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+210*I*A*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*
x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-co
s(d*x+c)-sin(d*x+c)+1))-77*I*B*2^(1/2)*cos(d*x+c)-420*I*B*arctan(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-420*I*
B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)-1)-210*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)))*(cos(d

```
*x+c)/sin(d*x+c))^(9/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*sin(
d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^4
```

Maxima [B] time = 9.94747, size = 5426, normalized size = 21.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] 1/11025*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c)
+ 1)*((((44100*I - 44100)*A + (44100*I + 44100)*B)*a^2*cos(7*d*x + 7*c) + (
-(44100*I - 44100)*A - (88200*I + 88200)*B)*a^2*cos(5*d*x + 5*c) + ((26460*
I - 26460)*A + (59535*I + 59535)*B)*a^2*cos(3*d*x + 3*c) + (-(1260*I - 1260
)*A - (15435*I + 15435)*B)*a^2*cos(d*x + c) + (-(44100*I + 44100)*A + (4410
0*I - 44100)*B)*a^2*sin(7*d*x + 7*c) + ((44100*I + 44100)*A - (88200*I - 88
200)*B)*a^2*sin(5*d*x + 5*c) + (-(26460*I + 26460)*A + (59535*I - 59535)*B)
*a^2*sin(3*d*x + 3*c) + ((1260*I + 1260)*A - (15435*I - 15435)*B)*a^2*sin(d
*x + c))*cos(7/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((-(273
00*I - 27300)*A - (23520*I + 23520)*B)*a^2*cos(d*x + c) + ((27300*I + 27300
)*A - (23520*I - 23520)*B)*a^2*sin(d*x + c) + ((-(27300*I - 27300)*A - (235
20*I + 23520)*B)*a^2*cos(d*x + c) + ((27300*I + 27300)*A - (23520*I - 23520
)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(27300*I - 27300)*A - (23520
*I + 23520)*B)*a^2*cos(d*x + c) + ((27300*I + 27300)*A - (23520*I - 23520)*
B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^2 + (((44100*I - 44100)*A + (44100*I
+ 44100)*B)*a^2*cos(2*d*x + 2*c)^2 + ((44100*I - 44100)*A + (44100*I + 4410
0)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(88200*I - 88200)*A - (88200*I + 88200)*B)
*a^2*cos(2*d*x + 2*c) + ((44100*I - 44100)*A + (44100*I + 44100)*B)*a^2)*co
s(3*d*x + 3*c) + (((54600*I - 54600)*A + (47040*I + 47040)*B)*a^2*cos(d*x +
 c) + (-(54600*I + 54600)*A + (47040*I - 47040)*B)*a^2*sin(d*x + c))*cos(2*
d*x + 2*c) + ((-(44100*I + 44100)*A + (44100*I - 44100)*B)*a^2*cos(2*d*x +
2*c)^2 + (-(44100*I + 44100)*A + (44100*I - 44100)*B)*a^2*sin(2*d*x + 2*c)^
2 + ((88200*I + 88200)*A - (88200*I - 88200)*B)*a^2*cos(2*d*x + 2*c) + (-(4
4100*I + 44100)*A + (44100*I - 44100)*B)*a^2)*sin(3*d*x + 3*c))*cos(3/2*arc
tan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((((44100*I + 44100)*A - (44
100*I - 44100)*B)*a^2*cos(7*d*x + 7*c) + (-(44100*I + 44100)*A + (88200*I -
 88200)*B)*a^2*cos(5*d*x + 5*c) + ((26460*I + 26460)*A - (59535*I - 59535)*
B)*a^2*cos(3*d*x + 3*c) + (-(1260*I + 1260)*A + (15435*I - 15435)*B)*a^2*co
s(d*x + c) + ((44100*I - 44100)*A + (44100*I + 44100)*B)*a^2*sin(7*d*x + 7*
c) + (-(44100*I - 44100)*A - (88200*I + 88200)*B)*a^2*sin(5*d*x + 5*c) + ((
```

26460*I - 26460)*A + (59535*I + 59535)*B)*a^2*sin(3*d*x + 3*c) + (-(1260*I - 1260)*A - (15435*I + 15435)*B)*a^2*sin(d*x + c))*sin(7/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((-(27300*I + 27300)*A + (23520*I - 23520)*B)*a^2*cos(d*x + c) + (-(27300*I - 27300)*A - (23520*I + 23520)*B)*a^2*sin(d*x + c) + ((-(27300*I + 27300)*A + (23520*I - 23520)*B)*a^2*cos(d*x + c) + (-(27300*I - 27300)*A - (23520*I + 23520)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(27300*I + 27300)*A + (23520*I - 23520)*B)*a^2*cos(d*x + c) + (-(27300*I - 27300)*A - (23520*I + 23520)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^2 + (((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2*cos(2*d*x + 2*c)^2 + ((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(88200*I + 88200)*A + (88200*I - 88200)*B)*a^2*cos(2*d*x + 2*c) + ((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2)*cos(3*d*x + 3*c) + (((54600*I + 54600)*A - (47040*I - 47040)*B)*a^2*cos(d*x + c) + ((54600*I - 54600)*A + (47040*I + 47040)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c) + (((44100*I - 44100)*A + (44100*I + 44100)*B)*a^2*cos(2*d*x + 2*c)^2 + ((44100*I - 44100)*A + (44100*I + 44100)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(88200*I - 88200)*A - (88200*I + 88200)*B)*a^2*cos(2*d*x + 2*c) + ((44100*I - 44100)*A + (44100*I + 44100)*B)*a^2)*sin(3*d*x + 3*c))*sin(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a) + ((((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2*cos(2*d*x + 2*c)^4 + ((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2*sin(2*d*x + 2*c)^4 + (-(176400*I + 176400)*A + (176400*I - 176400)*B)*a^2*cos(2*d*x + 2*c)^3 + ((264600*I + 264600)*A - (264600*I - 264600)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(176400*I + 176400)*A + (176400*I - 176400)*B)*a^2*cos(2*d*x + 2*c) + ((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2 + (((88200*I + 88200)*A - (88200*I - 88200)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(176400*I + 176400)*A + (176400*I - 176400)*B)*a^2*cos(2*d*x + 2*c) + ((88200*I + 88200)*A - (88200*I - 88200)*B)*a^2)*sin(2*d*x + 2*c)^2)*arctan2(2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x + c), 2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x + c)) + ((-(22050*I - 22050)*A - (22050*I + 22050)*B)*a^2*cos(2*d*x + 2*c)^4 + (-(22050*I - 22050)*A - (22050*I + 22050)*B)*a^2*sin(2*d*x + 2*c)^4 + ((88200*I - 88200)*A + (88200*I + 88200)*B)*a^2*cos(2*d*x + 2*c)^3 + (-(132300*I - 132300)*A - (132300*I + 132300)*B)*a^2*cos(2*d*x + 2*c)^2 + ((88200*I - 88200)*A + (88200*I + 88200)*B)*a^2*cos(2*d*x + 2*c) + (-(22050*I - 22050)*A - (22050*I + 22050)*B)*a^2 + ((-(44100*I - 44100)*A - (44100*I + 44100)*B)*a^2*cos(2*d*x + 2*c)^2 + ((88200*I - 88200)*A + (88200*I + 88200)*B)*a^2*cos(2*d*x + 2*c) + (-(44100*I - 44100)*A - (44100*I + 44100)*B)*a^2)*sin(2*d*x + 2*c)^2)*log(4*cos(d*x + c)^2 + 4*sin(d*x + c)^2 + 4*sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*(cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2 + sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + sin(d*x + c)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))))*(

cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1/4)*sqr
t(a) + ((((63840*I - 63840)*A + (61005*I + 61005)*B)*a^2*cos(d*x + c) + (-(
63840*I + 63840)*A + (61005*I - 61005)*B)*a^2*sin(d*x + c) + (((63840*I - 6
3840)*A + (61005*I + 61005)*B)*a^2*cos(d*x + c) + (-(63840*I + 63840)*A + (
61005*I - 61005)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (((63840*I - 638
40)*A + (61005*I + 61005)*B)*a^2*cos(d*x + c) + (-(63840*I + 63840)*A + (61
005*I - 61005)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^2 + (((44100*I - 44100
)*A + (44100*I + 44100)*B)*a^2*cos(2*d*x + 2*c)^2 + ((44100*I - 44100)*A +
(44100*I + 44100)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(88200*I - 88200)*A - (8820
0*I + 88200)*B)*a^2*cos(2*d*x + 2*c) + ((44100*I - 44100)*A + (44100*I + 44
100)*B)*a^2)*cos(5*d*x + 5*c) + ((-(102900*I - 102900)*A - (102900*I + 1029
00)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(102900*I - 102900)*A - (102900*I + 10290
0)*B)*a^2*sin(2*d*x + 2*c)^2 + ((205800*I - 205800)*A + (205800*I + 205800)
*B)*a^2*cos(2*d*x + 2*c) + (-(102900*I - 102900)*A - (102900*I + 102900)*B)
*a^2)*cos(3*d*x + 3*c) + ((-(127680*I - 127680)*A - (122010*I + 122010)*B)*
a^2*cos(d*x + c) + ((127680*I + 127680)*A - (122010*I - 122010)*B)*a^2*sin(
d*x + c))*cos(2*d*x + 2*c) + ((-(44100*I + 44100)*A + (44100*I - 44100)*B)*
a^2*cos(2*d*x + 2*c)^2 + (-(44100*I + 44100)*A + (44100*I - 44100)*B)*a^2*s
in(2*d*x + 2*c)^2 + ((88200*I + 88200)*A - (88200*I - 88200)*B)*a^2*cos(2*d
*x + 2*c) + (-(44100*I + 44100)*A + (44100*I - 44100)*B)*a^2)*sin(5*d*x + 5
*c) + (((102900*I + 102900)*A - (102900*I - 102900)*B)*a^2*cos(2*d*x + 2*c)
^2 + ((102900*I + 102900)*A - (102900*I - 102900)*B)*a^2*sin(2*d*x + 2*c)^2
 + (-(205800*I + 205800)*A + (205800*I - 205800)*B)*a^2*cos(2*d*x + 2*c) +
((102900*I + 102900)*A - (102900*I - 102900)*B)*a^2)*sin(3*d*x + 3*c))*cos(
5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((-(48300*I - 48300
)*A - (55860*I + 55860)*B)*a^2*cos(d*x + c) + ((48300*I + 48300)*A - (55860
*I - 55860)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^4 + ((-(48300*I - 48300)*
A - (55860*I + 55860)*B)*a^2*cos(d*x + c) + ((48300*I + 48300)*A - (55860*I
 - 55860)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^4 + (((193200*I - 193200)*A
 + (223440*I + 223440)*B)*a^2*cos(d*x + c) + (-(193200*I + 193200)*A + (223
440*I - 223440)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^3 + (-(48300*I - 4830
0)*A - (55860*I + 55860)*B)*a^2*cos(d*x + c) + ((48300*I + 48300)*A - (5586
0*I - 55860)*B)*a^2*sin(d*x + c) + ((-(289800*I - 289800)*A - (335160*I + 3
35160)*B)*a^2*cos(d*x + c) + ((289800*I + 289800)*A - (335160*I - 335160)*B
)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(96600*I - 96600)*A - (111720*I
 + 111720)*B)*a^2*cos(d*x + c) + ((96600*I + 96600)*A - (111720*I - 111720)
*B)*a^2*sin(d*x + c) + ((-(96600*I - 96600)*A - (111720*I + 111720)*B)*a^2*
cos(d*x + c) + ((96600*I + 96600)*A - (111720*I - 111720)*B)*a^2*sin(d*x +
c))*cos(2*d*x + 2*c)^2 + (((193200*I - 193200)*A + (223440*I + 223440)*B)*a
^2*cos(d*x + c) + (-(193200*I + 193200)*A + (223440*I - 223440)*B)*a^2*sin(
d*x + c))*cos(2*d*x + 2*c))*sin(2*d*x + 2*c)^2 + (((193200*I - 193200)*A +
(223440*I + 223440)*B)*a^2*cos(d*x + c) + (-(193200*I + 193200)*A + (223440
*I - 223440)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*cos(1/2*arctan2(sin(2*d
*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((63840*I + 63840)*A - (61005*I - 6100
5)*B)*a^2*cos(d*x + c) + ((63840*I - 63840)*A + (61005*I + 61005)*B)*a^2*si

```
n(d*x + c) + (((63840*I + 63840)*A - (61005*I - 61005)*B)*a^2*cos(d*x + c)
+ ((63840*I - 63840)*A + (61005*I + 61005)*B)*a^2*sin(d*x + c))*cos(2*d*x +
 2*c)^2 + (((63840*I + 63840)*A - (61005*I - 61005)*B)*a^2*cos(d*x + c) + (
(63840*I - 63840)*A + (61005*I + 61005)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*
c)^2 + (((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2*cos(2*d*x + 2*c)^2
+ ((44100*I + 44100)*A - (44100*I - 44100)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(8
8200*I + 88200)*A + (88200*I - 88200)*B)*a^2*cos(2*d*x + 2*c) + ((44100*I +
 44100)*A - (44100*I - 44100)*B)*a^2)*cos(5*d*x + 5*c) + ((-(102900*I + 102
900)*A + (102900*I - 102900)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(102900*I + 1029
00)*A + (102900*I - 102900)*B)*a^2*sin(2*d*x + 2*c)^2 + ((205800*I + 205800
)*A - (205800*I - 205800)*B)*a^2*cos(2*d*x + 2*c) + (-(102900*I + 102900)*A
 + (102900*I - 102900)*B)*a^2)*cos(3*d*x + 3*c) + ((-(127680*I + 127680)*A
+ (122010*I - 122010)*B)*a^2*cos(d*x + c) + (-(127680*I - 127680)*A - (1220
10*I + 122010)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c) + (((44100*I - 44100)*
A + (44100*I + 44100)*B)*a^2*cos(2*d*x + 2*c)^2 + ((44100*I - 44100)*A + (4
4100*I + 44100)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(88200*I - 88200)*A - (88200*
I + 88200)*B)*a^2*cos(2*d*x + 2*c) + ((44100*I - 44100)*A + (44100*I + 4410
0)*B)*a^2)*sin(5*d*x + 5*c) + ((-(102900*I - 102900)*A - (102900*I + 102900
)*B)*a^2*cos(2*d*x + 2*c)^2 + (-(102900*I - 102900)*A - (102900*I + 102900)
*B)*a^2*sin(2*d*x + 2*c)^2 + ((205800*I - 205800)*A + (205800*I + 205800)*B
)*a^2*cos(2*d*x + 2*c) + (-(102900*I - 102900)*A - (102900*I + 102900)*B)*a
^2)*sin(3*d*x + 3*c))*sin(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) -
1)) + (((-(48300*I + 48300)*A + (55860*I - 55860)*B)*a^2*cos(d*x + c) + (-(
48300*I - 48300)*A - (55860*I + 55860)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c
)^4 + ((-(48300*I + 48300)*A + (55860*I - 55860)*B)*a^2*cos(d*x + c) + (-(4
8300*I - 48300)*A - (55860*I + 55860)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)
^4 + (((193200*I + 193200)*A - (223440*I - 223440)*B)*a^2*cos(d*x + c) + ((
193200*I - 193200)*A + (223440*I + 223440)*B)*a^2*sin(d*x + c))*cos(2*d*x +
 2*c)^3 + (-(48300*I + 48300)*A + (55860*I - 55860)*B)*a^2*cos(d*x + c) + (
-(48300*I - 48300)*A - (55860*I + 55860)*B)*a^2*sin(d*x + c) + ((-(289800*I
 + 289800)*A + (335160*I - 335160)*B)*a^2*cos(d*x + c) + (-(289800*I - 2898
00)*A - (335160*I + 335160)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + ((-(9
6600*I + 96600)*A + (111720*I - 111720)*B)*a^2*cos(d*x + c) + (-(96600*I -
96600)*A - (111720*I + 111720)*B)*a^2*sin(d*x + c) + ((-(96600*I + 96600)*A
 + (111720*I - 111720)*B)*a^2*cos(d*x + c) + (-(96600*I - 96600)*A - (11172
0*I + 111720)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^2 + (((193200*I + 19320
0)*A - (223440*I - 223440)*B)*a^2*cos(d*x + c) + ((193200*I - 193200)*A + (
223440*I + 223440)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*sin(2*d*x + 2*c)^
2 + (((193200*I + 193200)*A - (223440*I - 223440)*B)*a^2*cos(d*x + c) + ((1
93200*I - 193200)*A + (223440*I + 223440)*B)*a^2*sin(d*x + c))*cos(2*d*x +
2*c))*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a))/((
cos(2*d*x + 2*c)^4 + sin(2*d*x + 2*c)^4 - 4*cos(2*d*x + 2*c)^3 + 2*(cos(2*d
*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*sin(2*d*x + 2*c)^2 + 6*cos(2*d*x + 2*
c)^2 - 4*cos(2*d*x + 2*c) + 1)*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2
*cos(2*d*x + 2*c) + 1)^(1/4)*d)
```

Fricas [B] time = 1.56895, size = 1659, normalized size = 6.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/210*(sqrt(2)*((1600*I*A + 1456*B)*a^2*e^(6*I*d*x + 6*I*c) + (-3080*I*A -
3416*B)*a^2*e^(4*I*d*x + 4*I*c) + (2800*I*A + 2800*B)*a^2*e^(2*I*d*x + 2*I*
c) + (-840*I*A - 840*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2
*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - 105*sqrt(
(-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*
I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a
^2*e^(2*I*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x +
I*c) + sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))
*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) + 105*sqrt((-32*I*A^2 - 64*A*B +
 32*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3*d*
e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c
) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - sqrt((-32*I*A^
2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)
/((4*I*A + 4*B)*a^2)))/(d*e^(6*I*d*x + 6*I*c) - 3*d*e^(4*I*d*x + 4*I*c) + 3
*d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(9
/2), x)
```

3.549 $\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=205

$$-\frac{2a^2(5B+8iA)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d}+\frac{2a^2(38A-35iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d}-\frac{(4+4i)a^{5/2}(A-}{}$$

```
[Out] ((-4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*a
^2*(38*A - (35*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d)
- (2*a^2*((8*I)*A + 5*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(15
*d) - (2*a*A*Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(3/2))/(5*d)
```

Rubi [A] time = 0.735829, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3593, 3598, 12, 3544, 205}

$$-\frac{2a^2(5B+8iA)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d}+\frac{2a^2(38A-35iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d}-\frac{(4+4i)a^{5/2}(A-}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((-4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/
Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*a
^2*(38*A - (35*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(15*d)
- (2*a^2*((8*I)*A + 5*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(15
*d) - (2*a*A*Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(3/2))/(5*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{5/2}(A}{\tan^{\frac{7}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}{5d} + \frac{1}{5}\left(2\sqrt{\cot(c\right.$$

$$= -\frac{2a^2(8iA+5B)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2aA}{}$$

$$= \frac{2a^2(38A-35iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2a^2}{}$$

$$= \frac{2a^2(38A-35iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2a^2}{}$$

$$= \frac{2a^2(38A-35iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{15d} - \frac{2a^2}{}$$

$$= -\frac{(4-4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

Mathematica [A] time = 7.53274, size = 306, normalized size = 1.49

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(-4\sqrt{2}(A-iB)e^{-3i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\tanh^{-1}\left(\frac{e^{i(c+}}{\sqrt{-1+e^{2}}}\right.\right.}{d\sec^{\frac{7}{2}}(c+dx)(A\cos(c+dx)+B}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (((-4*Sqrt[2]*(A - I*B)*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))
/(1 + E^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*
I)*(c + d*x)))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/E^
((3*I)*(c + d*x)) - (Sqrt[Cot[c + d*x]]*Csc[c + d*x]^2*Sqrt[Sec[c + d*x]]*(
Cos[2*c] - I*Sin[2*c])*(-35*(A - I*B) + (41*A - (35*I)*B)*Cos[2*(c + d*x)]
+ ((11*I)*A + 5*B)*Sin[2*(c + d*x)]))/(15*(Cos[d*x] + I*Sin[d*x])^2))*(a +
I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*Sec[c + d*x]^(7/2)*(A*Cos[
c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.799, size = 2246, normalized size = 11.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/15/d*a^2*2^(1/2)*(-5*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+60*I*A*cos(d*x+c)^2
*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)-1)+60*I*B*cos(d*x+c)^2*sin(d*x+c)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+52*A*cos(d
*x+c)^3*2^(1/2)-49*A*cos(d*x+c)*2^(1/2)-41*A*2^(1/2)*cos(d*x+c)^2-35*I*B*2^
(1/2)+38*A*2^(1/2)+60*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+30*A*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x
+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin
(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+60*I*B*cos(d*x+c)^2*sin(d*x+c)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)
+30*I*B*cos(d*x+c)^2*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+
1))-35*B*2^(1/2)*sin(d*x+c)+40*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+30*I*A*cos
(d*x+c)^2*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x
+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin
(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+60*I*A*
cos(d*x+c)^2*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+52*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-1
1*I*A*cos(d*x+c)*sin(d*x+c)*2^(1/2)-30*I*A*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)-60*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-60*I*A*sin(d*x+c)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2)+1)-60*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-30*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+co
s(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c
)-cos(d*x+c)-sin(d*x+c)+1))-60*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+35*I*B*cos(d*x+c)^
2*2^(1/2)-38*I*A*sin(d*x+c)*2^(1/2)+40*I*B*cos(d*x+c)*2^(1/2)-40*I*B*cos(d*
x+c)^3*2^(1/2)-60*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-60*B*((cos(d*x+c)-1)/sin(d*x+c))^
```

```
(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-30*B*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+60*A*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2)+1)-60*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arc
tan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-60*A*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2)-1)-30*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c
)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(
d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-
sin(d*x+c)+1))+60*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+
c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+60*B*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)-1)+30*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin
(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c
)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d
*x+c)+sin(d*x+c)-1)))*(cos(d*x+c)/sin(d*x+c))^(7/2)*(a*(I*sin(d*x+c)+cos(d*
x+c))/cos(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^3
```

Maxima [B] time = 3.58871, size = 2059, normalized size = 10.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] -1/225*(sqrt(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) +
 1)*(((-(900*I + 900)*A + (900*I - 900)*B)*a^2*cos(3*d*x + 3*c) + ((930*I +
 930)*A - (750*I - 750)*B)*a^2*cos(d*x + c) + (-(900*I - 900)*A - (900*I +
900)*B)*a^2*sin(3*d*x + 3*c) + ((930*I - 930)*A + (750*I + 750)*B)*a^2*sin(
d*x + c))*cos(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((900
*I - 900)*A + (900*I + 900)*B)*a^2*cos(3*d*x + 3*c) + (-(930*I - 930)*A - (
750*I + 750)*B)*a^2*cos(d*x + c) + (-(900*I + 900)*A + (900*I - 900)*B)*a^2
*sin(3*d*x + 3*c) + ((930*I + 930)*A - (750*I - 750)*B)*a^2*sin(d*x + c))*s
in(3/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a) + ((((900*
I - 900)*A + (900*I + 900)*B)*a^2*cos(2*d*x + 2*c)^2 + ((900*I - 900)*A + (
900*I + 900)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(1800*I - 1800)*A - (1800*I + 18
00)*B)*a^2*cos(2*d*x + 2*c) + ((900*I - 900)*A + (900*I + 900)*B)*a^2)*arct
an2(2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1
```

```
/4)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*sin(d*x +
c), 2*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(1
/4)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + 2*cos(d*x +
c)) + (((450*I + 450)*A - (450*I - 450)*B)*a^2*cos(2*d*x + 2*c)^2 + ((450*I
 + 450)*A - (450*I - 450)*B)*a^2*sin(2*d*x + 2*c)^2 + (-(900*I + 900)*A + (
900*I - 900)*B)*a^2*cos(2*d*x + 2*c) + ((450*I + 450)*A - (450*I - 450)*B)*
a^2)*log(4*cos(d*x + c)^2 + 4*sin(d*x + c)^2 + 4*sqrt(cos(2*d*x + 2*c)^2 +
sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)*(cos(1/2*arctan2(sin(2*d*x + 2
*c), cos(2*d*x + 2*c) - 1))^2 + sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x
 + 2*c) - 1))^2) + 8*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x
 + 2*c) + 1)^(1/4)*(cos(d*x + c)*cos(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*
x + 2*c) - 1)) + sin(d*x + c)*sin(1/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x +
 2*c) - 1)))))*(cos(2*d*x + 2*c)^2 + sin(2*d*x + 2*c)^2 - 2*cos(2*d*x + 2*c
) + 1)^(1/4)*sqrt(a) + (((-(900*I + 900)*A + (900*I - 900)*B)*a^2*cos(5*d*x
 + 5*c) + ((750*I + 750)*A - (1650*I - 1650)*B)*a^2*cos(3*d*x + 3*c) + (-(2
10*I + 210)*A + (750*I - 750)*B)*a^2*cos(d*x + c) + (-(900*I - 900)*A - (90
0*I + 900)*B)*a^2*sin(5*d*x + 5*c) + ((750*I - 750)*A + (1650*I + 1650)*B)*
a^2*sin(3*d*x + 3*c) + (-(210*I - 210)*A - (750*I + 750)*B)*a^2*sin(d*x + c
))*cos(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + (((240*I + 24
0)*A - (600*I - 600)*B)*a^2*cos(d*x + c) + ((240*I - 240)*A + (600*I + 600)
*B)*a^2*sin(d*x + c) + (((240*I + 240)*A - (600*I - 600)*B)*a^2*cos(d*x + c
) + ((240*I - 240)*A + (600*I + 600)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c)^
2 + (((240*I + 240)*A - (600*I - 600)*B)*a^2*cos(d*x + c) + ((240*I - 240)*
A + (600*I + 600)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^2 + ((-(480*I + 480
)*A + (1200*I - 1200)*B)*a^2*cos(d*x + c) + (-(480*I - 480)*A - (1200*I + 1
200)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*cos(1/2*arctan2(sin(2*d*x + 2*c
), cos(2*d*x + 2*c) - 1)) + (((900*I - 900)*A + (900*I + 900)*B)*a^2*cos(5*
d*x + 5*c) + (-(750*I - 750)*A - (1650*I + 1650)*B)*a^2*cos(3*d*x + 3*c) +
((210*I - 210)*A + (750*I + 750)*B)*a^2*cos(d*x + c) + (-(900*I + 900)*A +
(900*I - 900)*B)*a^2*sin(5*d*x + 5*c) + ((750*I + 750)*A - (1650*I - 1650)*
B)*a^2*sin(3*d*x + 3*c) + (-(210*I + 210)*A + (750*I - 750)*B)*a^2*sin(d*x
+ c))*sin(5/2*arctan2(sin(2*d*x + 2*c), cos(2*d*x + 2*c) - 1)) + ((-(240*I
- 240)*A - (600*I + 600)*B)*a^2*cos(d*x + c) + ((240*I + 240)*A - (600*I -
600)*B)*a^2*sin(d*x + c) + ((-(240*I - 240)*A - (600*I + 600)*B)*a^2*cos(d*
x + c) + ((240*I + 240)*A - (600*I - 600)*B)*a^2*sin(d*x + c))*cos(2*d*x +
2*c)^2 + ((-(240*I - 240)*A - (600*I + 600)*B)*a^2*cos(d*x + c) + ((240*I +
 240)*A - (600*I - 600)*B)*a^2*sin(d*x + c))*sin(2*d*x + 2*c)^2 + (((480*I
- 480)*A + (1200*I + 1200)*B)*a^2*cos(d*x + c) + (-(480*I + 480)*A + (1200*
I - 1200)*B)*a^2*sin(d*x + c))*cos(2*d*x + 2*c))*sin(1/2*arctan2(sin(2*d*x
+ 2*c), cos(2*d*x + 2*c) - 1)))*sqrt(a))/((cos(2*d*x + 2*c)^2 + sin(2*d*x +
 2*c)^2 - 2*cos(2*d*x + 2*c) + 1)^(5/4)*d)
```

Fricas [B] time = 1.48638, size = 1469, normalized size = 7.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/30*(8*sqrt(2)*(2*(13*A - 10*I*B)*a^2*e^(4*I*d*x + 4*I*c) - 35*(A - I*B)*a
^2*e^(2*I*d*x + 2*I*c) + 15*(A - I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1)
)*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*
c) - 15*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c)
 - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x
+ 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt(
(32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
- 2*I*c)/((4*I*A + 4*B)*a^2)) + 15*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/
d^2)*(d*e^(4*I*d*x + 4*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4
*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)
)*e^(I*d*x + I*c) - I*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I
*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(4*I*d*x + 4
*I*c) - 2*d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(7
/2), x)
```

3.550 $\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=230

$$-\frac{2a^2(B+2iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d}+\frac{(4+4i)a^{5/2}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

```
[Out] (2*(-1)^(3/4)*a^(5/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((4 + 4*
I)*a^(5/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a +
I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a^2*((2*I)
*A + B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d - (2*a*A*Cot[c + d
*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2))/(3*d)
```

Rubi [A] time = 0.828789, antiderivative size = 230, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3593, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{2a^2(B+2iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d}+\frac{(4+4i)a^{5/2}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] (2*(-1)^(3/4)*a^(5/2)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt
[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((4 + 4*
I)*a^(5/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a +
I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a^2*((2*I)
*A + B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/d - (2*a*A*Cot[c + d
*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2))/(3*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
```

```
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{5/2}(A}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}{3d} + \frac{1}{3}\left(2\sqrt{\cot(c\right.$$

$$= -\frac{2a^2(2iA+B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2aA\,\mathrm{c}}{}$$

$$= -\frac{2a^2(2iA+B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2aA\,\mathrm{c}}{}$$

$$= -\frac{2a^2(2iA+B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{d} - \frac{2aA\,\mathrm{c}}{}$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

$$= \frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

$$= \frac{2(-1)^{3/4}a^{5/2}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\mathrm{ta}}}{d}$$

Mathematica [B] time = 10.271, size = 496, normalized size = 2.16

$$\frac{\cos^3(c+dx)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left((8A-3iB)\left(-\frac{2}{3}\sin(2c)-\frac{2}{3}i\cos(2c)\right)+\csc(c+dx\right.}{d(\cos(dx)+i\sin(dx))^2(A\cos(c+dx)+B\sin(c+dx))}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (Sqrt[E^(I*d*x)]*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E
^((2*I)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I)*(c +
 d*x)))]*(16*(I*A + B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]
] + Sqrt[2]*B*(-Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c + d*x))*S
qrt[-1 + E^((2*I)*(c + d*x))]] + Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2]*
E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]))*(a + I*a*Tan[c + d*x])^(5
/2)*(A + B*Tan[c + d*x]))/(2*Sqrt[2]*d*E^(I*(3*c + d*x))*Sec[c + d*x]^(7/2)
*(Cos[d*x] + I*Sin[d*x])^(5/2)*(A*Cos[c + d*x] + B*Sin[c + d*x])) + (Cos[c
+ d*x]^3*Sqrt[Cot[c + d*x]]*((8*A - (3*I)*B)*(((-2*I)/3)*Cos[2*c] - (2*Sin[
2*c])/3) + Csc[c + d*x]*((-2*A*Cos[3*c + d*x])/3 + ((2*I)/3)*A*Sin[3*c + d*
x]))*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/(d*(Cos[d*x] + I*Si
n[d*x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.692, size = 2629, normalized size = 11.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/6/d*a^2*2^(1/2)*(24*B*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+12*B*cos(d*x+c)^2*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*si
n(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2
)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+24*B*cos(d*x+c)^2*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+6*B*2^(
1/2)*cos(d*x+c)*sin(d*x+c)+6*I*B*2^(1/2)+6*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*cos(d*x+c)^2+3*I*B*
2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1
```

```
/2)-1)*cos(d*x+c)^2-2*A*cos(d*x+c)*2^(1/2)+3*B*2^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*cos(d*x+c)^2-3*B*2^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+
1)*cos(d*x+c)^2-6*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2))*cos(d*x+c)^2+24*I*A*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2+24
*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)+1)*cos(d*x+c)^2+12*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-
1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x
+c)+1))*cos(d*x+c)^2-24*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^2-24*I*B*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)*cos(d
*x+c)^2-12*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^2+
16*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)-6*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-3*I*B*2^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+3*I*B*2^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+
1)+24*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)+24*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+12*A*cos(d*x+c
)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+16*A*2^(1/2)*cos(d*x+c)^
2-24*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)-1)-24*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-12*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+si
n(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c
)-sin(d*x+c)+1))+24*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+24*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+12*I*B*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c
)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d
*x+c)+cos(d*x+c)+sin(d*x+c)-1))-14*A*2^(1/2)-24*A*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-24*A*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1
)-12*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-24*B*arctan(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-12*B*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
```

```
)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-24*B*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-6*B*2^(1/2)*
sin(d*x+c)-3*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)+1)*cos(d*x+c)^2+6*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-3*B*2^(1/2)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+3*B*2^(1/2)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-14*
I*A*2^(1/2)*sin(d*x+c)-6*I*B*2^(1/2)*cos(d*x+c)^2)*(cos(d*x+c)/sin(d*x+c))^
(5/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+
c)+cos(d*x+c)-1)/cos(d*x+c)^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")

[Out] Timed out
```

Fricas [B] time = 1.59136, size = 2090, normalized size = 9.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")

[Out] 1/6*(sqrt(2)*((-32*I*A - 12*B)*a^2*e^(2*I*d*x + 2*I*c) + (24*I*A + 12*B)*a^
2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2
*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 3*sqrt((-32*I*A^2 - 64*A*B + 32*I*B
^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^
(2*I*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c)
+ sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-
2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) - 3*sqrt((-32*I*A^2 - 64*A*B + 32*I*B
^2)*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c) - d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^
```

```
(2*I*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c)
- sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-
2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)) - 3*sqrt(4*I*B^2*a^5/d^2)*(d*e^(2*I*d
*x + 2*I*c) - d)*log((sqrt(2)*(B*a^2*e^(2*I*d*x + 2*I*c) - B*a^2)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1))*e^(I*d*x + I*c) + sqrt(4*I*B^2*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^
(-2*I*d*x - 2*I*c)/(B*a^2)) + 3*sqrt(4*I*B^2*a^5/d^2)*(d*e^(2*I*d*x + 2*I*c
) - d)*log((sqrt(2)*(B*a^2*e^(2*I*d*x + 2*I*c) - B*a^2)*sqrt(a/(e^(2*I*d*x
+ 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*
e^(I*d*x + I*c) - sqrt(4*I*B^2*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
- 2*I*c)/(B*a^2)))/(d*e^(2*I*d*x + 2*I*c) - d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(5
/2), x)
```

3.551 $\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=236

$$\frac{(-1)^{3/4}a^{5/2}(2A-5iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(-B+2iA)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}}+\frac{(4+$$

```
[Out] ((-1)^(3/4)*a^(5/2)*(2*A - (5*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/
d + ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]
])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (
a^2*((2*I)*A - B)*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Cot[c + d*x]]) - (2*a
*A*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2))/d
```

Rubi [A] time = 0.857209, antiderivative size = 236, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4241, 3593, 3594, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{(-1)^{3/4}a^{5/2}(2A-5iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{d}+\frac{a^2(-B+2iA)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}}+\frac{(4+$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((-1)^(3/4)*a^(5/2)*(2*A - (5*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/
d + ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]
])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (
a^2*((2*I)*A - B)*Sqrt[a + I*a*Tan[c + d*x]])/(d*Sqrt[Cot[c + d*x]]) - (2*a
*A*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2))/d
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

]

Rule 3593

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[(a^2*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n +
1))/(d*f*(b*c + a*d)*(n + 1)), x] - Dist[a/(d*(b*c + a*d)*(n + 1)), Int[(a
+ b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*b*d*(m - n -
2) - B*(b*c*(m - 1) + a*d*(n + 1)) + (a*A*d*(m + n) - B*(a*c*(m - 1) + b*d*
(n + 1)))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
 NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{5/2}(A}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}{d} + \left(2\sqrt{\cot(c+}\right.$$

$$= \frac{a^2(2iA-B)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{a^2(2iA-B)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{a^2(2iA-B)\sqrt{a+ia\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{(4-4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

$$= \frac{(4-4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+}}{d}$$

$$= \frac{\sqrt[4]{-1}a^{5/2}(2iA+5B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+d}}{d}$$

Mathematica [A] time = 9.53153, size = 387, normalized size = 1.64

$$\frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\sqrt{2}e^{-3i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\sqrt{\frac{e^{i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\frac{i\left(1+e^{2i(c+dx)}\right)}{-1+e^{2i(c+dx)}}}\left(32(A-iB)\log\left(\sqrt{-1+e^{2}}\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (((Sqrt[2]*Sqrt[-1 + E^((2*I)*(c + d*x))]*Sqrt[E^(I*(c + d*x))/(1 + E^((2*I
)*(c + d*x)))]*Sqrt[(I*(1 + E^((2*I)*(c + d*x))))/(-1 + E^((2*I)*(c + d*x))
)]*(32*(A - I*B)*Log[E^(I*(c + d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] - Sq
rt[2]*(2*A - (5*I)*B)*(Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c +
d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - Log[1 - 3*E^((2*I)*(c + d*x)) + 2*S
```

```
qrt[2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]])))/E^((3*I)*(c + d*x
)) - (8*(B + 2*A*Cot[c + d*x])*Sqrt[Sec[c + d*x]]*(Cos[2*c] - I*Sin[2*c]))/
(Sqrt[Cot[c + d*x]]*(Cos[d*x] + I*Sin[d*x])^2))*(a + I*a*Tan[c + d*x])^(5/2
)*(A + B*Tan[c + d*x]))/(8*d*Sec[c + d*x]^(7/2)*(A*Cos[c + d*x] + B*Sin[c +
 d*x]))
```

Maple [B] time = 0.55, size = 1896, normalized size = 8.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/4/d*a^2*2^(1/2)*(4*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))+2*I*A*2^(1/2)*cos(d
*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)-1)-2*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+10*I*B*2^(1/2)*cos(d*x+c
)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2))-5*I*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+5*I*B*2^(1/2)*cos(d*x+c)*s
in(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)+1)-2*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)+10*B*2^(1/2)*cos(d*x+c)*sin(d*x+
c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/
2))+5*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+4*A*cos(d*x+c)*2^(1/2)-2*I*B*2^(1/2)-4
*A*2^(1/2)*cos(d*x+c)^2-5*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-4*A*2^(1/2)*cos(d*
x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2))+2*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-2*A*2^(1/2)*cos(d*x+c)*si
n(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)+1)-16*I*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arct
an(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-16*I*A*cos(d*x+c)*sin(d*x+c
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2)-1)-8*I*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*
x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+si
n(d*x+c)-1))-16*I*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-16*I*B*cos(d*x+c)*sin(
d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))
```

```
^(1/2)*2^(1/2)-1)-8*I*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+s
in(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+
c)-sin(d*x+c)+1))+2*B*2^(1/2)*sin(d*x+c)+2*I*B*2^(1/2)*cos(d*x+c)^2-8*B*cos
(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-4*I*A*2^(
1/2)*cos(d*x+c)*sin(d*x+c)+16*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+16*A*cos(d
*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*2^(1/2)-1)+8*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(
d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-
cos(d*x+c)-sin(d*x+c)+1))-16*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-16*B*cos(d*
x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)-1))*(cos(d*x+c)/sin(d*x+c))^(3/2)*(a*(I*sin(d*x+c)+
cos(d*x+c))/cos(d*x+c))^(1/2)*sin(d*x+c)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*
x+c)^2
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.63218, size = 2300, normalized size = 9.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] -1/2*(2*sqrt(2)*((2*A - I*B)*a^2*e^(2*I*d*x + 2*I*c) + (2*A + I*B)*a^2)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) - 1))*e^(I*d*x + I*c) - sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d
^2)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x
+ 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt(
(32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x
- 2*I*c)/((4*I*A + 4*B)*a^2)) + sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2
)*(d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x +
2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2
*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*sqrt((3
2*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
2*I*c)/((4*I*A + 4*B)*a^2)) + sqrt((4*I*A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*(
d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 5*B)*a^2*e^(2*I*d*x + 2*I
*c) + (-2*I*A - 5*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*
d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 2*I*sqrt((4*
I*A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*
I*c)/((2*I*A + 5*B)*a^2)) - sqrt((4*I*A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*(d*
e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((2*I*A + 5*B)*a^2*e^(2*I*d*x + 2*I*c
) + (-2*I*A - 5*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*
x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - 2*I*sqrt((4*I*
A^2 + 20*A*B - 25*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*
c)/((2*I*A + 5*B)*a^2)))/(d*e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(3
/2), x)
```

3.552 $\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=246

$$-\frac{(-1)^{3/4}a^{5/2}(23B+20iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{a^2(4A-7iB)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}}+$$

```
[Out] -((-1)^(3/4)*a^(5/2)*((20*I)*A + 23*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(4*d) + ((4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d - (a^2*(4*A - (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*
x]]) + ((I/2)*a*B*(a + I*a*Tan[c + d*x])^(3/2))/(d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 0.881914, antiderivative size = 246, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3594, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{(-1)^{3/4}a^{5/2}(23B+20iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{4d}-\frac{a^2(4A-7iB)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}}+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] -((-1)^(3/4)*a^(5/2)*((20*I)*A + 23*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(4*d) + ((4 - 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d - (a^2*(4*A - (7*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*
x]]) + ((I/2)*a*B*(a + I*a*Tan[c + d*x])^(3/2))/(d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
```

```
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^{5/2}(}{\sqrt{\tan(c}}$$

$$= \frac{iaB(a+ia\tan(c+dx))^{3/2}}{2d\sqrt{\cot(c+dx)}} + \frac{1}{2}\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+}\right.$$

$$= -\frac{a^2(4A-7iB)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{iaB(a+ia\tan(c}{2d\sqrt{\cot(c+}}$$

$$= -\frac{a^2(4A-7iB)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{iaB(a+ia\tan(c}{2d\sqrt{\cot(c+}}$$

$$= -\frac{a^2(4A-7iB)\sqrt{a+ia\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{iaB(a+ia\tan(c}{2d\sqrt{\cot(c+}}$$

$$= -\frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{d}$$

$$= -\frac{(4+4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{d}$$

$$= \frac{\sqrt[4]{-1}a^{5/2}(20A-23iB)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c}}{4d}$$

Mathematica [A] time = 8.02878, size = 447, normalized size = 1.82

$$\frac{\cos^3(c+dx)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\sqrt{2}(\cos(3c+dx)-i\sin(3c+dx))\sqrt{i\sin^2(c+dx)(c\ldots}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*
x]),x]
```

```
[Out] (Cos[c + d*x]^3*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[
c + d*x])*(Sqrt[2]*(Sqrt[2]*((-20*I)*A - 23*B)*Log[(-2*E^(((7*I)/2)*c)*(I*S
qrt[2] + Sqrt[2]*E^(I*(c + d*x)) - 2*Sqrt[-1 + E^((2*I)*(c + d*x))]))/((20*
A - (23*I)*B)*(-I + E^(I*(c + d*x))))] + Sqrt[2]*((20*I)*A + 23*B)*Log[(-2*
E^(((7*I)/2)*c)*((-I)*Sqrt[2] + Sqrt[2]*E^(I*(c + d*x)) + 2*Sqrt[-1 + E^((2
*I)*(c + d*x))]))/((20*A - (23*I)*B)*(I + E^(I*(c + d*x))))] - (64*I)*(A -
I*B)*Log[(Cos[c] - I*Sin[c])*(Cos[c + d*x] + I*Sin[c + d*x] + Sqrt[-1 + Cos
[2*(c + d*x)] + I*Sin[2*(c + d*x)]])])*Sqrt[I*(I + Cot[c + d*x])*Sin[c + d*
x]^2]*(Cos[3*c + d*x] - I*Sin[3*c + d*x]) - 4*(Cos[2*c] - I*Sin[2*c])*Tan[c
 + d*x]*(4*A - (9*I)*B + 2*B*Tan[c + d*x])))/(16*d*(Cos[d*x] + I*Sin[d*x])^
2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.589, size = 1530, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/16/d*2^(1/2)*a^2*(cos(d*x+c)-1)*(22*I*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)-8*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*cos(d*x+c)*sin(d*x+c)-32*A*cos(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-64*B*cos(d*x+c)^2*ar
ctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-64*B*cos(d*x+c)^2*arctan(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-32*B*cos(d*x+c)^2*ln(-(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))
-4*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-64*A*cos(d*x+c)^2*arctan(((c
```

```
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-64*A*cos(d*x+c)^2*arctan(((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-64*I*A*cos(d*x+c)^2*arctan(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-64*I*A*cos(d*x+c)^2*arctan(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)-1)-32*I*A*cos(d*x+c)^2*ln(-(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+64*I*B*cos(
d*x+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+64*I*B*cos(d*x
+c)^2*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+32*I*B*cos(d*x+c)
^2*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin
(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)
+sin(d*x+c)-1))+8*I*A*cos(d*x+c)^2*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)+40*I*A*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-20*
I*A*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+20*I*A*cos
(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-46*I*B*cos(d*x+c)
^2*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-23*I*B*cos(d*x+c)^2*2^
(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+23*I*B*cos(d*x+c)^2*2^(1/2)*l
n(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+8*I*A*cos(d*x+c)*2^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)+4*I*B*sin(d*x+c)*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)+22*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-20*A*cos
(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+40*A*cos(d*x+c)^2
*2^(1/2)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))+20*A*cos(d*x+c)^2*2^(1/2
)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+23*B*cos(d*x+c)^2*2^(1/2)*ln(((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+46*B*cos(d*x+c)^2*2^(1/2)*arctan(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2))-23*B*cos(d*x+c)^2*2^(1/2)*ln(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)-1)+18*B*2^(1/2)*cos(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2))
*(cos(d*x+c)/sin(d*x+c))^(1/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/
2)/(I*sin(d*x+c)+cos(d*x+c)-1)/cos(d*x+c)^2/((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="maxima")
```

```
[Out] Timed out
```

Fricas [B] time = 1.59075, size = 2566, normalized size = 10.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="fricas")
```

```
[Out] 1/8*(2*sqrt(2)*((4*I*A + 11*B)*a^2*e^(4*I*d*x + 4*I*c) - 4*B*a^2*e^(2*I*d*x
 + 2*I*c) + (-4*I*A - 7*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e
^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + sqrt((
-400*I*A^2 - 920*A*B + 529*I*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(
2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((20*I*A + 23*B)*a^2*e^(2*I*d*x + 2*I*c)
 + (-20*I*A - 23*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d
*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 2*sqrt((-400*
I*A^2 - 920*A*B + 529*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x -
2*I*c)/((20*I*A + 23*B)*a^2)) - sqrt((-400*I*A^2 - 920*A*B + 529*I*B^2)*a^5
/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((
20*I*A + 23*B)*a^2*e^(2*I*d*x + 2*I*c) + (-20*I*A - 23*B)*a^2)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
 - 1))*e^(I*d*x + I*c) - 2*sqrt((-400*I*A^2 - 920*A*B + 529*I*B^2)*a^5/d^2)
*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((20*I*A + 23*B)*a^2)) - 4*sqr
t((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(4*I*d*x + 4*I*c) + 2*d*e^(
2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) +
 (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x +
 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + sqrt((-32*I*A^2 -
 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((
4*I*A + 4*B)*a^2)) + 4*sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*(d*e^(
4*I*d*x + 4*I*c) + 2*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)
*a^2*e^(2*I*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x
+ I*c) - sqrt((-32*I*A^2 - 64*A*B + 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c
))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/(d*e^(4*I*d*x + 4*I*c) + 2*d*
e^(2*I*d*x + 2*I*c) + d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)*sqrt(cot(d*x +
c)), x)
```

3.553 $\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=292

$$-\frac{a^2(2A-3iB)\sqrt{a+ia\tan(c+dx)}}{4d\cot^{\frac{3}{2}}(c+dx)}-\frac{(-1)^{3/4}a^{5/2}(46A-45iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}+\frac{a^2(\ldots}{}$$

```
[Out] -((-1)^(3/4)*a^(5/2)*(46*A - (45*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(8*d) - ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d - (a^2*(2*A - (3*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(4*d*Cot[c + d*x]^(3
/2)) + (a^2*((18*I)*A + 19*B)*Sqrt[a + I*a*Tan[c + d*x]])/(8*d*Sqrt[Cot[c +
 d*x]]) + ((I/3)*a*B*(a + I*a*Tan[c + d*x])^(3/2))/(d*Cot[c + d*x]^(3/2))
```

Rubi [A] time = 1.08641, antiderivative size = 292, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4241, 3594, 3597, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{a^2(2A-3iB)\sqrt{a+ia\tan(c+dx)}}{4d\cot^{\frac{3}{2}}(c+dx)}-\frac{(-1)^{3/4}a^{5/2}(46A-45iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{8d}+\frac{a^2(\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
x]
```


```
[Out] -((-1)^(3/4)*a^(5/2)*(46*A - (45*I)*B)*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[
c + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(8*d) - ((4 + 4*I)*a^(5/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c
 + d*x]])/Sqrt[a + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]
)/d - (a^2*(2*A - (3*I)*B)*Sqrt[a + I*a*Tan[c + d*x]])/(4*d*Cot[c + d*x]^(3
/2)) + (a^2*((18*I)*A + 19*B)*Sqrt[a + I*a*Tan[c + d*x]])/(8*d*Sqrt[Cot[c +
 d*x]]) + ((I/3)*a*B*(a + I*a*Tan[c + d*x])^(3/2))/(d*Cot[c + d*x]^(3/2))
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3594

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m +
 n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[
e + f*x])^n*Simp[a*A*d*(m + n) + B*(a*c*(m - 1) - b*d*(n + 1)) - (B*(b*c -
a*d)*(m - 1) - d*(A*b + a*B)*(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && G
tQ[m, 1] &&  !LtQ[n, -1]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}$$

$$= \frac{iaB(a+ia\tan(c+dx))^{3/2}}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{1}{3}\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\mathrm{ta}}$$

$$= -\frac{a^2(2A-3iB)\sqrt{a+ia\tan(c+dx)}}{4d\cot^{\frac{3}{2}}(c+dx)} + \frac{iaB(a+ia\tan(c+dx))^{3/2}}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{1}{6}$$

$$= -\frac{a^2(2A-3iB)\sqrt{a+ia\tan(c+dx)}}{4d\cot^{\frac{3}{2}}(c+dx)} + \frac{a^2(18iA+19B)\sqrt{a+ia\tan(c}}{8d\sqrt{\cot(c+dx)}}$$

$$= -\frac{a^2(2A-3iB)\sqrt{a+ia\tan(c+dx)}}{4d\cot^{\frac{3}{2}}(c+dx)} + \frac{a^2(18iA+19B)\sqrt{a+ia\tan(c}}{8d\sqrt{\cot(c+dx)}}$$

$$= -\frac{a^2(2A-3iB)\sqrt{a+ia\tan(c+dx)}}{4d\cot^{\frac{3}{2}}(c+dx)} + \frac{a^2(18iA+19B)\sqrt{a+ia\tan(c}}{8d\sqrt{\cot(c+dx)}}$$

$$= -\frac{(4-4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(}}{d}$$

$$= -\frac{(4-4i)a^{5/2}(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(}}{d}$$

$$= -\frac{\sqrt[4]{-1}a^{5/2}(46iA+45B)\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\mathrm{ta}}}{8d}$$

Mathematica [A] time = 9.61155, size = 484, normalized size = 1.66

$$\frac{\cos^3(c+dx)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}(A+B\tan(c+dx))\left(\frac{2}{3}(\cos(2c)-i\sin(2c))\tan(c+dx)\sec^2(c+dx)((-\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c +
d*x]],x]
```

```
[Out] (Cos[c + d*x]^3*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)*(A + B*Tan[
c + d*x])*(-(Sqrt[2]*(Sqrt[2]*(46*A - (45*I)*B)*Log[(2*E^(((7*I)/2)*c)*(Sqr
```

```
t[2] - I*Sqrt[2]*E^(I*(c + d*x)) + (2*I)*Sqrt[-1 + E^((2*I)*(c + d*x))]))/(
(46*A - (45*I)*B)*(-I + E^(I*(c + d*x))))] + Sqrt[2]*(-46*A + (45*I)*B)*Log
[(2*E^(((7*I)/2)*c)*((-I)*Sqrt[2] + Sqrt[2]*E^(I*(c + d*x)) + 2*Sqrt[-1 + E
^((2*I)*(c + d*x))]))/(((46*I)*A + 45*B)*(I + E^(I*(c + d*x))))] + 128*(A -
 I*B)*Log[(Cos[c] - I*Sin[c])*(Cos[c + d*x] + I*Sin[c + d*x] + Sqrt[-1 + Co
s[2*(c + d*x)] + I*Sin[2*(c + d*x)]])])*Sqrt[I*(I + Cot[c + d*x])*Sin[c + d
*x]^2]*(Cos[3*c + d*x] - I*Sin[3*c + d*x])) + (2*Sec[c + d*x]^2*(Cos[2*c] -
 I*Sin[2*c])*((54*I)*A + 49*B + ((54*I)*A + 65*B)*Cos[2*(c + d*x)] + (-12*A
 + (26*I)*B)*Sin[2*(c + d*x)])*Tan[c + d*x])/3))/(32*d*(Cos[d*x] + I*Sin[d*
x])^2*(A*Cos[c + d*x] + B*Sin[c + d*x]))
```

Maple [B] time = 0.623, size = 4851, normalized size = 16.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/96/d*2^(1/2)*a^2*(-24*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x
+c)^3+52*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3-276*A*arc
tan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^3+138*A*ln(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)-1)*2^(1/2)*cos(d*x+c)^3+132*I*A*2^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*x+c)-384*A*cos(d*x+c)^4*arcta
n(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-108*A*2^(1/2)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)+24*A*2^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)+384*A*arctan(((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^3-138*I*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*l
n(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-384*B*arctan(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)-1)*cos(d*x+c)^3-384*B*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2)+1)*cos(d*x+c)^3-192*B*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))*cos(d*x+c)^3+16*B*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-130*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*cos(d*x+c)^2*sin(d*x+c)-68*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)+384*A*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2)+1)*cos(d*x+c)^3+192*A*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*
sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1
/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))*cos(d*x+c)^3+138*I*A*2^(1/2)*cos(d
*x+c)^3*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+182*I*B*2^(1/2)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*x+c)+135*I*B*2^(1/2)*c
os(d*x+c)^3*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+270*I*B*2^(1
```

/2)*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-135*I
*B*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-
384*A*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-192*
A*cos(d*x+c)^4*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+co
s(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c
)-cos(d*x+c)-sin(d*x+c)+1))+384*B*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2)-1)+384*B*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2)+1)+192*B*cos(d*x+c)^4*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))-135*B*ln(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^3+270*B*arctan(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2))*2^(1/2)*cos(d*x+c)^3+135*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)-1)*2^(1/2)*cos(d*x+c)^3+16*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)-198*B*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+2
4*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)-138*A*ln(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)+1)*2^(1/2)*cos(d*x+c)^3-52*B*2^(1/2)*cos(d*x+c)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)-108*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*cos(d*x+c)^2*sin(d*x+c)+130*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*cos(d*x+c)^2*sin(d*x+c)-24*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*cos(d*x+c)*sin(d*x+c)-68*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
cos(d*x+c)*sin(d*x+c)+276*I*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2))-270*B*2^(1/2)*cos(d*x+c)^4*arctan(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2))-135*B*2^(1/2)*cos(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)-1)+384*A*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)-1)+384*A*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2)+1)+192*A*cos(d*x+c)^3*sin(d*x+c)*ln(-(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))+138
*A*2^(1/2)*cos(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+276*A*2^(1/
2)*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))-138*A*2^(1/2)*cos
(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+132*A*2^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^4+182*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*cos(d*x+c)^4-132*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d
*x+c)^2-384*B*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2)-1)-384*B*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2)+1)-192*B*cos(d*x+c)^3*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+384*I*A*co
s(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)+384*I*A*cos(
d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)+192*I*A*cos(d*
x+c)^4*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)
-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*
x+c)+sin(d*x+c)-1))+384*I*B*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2)-1)+384*I*B*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)+1)+192*I*B*cos(d*x+c)^4*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)

*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-384*I*A*cos(d*x+c)^3*arct
an(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-1)-384*I*A*cos(d*x+c)^3*arctan
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-192*I*A*cos(d*x+c)^3*ln(-(((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)
-1))-384*I*B*cos(d*x+c)^3*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)-
1)-384*I*B*cos(d*x+c)^3*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1)
-192*I*B*cos(d*x+c)^3*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*
x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*si
n(d*x+c)-cos(d*x+c)-sin(d*x+c)+1))-16*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)+135*B*2^(1/2)*cos(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)
-132*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*x+c)-19
2*I*A*cos(d*x+c)^3*sin(d*x+c)*ln(-(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2
)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)/(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1))+52*I*B*2^(1/2)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*cos(d*x+c)^3+135*I*B*2^(1/2)*cos(d*x+c)^3*ln(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)+1)+270*I*B*2^(1/2)*cos(d*x+c)^3*arctan(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2))-135*I*B*2^(1/2)*cos(d*x+c)^3*ln(((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)-1)-384*I*B*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2)-1)-384*I*B*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2)+1)-192*I*B*cos(d*x+c)^3*sin(d*x+c)*ln(-(((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)+cos(d*x+c)+sin(d*x+c)-1)/(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)*sin(d*x+c)-cos(d*x+c)-sin(d*x+c)+1)
)-132*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2+198*I*B*2^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-24*I*A*2^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)-52*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*cos(d*x+c)-16*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*sin
(d*x+c)+182*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3*sin(d*
x+c)-135*B*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)+1)+270*B*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2))+135*B*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)-1)-138*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*ln(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)+1)-276*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2))+138*A*2^(1/2)*cos(d*x+c)^3*sin(d*x+c)*ln(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)-1)+132*I*A*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*cos(d*x+c)^4+138*I*A*2^(1/2)*cos(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)+1)-276*I*A*2^(1/2)*cos(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1
/2))-138*I*A*2^(1/2)*cos(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-1
82*I*B*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^4-135*I*B*2^(1/
2)*cos(d*x+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-270*I*B*2^(1/2)*cos
(d*x+c)^4*arctan(((cos(d*x+c)-1)/sin(d*x+c))^(1/2))+135*I*B*2^(1/2)*cos(d*x
+c)^4*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+24*I*A*2^(1/2)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*cos(d*x+c)^3-138*I*A*2^(1/2)*cos(d*x+c)^3*ln(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)+1)+276*I*A*2^(1/2)*cos(d*x+c)^3*arctan(((cos(d*x+c)

```
-1)/sin(d*x+c))^(1/2))+138*I*A*2^(1/2)*cos(d*x+c)^3*ln(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)-1)-384*I*A*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2)-1)-384*I*A*cos(d*x+c)^3*sin(d*x+c)*arctan(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2)+1))*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c)
)^(1/2)/(I*cos(d*x+c)+I*sin(d*x+c)-1+I+cos(d*x+c)-sin(d*x+c))/cos(d*x+c)^2/
(cos(d*x+c)/sin(d*x+c))^(1/2)/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)/sin(d*x+c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)/sqrt(cot(d*x +
c)), x)
```

Fricas [B] time = 1.67243, size = 2843, normalized size = 9.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/48*(2*sqrt(2)*((66*A - 91*I*B)*a^2*e^(6*I*d*x + 6*I*c) + 7*(6*A - I*B)*a^
2*e^(4*I*d*x + 4*I*c) - (66*A - 59*I*B)*a^2*e^(2*I*d*x + 2*I*c) - 3*(14*A -
 13*I*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c)
 + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 3*sqrt((2116*I*A^2 + 414
0*A*B - 2025*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*
c) + 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((46*I*A + 45*B)*a^2*e^(2*I*
d*x + 2*I*c) + (-46*I*A - 45*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt
((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 2
*I*sqrt((2116*I*A^2 + 4140*A*B - 2025*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c)
)*e^(-2*I*d*x - 2*I*c)/((46*I*A + 45*B)*a^2)) - 3*sqrt((2116*I*A^2 + 4140*A
```

```
*B - 2025*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c)
+ 3*d*e^(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((46*I*A + 45*B)*a^2*e^(2*I*d*x
 + 2*I*c) + (-46*I*A - 45*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I
*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - 2*I*
sqrt((2116*I*A^2 + 4140*A*B - 2025*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e
^(-2*I*d*x - 2*I*c)/((46*I*A + 45*B)*a^2)) - 24*sqrt((32*I*A^2 + 64*A*B - 3
2*I*B^2)*a^5/d^2)*(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^
(2*I*d*x + 2*I*c) + d)*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c)
+ (-4*I*A - 4*B)*a^2)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x
+ 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + I*sqrt((32*I*A^2
 + 64*A*B - 32*I*B^2)*a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/
((4*I*A + 4*B)*a^2)) + 24*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*a^5/d^2)*(d*e
^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c) + d)
*log((sqrt(2)*((4*I*A + 4*B)*a^2*e^(2*I*d*x + 2*I*c) + (-4*I*A - 4*B)*a^2)*
sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*
d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - I*sqrt((32*I*A^2 + 64*A*B - 32*I*B^2)*
a^5/d^2)*d*e^(2*I*d*x + 2*I*c))*e^(-2*I*d*x - 2*I*c)/((4*I*A + 4*B)*a^2)))/
(d*e^(6*I*d*x + 6*I*c) + 3*d*e^(4*I*d*x + 4*I*c) + 3*d*e^(2*I*d*x + 2*I*c)
+ d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^{\frac{5}{2}}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^(5/2)/sqrt(cot(d*x +
c)), x)
```

3.554 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=211

$$-\frac{(5A+3iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{3ad}+\frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(-9B+7iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3ad}$$

```
[Out] ((1/2 + I/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (
(A + I*B)*Cot[c + d*x]^(3/2))/(d*Sqrt[a + I*a*Tan[c + d*x]]) + (((7*I)*A -
9*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d) - ((5*A + (3*I)
*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d)
```

Rubi [A] time = 0.696978, antiderivative size = 211, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3596, 3598, 12, 3544, 205}

$$-\frac{(5A+3iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{3ad}+\frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}}+\frac{(-9B+7iA)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] ((1/2 + I/2)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (
(A + I*B)*Cot[c + d*x]^(3/2))/(d*Sqrt[a + I*a*Tan[c + d*x]]) + (((7*I)*A -
9*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d) - ((5*A + (3*I)
*B)*Cot[c + d*x]^(3/2)*Sqrt[a + I*a*Tan[c + d*x]])/(3*a*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(5A+3i\right.}{\tan^{\frac{5}{2}}(c\text{-}}}{a^2}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(5A+3iB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}{3ad} + \frac{\left(2\sqrt{\text{co}\right.}{}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-9B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3ad} - \frac{(5A+}{}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-9B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3ad} - \frac{(5A+}{}$$

$$= \frac{(A+iB)\cot^{\frac{3}{2}}(c+dx)}{d\sqrt{a+ia\tan(c+dx)}} + \frac{(7iA-9B)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{3ad} - \frac{(5A+}{}$$

$$= \frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{a}d} + \frac{(A+}{d\sqrt{a}}$$

Mathematica [A] time = 4.05174, size = 166, normalized size = 0.79

$$\frac{\sqrt{\cot(c+dx)}\csc(c+dx)\sec(c+dx)\left((5A+9iB)\cos(2(c+dx)) + \frac{3}{2}(A-iB)e^{-i(c+dx)}\left(-1+e^{2i(c+dx)}\right)^{3/2}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+a}}}\right.\right.}{6d\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*
x]],x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Csc[c + d*x]*Sec[c + d*x]*(-9*A - (9*I)*B + (3*(A - I*B
)*(-1 + E^((2*I)*(c + d*x)))^(3/2)*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*
I)*(c + d*x))]])/(2*E^(I*(c + d*x))) + (5*A + (9*I)*B)*Cos[2*(c + d*x)] + (
2*I)*A*Sin[2*(c + d*x)] - 6*B*Sin[2*(c + d*x)]))/(6*d*Sqrt[a + I*a*Tan[c +
d*x]])
```

Maple [B] time = 0.709, size = 683, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] (-1/6-1/6*I)/d/a*(-6*I*B*sin(d*x+c)*cos(d*x+c)-9*I*B*cos(d*x+c)^2+3*I*A*cos
(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+3*A*cos(d*x+c)^2*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2))*2^(1/2)+3*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-7
*I*A+3*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-3*I*B*cos(d*x+c)^2*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2))*2^(1/2)-2*I*A*cos(d*x+c)*sin(d*x+c)-3*A*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*
2^(1/2)+5*I*A*cos(d*x+c)^2+9*I*B-5*A*cos(d*x+c)^2-2*A*cos(d*x+c)*sin(d*x+c)
-9*B*cos(d*x+c)^2+6*B*cos(d*x+c)*sin(d*x+c)+3*I*B*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1
/2)+3*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+7*A+9*B)*sin(d*x+c)*(cos(
d*x+c)/sin(d*x+c))^(5/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(I*
sin(d*x+c)+cos(d*x+c))/cos(d*x+c)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.68108, size = 1353, normalized size = 6.41

$$\sqrt{2}\Big((14i\,A-30\,B)e^{(4i\,dx+4i\,c)}+(-36i\,A+36\,B)e^{(2i\,dx+2i\,c)}+6i\,A-6\,B\Big)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)}+3\left(ade^{(4i\,dx+4i\,c)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/12*(sqrt(2)*((14*I*A - 30*B)*e^(4*I*d*x + 4*I*c) + (-36*I*A + 36*B)*e^(2*
I*d*x + 2*I*c) + 6*I*A - 6*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(
2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + 3*(a*d*e
^(4*I*d*x + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((-2*I*A^2 - 4*A*B + 2*I*
B^2)/(a*d^2))*log((a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*
x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
 - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*(a*d*e^(4*I*d*x
 + 4*I*c) - a*d*e^(2*I*d*x + 2*I*c))*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d
^2))*log(-(a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*
c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x +
 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e
^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)))/(a*d*e^(4*I*d*x + 4*I*c) -
 a*d*e^(2*I*d*x + 2*I*c))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{\sqrt{i\,a\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/sqrt(I*a*tan(d*x + c) + a
), x)
```

3.555 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=163

$$\frac{(A+iB)\sqrt{\cot(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(3A+iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh}{\sqrt{a}d}$$

```
[Out] ((1/2 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (
(A + I*B)*Sqrt[Cot[c + d*x]])/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((3*A + I*B)
*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(a*d)
```

Rubi [A] time = 0.495813, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3596, 3598, 12, 3544, 205}

$$\frac{(A+iB)\sqrt{\cot(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}}-\frac{(3A+iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```

```
[Out] ((1/2 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (
(A + I*B)*Sqrt[Cot[c + d*x]])/(d*Sqrt[a + I*a*Tan[c + d*x]]) - ((3*A + I*B)
*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(a*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan(c+dx)}}\,dx$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(c+dx)}\left(\frac{1}{2}a(3A+iB\right.}{\tan^{\frac{3}{2}}(c+}}{a^2}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad} + \frac{\left(2\sqrt{\cot\right.}{}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad} + \frac{((iA+}{}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{d\sqrt{a+ia\tan(c+dx)}} - \frac{(3A+iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{ad} - \frac{(ia(iA}{}$$

$$= \frac{\left(\frac{1}{2}-\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{a}d} + \frac{(A+}{d\sqrt{a}}$$

Mathematica [A] time = 3.08865, size = 165, normalized size = 1.01

$$\frac{e^{-2i(c+dx)}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\cot(c+dx)}\left((A-iB)e^{i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)-5Ae^{2i(c+dx)}+A-iB\left(-1+e^{2i(c+\right.}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*
x]],x]
```

```
[Out] (Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(A - 5*A*E^((2*I)*
(c + d*x)) - I*B*(-1 + E^((2*I)*(c + d*x))) + (A - I*B)*E^(I*(c + d*x))*Sqr
t[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c +
 d*x))]])*Sqrt[Cot[c + d*x]])/(Sqrt[2]*a*d*E^((2*I)*(c + d*x)))
```

Maple [B] time = 0.676, size = 484, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] (1/2+1/2*I)/d/a*(-I*A*sin(d*x+c)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I*B*cos(d*x+c
)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)-A*cos(d*x+c)*2^(1/2)*arctan((1/2+1/2*I)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I*
B*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)-B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-A*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*2^(1/2))*2^(1/2)+2*I*A*cos(d*x+c)-3*I*A*sin(d*x+c)-I*B*sin(d*x+
c)-2*A*cos(d*x+c)-3*A*sin(d*x+c)+B*sin(d*x+c))*sin(d*x+c)*(cos(d*x+c)/sin(d
*x+c))^(3/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(I*sin(d*x+c)+c
os(d*x+c))/cos(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.59125, size = 1176, normalized size = 7.21

$$\left(ad\sqrt{\frac{2i\,A^2+4\,AB-2i\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}\log\left(\frac{\left(i\,ad\sqrt{\frac{2i\,A^2+4\,AB-2i\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}-i\,A-B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,dx-}}{4i\,A+4\,B}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] 1/4*(a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(
(I*a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt
(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x +
 I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^
2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((-I*a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2
)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I
*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/
(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B))
 - 2*sqrt(2)*((5*A + I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))
*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{\sqrt{i\,a\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/sqrt(I*a*tan(d*x + c) + a
), x)
```

3.556 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=119

$$\frac{A+iB}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

```
[Out] ((1/2 - I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (
A + I*B)/(d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.321207, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {4241, 3596, 12, 3544, 205}

$$\frac{A+iB}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*x]],x]
```



```
[Out] ((1/2 - I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (
A + I*B)/(d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
```

```
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx$$

$$= \frac{A+iB}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{a(A-iB)\sqrt{a}}{2\sqrt{\mathrm{ta}}}}{a^2}$$

$$= \frac{A+iB}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}} + \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int}{2a}$$

$$= \frac{A+iB}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}} - \frac{\left(ia(A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{S}}{d}$$

$$= -\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{a}d} + \frac{}{d\sqrt{}}$$

Mathematica [A] time = 2.35625, size = 156, normalized size = 1.31

$$\frac{e^{-2i(c+dx)}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\cot(c+dx)}\left((B-iA)\left(-1+e^{2i(c+dx)}\right)-i(A-iB)e^{i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)\right)}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + I*a*Tan[c + d*
x]],x]
```

```
[Out] (Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*(((-I)*A + B)*(-1
+ E^((2*I)*(c + d*x))) - I*(A - I*B)*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c
+ d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[Cot[
c + d*x]])/(Sqrt[2]*a*d*E^((2*I)*(c + d*x)))
```

Maple [B] time = 0.584, size = 431, normalized size = 3.6

$$\frac{-\frac{1}{2}-\frac{i}{2}}{ad\left(i\sin\left(dx+c\right)+\cos\left(dx+c\right)\right)}\left(iA\sin\left(dx+c\right)\arctan\left(\left(\frac{1}{2}+\frac{i}{2}\right)\sqrt{\frac{\cos\left(dx+c\right)-1}{\sin\left(dx+c\right)}}\sqrt{2}\right)\sqrt{2}-iB\cos\left(dx+c\right)\arctan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] (-1/2-1/2*I)/d/a*(I*A*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2))*2^(1/2)-I*B*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)+A*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2))*2^(1/2)-I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I*B*ar
ctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+B*sin(d
*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)
-A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-A*arctan((1/2+1/2*I)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-B*sin(d*x+c)*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2))*(cos(d*x+c)/sin(d*x+c))^(1/2)*(a*(I*sin(d*x+c)+cos(d*x+c)
)/cos(d*x+c))^(1/2)/(I*sin(d*x+c)+cos(d*x+c))/((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.72239, size = 1184, normalized size = 9.95

$$-\Bigg(ad\sqrt{\frac{-2i\,A^2-4\,AB+2i\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}\log\left(\frac{\left(ad\sqrt{\frac{-2i\,A^2-4\,AB+2i\,B^2}{ad^2}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}-i\,A-B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}e^{(i\,dx+i\,c)}\right)e^{(-i\,d}}{4i\,A+4\,B}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] -1/4*(a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*lo
g((a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqr
t(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x
+ I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*
B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(-(a*d*sqrt((-2*I*A^2 - 4*A*B + 2*I*B^
2)/(a*d^2))*e^(2*I*d*x + 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) -
I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)
) - sqrt(2)*((-2*I*A + 2*B)*e^(2*I*d*x + 2*I*c) + 2*I*A - 2*B)*sqrt(a/(e^(2
*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c)
 - 1))*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(A+B\tan{(c+dx)})\sqrt{\cot{(c+dx)}}}{\sqrt{a\,(i\tan{(c+dx)}+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(cot(c + d*x))/sqrt(a*(I*tan(c + d*x) + 1
)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{\sqrt{i\,a\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/sqrt(I*a*tan(d*x + c) + a
), x)
```

3.557 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx$

Optimal. Leaf size=196

$$\frac{-B+iA}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}-\frac{2\sqrt[4]{-1}B\sqrt{t}}{}$$

```
[Out] (-2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*
a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) - ((1/2
 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (I*A -
 B)/(d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.614583, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3595, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{-B+iA}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{\sqrt{a}d}-\frac{2\sqrt[4]{-1}B\sqrt{t}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]]),x]
```

```
[Out] (-2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*
a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) - ((1/2
 + I/2)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[a]*d) + (I*A -
 B)/(d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+ia\tan(c+dx)}}\,dx$$

$$= \frac{iA-B}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+ia\tan(}}{}}{a^2}$$

$$= \frac{iA-B}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}} + \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a-ia\tan}{}}{a^2}$$

$$= \frac{iA-B}{d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}} + \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int\right.}{d}$$

$$= -\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{a}d} + \frac{}{d\sqrt{}}$$

$$= -\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{a}d} + \frac{}{d\sqrt{}}$$

$$= -\frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{a}d} - \frac{\left(\frac{1}{2}-\frac{i}{2}\right)(iA}{}$$

Mathematica [A] time = 4.10055, size = 227, normalized size = 1.16

$$\frac{e^{-2i(c+dx)}\sqrt{\frac{ae^{2i(c+dx)}}{1+e^{2i(c+dx)}}}\sqrt{\cot(c+dx)}\left((A+iB)\left(-1+e^{2i(c+dx)}\right)-(A-iB)e^{i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)-2i\sqrt{2}B\right.}{\sqrt{2}ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x
]]),x]
```

```
[Out] (Sqrt[(a*E^((2*I)*(c + d*x)))/(1 + E^((2*I)*(c + d*x)))]*((A + I*B)*(-1 + E
^((2*I)*(c + d*x))) - (A - I*B)*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x
))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]] - (2*I)*Sqrt[2]
*B*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[(Sqrt[2]*E^(I*(c
+ d*x)))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[Cot[c + d*x]])/(Sqrt[2]*a*d*
E^((2*I)*(c + d*x)))
```

Maple [B] time = 0.633, size = 805, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x)
```

```
[Out] (1/2+1/2*I)/d/a*(-I*A*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2))+I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I*B*ln(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)+I*B*2^(1/2)*sin(d*x+c)*arctan((1/2+1/2*I
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-A*2^(1/2)*sin(d*x+c)*arctan((1
/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+I*B*ln(((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)+1)-I*B*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1
)+I*B*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-I*B*ln(((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)-1)+I*A*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+B*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+A*sin(d*x+c)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)+I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I*B*cos(d*
x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)-I*B*cos(d*x+c)*ln(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)+I)+I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)-B*2^(1
/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-B*sin(d*x
+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+B*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)+I)-B*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+B*sin(
d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-B*sin(d*x+c)*ln(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)-I))*cos(d*x+c)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c
))^(1/2)/(I*sin(d*x+c)+cos(d*x+c))/sin(d*x+c)/(cos(d*x+c)/sin(d*x+c))^(1/2)
/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.70677, size = 2007, normalized size = 10.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="fricas")
```

```
[Out] -1/4*(a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log
((I*a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqr
t(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c)
+ 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x
+ I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B
^2)/(a*d^2))*e^(2*I*d*x + 2*I*c)*log((-I*a*d*sqrt((2*I*A^2 + 4*A*B - 2*I*B^
2)/(a*d^2))*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) -
I*A - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)
/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)
) - a*d*sqrt(-4*I*B^2/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(1/605*(208*sqrt(2)*(
B*e^(2*I*d*x + 2*I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I
*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + (156*I*a*d*
e^(2*I*d*x + 2*I*c) - 52*I*a*d)*sqrt(-4*I*B^2/(a*d^2)))/(B*e^(2*I*d*x + 2*I
*c) + B)) + a*d*sqrt(-4*I*B^2/(a*d^2))*e^(2*I*d*x + 2*I*c)*log(1/605*(208*s
qrt(2)*(B*e^(2*I*d*x + 2*I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((
I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + (-1
56*I*a*d*e^(2*I*d*x + 2*I*c) + 52*I*a*d)*sqrt(-4*I*B^2/(a*d^2)))/(B*e^(2*I*
d*x + 2*I*c) + B)) - 2*sqrt(2)*((A + I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-2*I*d*x - 2*I*c)/(a*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan{(c + dx)}}{\sqrt{a(i\tan{(c + dx)} + 1)}\sqrt{\cot{(c + dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(sqrt(a*(I*tan(c + d*x) + 1))*sqrt(cot(c + d*
x))), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan{(dx + c)} + A}{\sqrt{i\,a\tan{(dx + c)} + a}\sqrt{\cot{(dx + c)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(1/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(I*a*tan(d*x + c) + a)*sqrt(cot(d*x + c
))), x)
```

3.558 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{(25A+7iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{6a^2d}+\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}$$

```
[Out] ((1/4 + I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + (
(A + I*B)*Sqrt[Cot[c + d*x]])/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((11*A +
 (5*I)*B)*Sqrt[Cot[c + d*x]])/(6*a*d*Sqrt[a + I*a*Tan[c + d*x]]) - ((25*A +
 (7*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(6*a^2*d)
```

Rubi [A] time = 0.725347, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3596, 3598, 12, 3544, 205}

$$-\frac{(25A+7iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{6a^2d}+\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),
x]
```


```
[Out] ((1/4 + I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + (
(A + I*B)*Sqrt[Cot[c + d*x]])/(3*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((11*A +
 (5*I)*B)*Sqrt[Cot[c + d*x]])/(6*a*d*Sqrt[a + I*a*Tan[c + d*x]]) - ((25*A +
 (7*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(6*a^2*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}a(7A+iB)-2a(iA-B)\tan}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+ia\tan}}}{3a^2}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(11A+5iB)\sqrt{\cot(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c\right.}{}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(11A+5iB)\sqrt{\cot(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(25A+7iB)\sqrt{\cot(c+}}{6a}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(11A+5iB)\sqrt{\cot(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(25A+7iB)\sqrt{\cot(c+}}{6a}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{3d(a+ia\tan(c+dx))^{3/2}} + \frac{(11A+5iB)\sqrt{\cot(c+dx)}}{6ad\sqrt{a+ia\tan(c+dx)}} - \frac{(25A+7iB)\sqrt{\cot(c+}}{6a}$$

$$= \frac{\left(\frac{1}{4}-\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{3/2}d} + \frac{(A}{3d(a}$$

Mathematica [A] time = 4.73117, size = 195, normalized size = 0.91

$$-\frac{\cot^{\frac{3}{2}}(c+dx)\left(-3(A-iB)e^{3i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)+A\left(-13e^{2i(c+dx)}+38e^{4i(c+dx)}-1\right)+iB\left(-7e^{2i(c+d}\right.\right.}{3ad\left(1+e^{2i(c+dx)}\right)^2(\cot(c+dx)+i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(3/2),x]
```

```
[Out] -((I*B*(-1 - 7*E^((2*I)*(c + d*x)) + 8*E^((4*I)*(c + d*x))) + A*(-1 - 13*E^
((2*I)*(c + d*x)) + 38*E^((4*I)*(c + d*x))) - 3*(A - I*B)*E^((3*I)*(c + d*x
))*Sqrt[-1 + E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I
)*(c + d*x))]])*Cot[c + d*x]^(3/2))/(3*a*d*(1 + E^((2*I)*(c + d*x)))^2*(I +
 Cot[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.673, size = 648, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] (-1/12-1/12*I)/d/a^2*sin(d*x+c)*(cos(d*x+c)/sin(d*x+c))^(3/2)*(a*(I*sin(d*x
+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(25*A+7*B-25*I*A-3*I*A*sin(d*x+c)*2^(1/2)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*2^(1/2))+4*I*B*cos(d*x+c)^3*sin(d*x+c)+11*I*A*cos(d*x+c)*sin(d
*x+c)+5*I*B*sin(d*x+c)*cos(d*x+c)+4*I*A*cos(d*x+c)^3*sin(d*x+c)+4*I*A*cos(d
*x+c)^4+9*I*A*cos(d*x+c)^2-3*I*B*cos(d*x+c)^2-4*I*B*cos(d*x+c)^4-3*I*B*cos(
d*x+c)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-9*A*cos(d*x+c)^2-4*A*cos(d*x+c)^4+11*A*
cos(d*x+c)*sin(d*x+c)-5*B*cos(d*x+c)*sin(d*x+c)-4*B*cos(d*x+c)^3*sin(d*x+c)
+4*A*cos(d*x+c)^3*sin(d*x+c)+3*A*cos(d*x+c)*2^(1/2)*arctan((1/2+1/2*I)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*
I*B*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2
)+7*I*B-4*cos(d*x+c)^4*B-3*B*cos(d*x+c)^2+3*A*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2))
/cos(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.96903, size = 1299, normalized size = 6.07

$$\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{iA^2+2AB-iB^2}{a^3d^2}}e^{(4idx+4ic)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{iA^2+2AB-iB^2}{a^3d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}-iA-B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}-1}}e^{(idx+ic)}\right.}{4iA+4B}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/12*(3*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(4*I*d*x
+ 4*I*c)*log((2*I*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e
^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1/
2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log((-
2*I*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*
I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))
*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*(2*(19*A + 4*I*
B)*e^(4*I*d*x + 4*I*c) - (13*A + 7*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(ia\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(I*a*tan(d*x + c) + a)^(3
/2), x)
```

3.559 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=168

$$\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{A+iB}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}+\frac{}{6ad\sqrt{c}}$$

```
[Out] ((1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + (
A + I*B)/(3*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (7*A + I*B
)/(6*a*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.53127, antiderivative size = 168, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {4241, 3596, 12, 3544, 205}

$$\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{A+iB}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}+\frac{}{6ad\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(3/2),
x]
```


```
[Out] ((1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + (
A + I*B)/(3*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (7*A + I*B
)/(6*a*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
```

```
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{A+iB}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}a(5A}{\sqrt{\tan}}}{3a^2}$$

$$= \frac{A+iB}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{7A+iB}{6ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}$$

$$= \frac{A+iB}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{7A+iB}{6ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}$$

$$= \frac{A+iB}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{7A+iB}{6ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}$$

$$= -\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{3/2}d} + \frac{}{3d}$$

Mathematica [A] time = 3.6629, size = 192, normalized size = 1.14

$$\frac{e^{-2i(c+dx)}\sqrt{\cot(c+dx)}\csc(c+dx)\sec(c+dx)\left(\left(\left(-1+e^{2i(c+dx)}\right)\left(-iA\left(1+8e^{2i(c+dx)}\right)+2Be^{2i(c+dx)}+B\right)-3i(A-iB)e^{3i(c+dx)}\right.\right.}{12ad(\cot(c+dx)+i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(3/2),x]
```

```
[Out] (((-1 + E^((2*I)*(c + d*x)))*(B + 2*B*E^((2*I)*(c + d*x)) - I*A*(1 + 8*E^((
2*I)*(c + d*x)))) - (3*I)*(A - I*B)*E^((3*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*
(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[C
ot[c + d*x]]*Csc[c + d*x]*Sec[c + d*x])/(12*a*d*E^((2*I)*(c + d*x))*(I + Co
t[c + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.595, size = 853, normalized size = 5.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] (-1/12+1/12*I)/d/a^2*(-3*I*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2))*2^(1/2)+I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*B*2^(1/2)
*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-3
*I*A*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*2^(1/2))-I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-6*A*arctan((1
/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)*sin(d*x+c)*
2^(1/2)-9*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-7*I*A
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
cos(d*x+c)*sin(d*x+c)+6*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2))*cos(d*x+c)^2*2^(1/2)+6*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)*sin(d*x+c)*2^(1/2)-7*A*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-9*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(
d*x+c)*sin(d*x+c)+3*A*2^(1/2)*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*2^(1/2))-B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^
2+3*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-3*B*2^(1/2)*c
os(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+6*I
*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)
^2*2^(1/2)+7*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-3*B*2^(1/2)
*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+7*A*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)+B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*(cos(d*x+c)/
sin(d*x+c))^(1/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(2*I*cos(d
*x+c)*sin(d*x+c)+2*cos(d*x+c)^2-1)/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.97366, size = 1293, normalized size = 7.7

$$-\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{-iA^2-2AB+iB^2}{a^3d^2}}e^{(4idx+4ic)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{-iA^2-2AB+iB^2}{a^3d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}-iA-B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}-1}}e^{(id\cdots}\right.}{4iA+4B}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*
x + 4*I*c)*log((2*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*
e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1
/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(
-(2*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2
*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)
)*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((-8*I*A + 2*B
)*e^(4*I*d*x + 4*I*c) + (7*I*A - B)*e^(2*I*d*x + 2*I*c) + I*A - B)*sqrt(a/(
e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) - 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(ia\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(I*a*tan(d*x + c) + a)^(3
/2), x)
```

3.560 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=170

$$-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{-B+iA}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}+\frac{}{6ad}$$

```
[Out] ((-1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) +
(I*A - B)/(3*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (I*A + 5*
B)/(6*a*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.531816, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3595, 3596, 12, 3544, 205}

$$-\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{-B+iA}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}+\frac{}{6ad}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)),
x]
```


```
[Out] ((-1/4 - I/4)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) +
(I*A - B)/(3*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (I*A + 5*
B)/(6*a*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
```

```
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{iA-B}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}a(}{\sqrt{t}}}{3a^2}$$

$$= \frac{iA-B}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{iA+5B}{6ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+d}}$$

$$= \frac{iA-B}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{iA+5B}{6ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+d}}$$

$$= \frac{iA-B}{3d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{3/2}} + \frac{iA+5B}{6ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+d}}$$

$$= -\frac{\left(\frac{1}{4}-\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{3/2}d} + \frac{}{3}$$

Mathematica [A] time = 4.1403, size = 190, normalized size = 1.12

$$\frac{e^{-2i(c+dx)}\sqrt{\cot(c+dx)}\csc(c+dx)\sec(c+dx)\left(\left(-1+e^{2i(c+dx)}\right)\left(2Ae^{2i(c+dx)}+A-iB\left(-1+4e^{2i(c+dx)}\right)\right)-3(A-iB)e^{3i(c+dx)}}{12ad(\cot(c+dx)+i)\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(
3/2)),x]
```

```
[Out] (((-1 + E^((2*I)*(c + d*x)))*(A + 2*A*E^((2*I)*(c + d*x)) - I*B*(-1 + 4*E^(
(2*I)*(c + d*x)))) - 3*(A - I*B)*E^((3*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c
+ d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sqrt[Cot[
c + d*x]]*Csc[c + d*x]*Sec[c + d*x])/(12*a*d*E^((2*I)*(c + d*x))*(I + Cot[c
 + d*x])*Sqrt[a + I*a*Tan[c + d*x]])
```

Maple [B] time = 0.582, size = 867, normalized size = 5.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] (-1/12+1/12*I)/d/a^2*(3*I*B*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-6*I*B*2^(1/2)*cos(d*x+c)^2*arctan((1/2+1/
2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-5*I*B*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)+6*A*2^(1/2)*cos(d*x+c)^2*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*2^(1/2))+3*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2))*2^(1/2)+6*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)*arctan((1/2+1
/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+5*I*B*cos(d*x+c)^2*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)+6*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*arctan((1/2+1/
2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-3*I*A*cos(d*x+c)*sin(d*x+c)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*
A*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*
2^(1/2)-A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2+3*A*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-3*I*B*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*cos(d*x+c)*sin(d*x+c)-3*B*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-5*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*cos(d*x+c)^2-3*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-
3*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-I
*A*cos(d*x+c)^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*A*sin(d*x+c)*arctan((
1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+A*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)+5*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2))*cos(d*x+c)*(a
*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(2*I*cos(d*x+c)*sin(d*x+c)+2*c
os(d*x+c)^2-1)/sin(d*x+c)/(cos(d*x+c)/sin(d*x+c))^(1/2)/((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.92935, size = 1292, normalized size = 7.6

$$-\frac{\left(3\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{iA^2+2AB-iB^2}{a^3d^2}}e^{(4idx+4ic)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^2d\sqrt{\frac{iA^2+2AB-iB^2}{a^3d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}-iA-B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}-1}}e^{(idx+}\right.}{4iA+4B}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(4*I*d*x
 + 4*I*c)*log((2*I*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*
e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqr
t(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
 + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1
/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log((
-2*I*sqrt(1/2)*a^2*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2
*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*
x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1)
)*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*(2*(A - 2*I*B)
*e^(4*I*d*x + 4*I*c) - (A - 5*I*B)*e^(2*I*d*x + 2*I*c) - A - I*B)*sqrt(a/(e
^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I
*c) - 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(ia\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x +
 c))), x)
```

3.561 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=243

$$\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{2(-1)^{3/4}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)\ldots}{\sqrt{\ldots}}\right.}{a^{3/2}d}$$

```
[Out] (2*(-1)^(3/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + ((1/4
+ I/4)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*
Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + (I*A -
B)/(3*d*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)) + (A + (3*I)*B)/(2
*a*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.8251, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3595, 3601, 3544, 205, 3599, 63, 217, 203}

$$\frac{\left(\frac{1}{4}+\frac{i}{4}\right)(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{3/2}d}+\frac{2(-1)^{3/4}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{(-1)\ldots}{\sqrt{\ldots}}\right.}{a^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)),
x]
```


```
[Out] (2*(-1)^(3/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + ((1/4
+ I/4)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*
Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(3/2)*d) + (I*A -
B)/(3*d*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)) + (A + (3*I)*B)/(2
*a*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

]

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{iA-B}{3d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{t}}{}}{3a}$$

$$= \frac{iA-B}{3d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{A+3iB}{2ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+}}$$

$$= \frac{iA-B}{3d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{A+3iB}{2ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+}}$$

$$= \frac{iA-B}{3d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{3/2}} + \frac{A+3iB}{2ad\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+}}$$

$$= \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{3/2}d} + \frac{}{3}$$

$$= \frac{\left(\frac{1}{4}+\frac{i}{4}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{3/2}d} + \frac{}{3}$$

$$= \frac{2(-1)^{3/4}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{3/2}d} + \frac{\left(\frac{1}{4}+\frac{i}{4}\right)}{}$$

Mathematica [A] time = 7.5004, size = 388, normalized size = 1.6

$$\frac{e^{-2i(c+dx)}\sqrt{\cot(c+dx)}\sec(c+dx)\left(3(B+iA)e^{3i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\log\left(\sqrt{-1+e^{2i(c+dx)}}+e^{i(c+dx)}\right)+5iAe^{2i(c+dx)}-4iAe\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(
3/2)),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((-I)*A + B + (5*I)*A*E^((2*I)*(c + d*x)) - 11*B*E^((2*
I)*(c + d*x)) - (4*I)*A*E^((4*I)*(c + d*x)) + 10*B*E^((4*I)*(c + d*x)) + 3*
(I*A + B)*E^((3*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[E^(I*(c +
```

```
d*x)) + Sqrt[-1 + E^((2*I)*(c + d*x))]] - 3*Sqrt[2]*B*E^((3*I)*(c + d*x))*S
qrt[-1 + E^((2*I)*(c + d*x))]*Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(
I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] + 3*Sqrt[2]*B*E^((3*I)*(c + d*
x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[2
]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]])*Sec[c + d*x]*(A + B*Tan[
c + d*x]))/(12*d*E^((2*I)*(c + d*x))*(A*Cos[c + d*x] + B*Sin[c + d*x])*(a +
 I*a*Tan[c + d*x])^(3/2))
```

Maple [B] time = 1.064, size = 1516, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x)
```

```
[Out] (1/12+1/12*I)/d/a^2*(6*I*A*2^(1/2)*cos(d*x+c)*sin(d*x+c)*arctan((1/2+1/2*I)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-3*A*arctan((1/2+1/2*I)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-3*I*A*sin(d*x+c)*arctan((1/2+1/2
*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+6*B*2^(1/2)*cos(d*x+
c)*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))
+3*I*B*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*2^(1/2))-3*I*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-
6*I*B*2^(1/2)*cos(d*x+c)^2*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2))+5*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-11*B*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)-5*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2+11*B*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-3*A*cos(d*x+c)*arctan((1/2+1/2*
I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-3*B*sin(d*x+c)*arctan
((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+6*A*2^(1/2)
*cos(d*x+c)^2*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))
+3*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2
)+6*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-6*B*ln(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)-I)+6*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)-6*B*ln(((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)-1)+5*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+11*I*B*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-12*B*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)+1)+12*B*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)-
12*B*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)+12*B*cos(d*x+c)^2
*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+6*B*ln(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)+1)*cos(d*x+c)-6*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)*cos(d*x+c)
+6*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)*cos(d*x+c)-6*B*ln(((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)-1)*cos(d*x+c)+3*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*c
os(d*x+c)*sin(d*x+c)+9*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d
```

```
*x+c)-12*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*cos(d*x+c)*sin(d*x+c)+
12*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)*cos(d*x+c)*sin(d*x+c)-12*I*B
*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)*cos(d*x+c)*sin(d*x+c)+12*I*B*ln(((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*cos(d*x+c)*sin(d*x+c)+9*I*B*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*cos(d*x+c)*sin(d*x+c)-6*I*B*ln(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)-I)*sin(d*x+c)+6*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)*sin
(d*x+c)-6*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)*sin(d*x+c)-5*I*A*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-11*I*B*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*cos(d*x+c)^2+6*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)*sin(d*x
+c))*cos(d*x+c)^2*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(2*I*cos(d
*x+c)*sin(d*x+c)+2*cos(d*x+c)^2-1)/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)/sin(d*
x+c)^2/(cos(d*x+c)/sin(d*x+c))^(3/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.76993, size = 2129, normalized size = 8.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="fricas")
```

```
[Out] 1/12*(3*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*x
 + 4*I*c)*log((2*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e
^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt
(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*sqrt(1/
2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(-
(2*sqrt(1/2)*a^2*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^3*d^2))*e^(2*I*d*x + 2*
```

```
I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*d*x
 + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))
*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 3*a^2*d*sqrt(4*I*B^2/(a
^3*d^2))*e^(4*I*d*x + 4*I*c)*log(52/605*(4*sqrt(2)*(B*e^(2*I*d*x + 2*I*c) -
 B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(
2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + (3*a^2*d*e^(2*I*d*x + 2*I*c) - a^2
*d)*sqrt(4*I*B^2/(a^3*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B)) + 3*a^2*d*sqrt(4*
I*B^2/(a^3*d^2))*e^(4*I*d*x + 4*I*c)*log(52/605*(4*sqrt(2)*(B*e^(2*I*d*x +
2*I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) +
 I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) - (3*a^2*d*e^(2*I*d*x + 2*I*
c) - a^2*d)*sqrt(4*I*B^2/(a^3*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B)) + sqrt(2)
*((-4*I*A + 10*B)*e^(4*I*d*x + 4*I*c) + (5*I*A - 11*B)*e^(2*I*d*x + 2*I*c)
- I*A + B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) +
I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-4*I*d*x - 4*I*c)/(a^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(3/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(
3/2)), x)
```

3.562 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=260

$$-\frac{(317A+67iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{60a^3d}+\frac{(151A+41iB)\sqrt{\cot(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot}}{a^{5/2}}$$

```
[Out] ((1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (
(A + I*B)*Sqrt[Cot[c + d*x]])/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + ((17*A +
 (7*I)*B)*Sqrt[Cot[c + d*x]])/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((151
*A + (41*I)*B)*Sqrt[Cot[c + d*x]])/(60*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) -
((317*A + (67*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(60*a^3*
d)
```

Rubi [A] time = 0.96579, antiderivative size = 260, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3596, 3598, 12, 3544, 205}

$$-\frac{(317A+67iB)\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}{60a^3d}+\frac{(151A+41iB)\sqrt{\cot(c+dx)}}{60a^2d\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot}}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```


```
[Out] ((1/8 + I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (
(A + I*B)*Sqrt[Cot[c + d*x]])/(5*d*(a + I*a*Tan[c + d*x])^(5/2)) + ((17*A +
 (7*I)*B)*Sqrt[Cot[c + d*x]])/(30*a*d*(a + I*a*Tan[c + d*x])^(3/2)) + ((151
*A + (41*I)*B)*Sqrt[Cot[c + d*x]])/(60*a^2*d*Sqrt[a + I*a*Tan[c + d*x]]) -
((317*A + (67*I)*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])/(60*a^3*
d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}a(11A+iB)-3a(iA-B)}{\tan^{\frac{3}{2}}(c+dx)(a+ia\tan}}{5a^2}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(17A+7iB)\sqrt{\cot(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan\right.}}{}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(17A+7iB)\sqrt{\cot(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(151A+41iB)\sqrt{\cot}}{60a^2d\sqrt{a+ia\tan}}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(17A+7iB)\sqrt{\cot(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(151A+41iB)\sqrt{\cot}}{60a^2d\sqrt{a+ia\tan}}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(17A+7iB)\sqrt{\cot(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(151A+41iB)\sqrt{\cot}}{60a^2d\sqrt{a+ia\tan}}$$

$$= \frac{(A+iB)\sqrt{\cot(c+dx)}}{5d(a+ia\tan(c+dx))^{5/2}} + \frac{(17A+7iB)\sqrt{\cot(c+dx)}}{30ad(a+ia\tan(c+dx))^{3/2}} + \frac{(151A+41iB)\sqrt{\cot}}{60a^2d\sqrt{a+ia\tan}}$$

$$= \frac{\left(\frac{1}{8}-\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} + \frac{(A}{5d(}$$

Mathematica [A] time = 8.75032, size = 200, normalized size = 0.77

$$\frac{\cot^{\frac{3}{2}}(c+dx)\sec(c+dx)\left(-20\csc(c+dx)((23A+4iB)\cos(2(c+dx))-17A-4iB)+\sec(c+dx)((86B-466iA)\cos(2\right.}{60a^2d(\cot(c+dx)+i)^2\sqrt{a+ia\tan}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(5/2),x]
```

```
[Out] (Cot[c + d*x]^(3/2)*Sec[c + d*x]*(-20*(-17*A - (4*I)*B + (23*A + (4*I)*B)*C
os[2*(c + d*x)])*Csc[c + d*x] + 15*(A - I*B)*E^((2*I)*(c + d*x))*Sqrt[-1 +
E^((2*I)*(c + d*x))]*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]
]*Csc[2*(c + d*x)] + ((-149*I)*A + 19*B + ((-466*I)*A + 86*B)*Cos[2*(c + d*
```

```
x)])*Sec[c + d*x]))/(60*a^2*d*(I + Cot[c + d*x])^2*Sqrt[a + I*a*Tan[c + d*x
]])
```

Maple [B] time = 0.541, size = 764, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] (1/120+1/120*I)/d/a^3*sin(d*x+c)*(cos(d*x+c)/sin(d*x+c))^(3/2)*(a*(I*sin(d*
x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)*(-317*A-67*B+15*I*A*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))
*sin(d*x+c)*2^(1/2)-48*I*A*cos(d*x+c)^6+48*I*B*cos(d*x+c)^6-32*I*A*cos(d*x+
c)^4-8*I*B*cos(d*x+c)^4-117*I*A*cos(d*x+c)^2+27*I*B*cos(d*x+c)^2+15*I*B*2^(
1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)+48*B*cos(d*x+c)^6+15*I*B*cos(d*x+c)*2^(1/2)*arcta
n((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)+117*A*cos(d*x+c)^2+32*A*cos(d*x+c)^4+48*A*cos(d*x+c)^6-151*
A*cos(d*x+c)*sin(d*x+c)+48*B*cos(d*x+c)^5*sin(d*x+c)+41*B*cos(d*x+c)*sin(d*
x+c)+16*B*cos(d*x+c)^3*sin(d*x+c)-48*A*cos(d*x+c)^5*sin(d*x+c)-56*A*cos(d*x
+c)^3*sin(d*x+c)-48*I*A*cos(d*x+c)^5*sin(d*x+c)-48*I*B*cos(d*x+c)^5*sin(d*x
+c)-56*I*A*cos(d*x+c)^3*sin(d*x+c)-16*I*B*cos(d*x+c)^3*sin(d*x+c)-151*I*A*c
os(d*x+c)*sin(d*x+c)-41*I*B*sin(d*x+c)*cos(d*x+c)-15*A*cos(d*x+c)*2^(1/2)*a
rctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)+15*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*arcta
n((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+317*I*A-67
*I*B-8*cos(d*x+c)^4*B+27*B*cos(d*x+c)^2-15*A*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2))/
cos(d*x+c)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.14662, size = 1365, normalized size = 5.25

$$\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{iA^2+2AB-iB^2}{a^5d^2}}e^{(6idx+6ic)}\log\left(\frac{\left(2i\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{iA^2+2AB-iB^2}{a^5d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}-iA-B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}-1}}e^{(idx}\right.}{4iA+4B}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*
x + 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))
*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqrt
(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log
((-2*I*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(2*I*d*x +
 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) -
1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((463*A + 83
*I*B)*e^(6*I*d*x + 6*I*c) - 2*(97*A + 32*I*B)*e^(4*I*d*x + 4*I*c) - 2*(13*A
 + 8*I*B)*e^(2*I*d*x + 2*I*c) - 3*A - 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) +
1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x +
I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(I*a*tan(d*x + c) + a)^(5
/2), x)
```

3.563 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=214

$$\frac{67A-3iB}{60a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{}{5d\sqrt{}}$$

```
[Out] ((1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (
A + I*B)/(5*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)) + (13*A + (3
*I)*B)/(30*a*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (67*A - (
3*I)*B)/(60*a^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.747459, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.132, Rules used = {4241, 3596, 12, 3544, 205}

$$\frac{67A-3iB}{60a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{}{5d\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^(5/2),
x]
```


```
[Out] ((1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (
A + I*B)/(5*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)) + (13*A + (3
*I)*B)/(30*a*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (67*A - (
3*I)*B)/(60*a^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{A+iB}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}a(9}{\sqrt{ta}}}{5a^2}$$

$$= \frac{A+iB}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{13A+3iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+d}$$

$$= \frac{A+iB}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{13A+3iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+d}$$

$$= \frac{A+iB}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{13A+3iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+d}$$

$$= \frac{A+iB}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{13A+3iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+d}$$

$$= -\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} + \frac{}{5}$$

Mathematica [A] time = 6.61944, size = 167, normalized size = 0.78

$$\frac{\cot^{\frac{3}{2}}(c+dx)\sec^2(c+dx)\left(\frac{30(A-iB)e^{3i(c+dx)}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-1+e^{2i(c+dx)}}} + 2((86A+6iB)\cos(2(c+dx)) + 80iA\sin(2(c+dx)) + 19A\right.}{120a^2d(\cot(c+dx)+i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + I*a*Tan[c + d*x])^
(5/2),x]
```

```
[Out] (Cot[c + d*x]^(3/2)*Sec[c + d*x]^2*((30*(A - I*B)*E^((3*I)*(c + d*x))*ArcTa
nh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/Sqrt[-1 + E^((2*I)*(c +
 d*x))] + 2*(19*A + (9*I)*B + (86*A + (6*I)*B)*Cos[2*(c + d*x)] + (80*I)*A*
Sin[2*(c + d*x)])))/(120*a^2*d*(I + Cot[c + d*x])^2*Sqrt[a + I*a*Tan[c + d*
x]])
```

Maple [B] time = 0.636, size = 1078, normalized size = 5.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] (-1/120+1/120*I)/d/a^3*(60*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2))*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+67*A*sin(d*x+c)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)+3*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3
0*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x
+c)*sin(d*x+c)*2^(1/2)+15*A*2^(1/2)*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-45*B*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+15*B*2^(1/2)*arctan((1/2+1/2*I
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-160*A*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*cos(d*x+c)^3+160*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)+1
60*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3-160*I*A*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*cos(d*x+c)+67*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)+15*I*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2
))*2^(1/2)-3*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+60*B*arctan((
1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)^3*2^(1/2)-
172*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)+12*B*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)-30*B*arctan((1/2+1/2*I)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)^2*2^(1/2)+60*I*A*arc
tan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)^3*2^(
1/2)-172*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)-30*I
*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)
^2*2^(1/2)-12*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)
-45*I*A*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*2^(1/2))-15*I*B*2^(1/2)*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*2^(1/2))-60*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2))*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)+30*A*arctan((1/2+1/2*I)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)*sin(d*x+c)*2^(1/2))*(
cos(d*x+c)/sin(d*x+c))^(1/2)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)
/(4*I*sin(d*x+c)*cos(d*x+c)^2+4*cos(d*x+c)^3-I*sin(d*x+c)-3*cos(d*x+c))/((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.03007, size = 1358, normalized size = 6.35

$$-\frac{\left(15\,\sqrt{\frac{1}{2}}a^{3}d\sqrt{\frac{-i\,A^{2}-2\,AB+i\,B^{2}}{a^{5}d^{2}}}e^{(6i\,dx+6i\,c)}\log\left(\frac{\left(2\,\sqrt{\frac{1}{2}}a^{3}d\sqrt{\frac{-i\,A^{2}-2\,AB+i\,B^{2}}{a^{5}d^{2}}}e^{(2i\,dx+2i\,c)}+\sqrt{2}\left((i\,A+B)e^{(2i\,dx+2i\,c)}-i\,A-B\right)\sqrt{\frac{a}{e^{(2i\,dx+2i\,c)}+1}}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}\cdots}{4i\,A+4\,B}\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] -1/120*(15*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*
d*x + 6*I*c)*log((2*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2)
)*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqr
t(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*l
og(-(2*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(2*I*d*x
+ 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) -
 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((-83*I*A +
 3*B)*e^(6*I*d*x + 6*I*c) + (64*I*A + 6*B)*e^(4*I*d*x + 4*I*c) + (16*I*A -
6*B)*e^(2*I*d*x + 2*I*c) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*s
qrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c))
*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(ia\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(I*a*tan(d*x + c) + a)^(5
/2), x)
```

3.564 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{-13B+3iA}{60a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{}{30}$$

```
[Out] ((-1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) +
(I*A - B)/(5*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)) + ((3*I)*A
+ 7*B)/(30*a*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) - ((3*I)*A
- 13*B)/(60*a^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.747181, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3595, 3596, 12, 3544, 205}

$$-\frac{-13B+3iA}{60a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}-\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{}{30}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)),
x]
```


```
[Out] ((-1/8 - I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) +
(I*A - B)/(5*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(5/2)) + ((3*I)*A
+ 7*B)/(30*a*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) - ((3*I)*A
- 13*B)/(60*a^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{iA-B}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}}{\sqrt{}}}{5a^2}$$

$$= \frac{iA-B}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{3iA+7B}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{iA-B}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{3iA+7B}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{iA-B}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{3iA+7B}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{iA-B}{5d\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^{5/2}} + \frac{3iA+7B}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= -\frac{\left(\frac{1}{8}-\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} +$$

Mathematica [A] time = 7.11435, size = 168, normalized size = 0.78

$$\frac{\cot^{\frac{3}{2}}(c+dx)\sec^2(c+dx)\left(2(2(7B+3iA)\cos(2(c+dx))+9iA+20iB\sin(2(c+dx))+B)-\frac{30i(A-iB)e^{3i(c+dx)}\tanh^{-1}\left(\frac{e^{i(c+}}{\sqrt{-1+e^{2i}}}\right.}{\sqrt{-1+e^{2i(c+dx)}}}\right.}{120a^2d(\cot(c+dx)+i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(
5/2)),x]
```

```
[Out] (Cot[c + d*x]^(3/2)*Sec[c + d*x]^2*(((-30*I)*(A - I*B)*E^((3*I)*(c + d*x))*
ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/Sqrt[-1 + E^((2*I)
*(c + d*x))] + 2*((9*I)*A + B + 2*((3*I)*A + 7*B)*Cos[2*(c + d*x)] + (20*I)
*B*Sin[2*(c + d*x)])))/(120*a^2*d*(I + Cot[c + d*x])^2*Sqrt[a + I*a*Tan[c +
 d*x]])
```

Maple [B] time = 0.626, size = 1092, normalized size = 5.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] (-1/120+1/120*I)/d/a^3*(60*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*arctan((1/2+
1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+3*A*sin(d*x+c)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)+15*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2))*2^(1/2)+13*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-4
0*B*cos(d*x+c)^3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+40*B*cos(d*x+c)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)-30*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*arctan((1/2+1/
2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-30*I*A*cos(d*x+c)*sin(d*x+c
)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-60*
I*B*cos(d*x+c)^3*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2))-12*I*A*cos(d*x+c)^2*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)-28*I*B*cos(d*x+c)^2*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+30*I*B*c
os(d*x+c)^2*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^
(1/2))-15*I*A*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2))*2^(1/2)+45*I*B*cos(d*x+c)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+60*B*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*arcta
n((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-45*A*cos(d*x+c)*ar
ctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)-15*B*si
n(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1
/2)-30*A*2^(1/2)*cos(d*x+c)^2*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*2^(1/2))+12*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*
x+c)-28*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)+40*I*B*
cos(d*x+c)^3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-3*I*A*sin(d*x+c)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)-40*I*B*cos(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+
13*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-15*I*B*arctan((1/2+1/2*
I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+60*A*cos(d*x+c)^3*2^(
1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)))*cos(d*x
+c)*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(4*I*sin(d*x+c)*cos(d*x+
c)^2+4*cos(d*x+c)^3-I*sin(d*x+c)-3*cos(d*x+c))/sin(d*x+c)/(cos(d*x+c)/sin(d
*x+c))^(1/2)/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.00075, size = 1359, normalized size = 6.29

$$-\frac{\left(15 \sqrt{\frac{1}{2}} a^{3} d \sqrt{\frac{i A^{2}+2 A B-i B^{2}}{a^{5} d^{2}}} e^{(6 i d x+6 i c)} \log \left(\frac{\left(2 i \sqrt{\frac{1}{2}} a^{3} d \sqrt{\frac{i A^{2}+2 A B-i B^{2}}{a^{5} d^{2}}} e^{(2 i d x+2 i c)}+\sqrt{2}\left((i A+B) e^{(2 i d x+2 i c)}-i A-B\right) \sqrt{\frac{a}{e^{(2 i d x+2 i c)}+1}} \sqrt{\frac{i e^{(2 i d x+2 i c)}+i}{e^{(2 i d x+2 i c)}-1}} e^{(i}\right.}{4 i A+4 B}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] -1/120*(15*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d
*x + 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2)
)*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*s
qrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d
*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqr
t(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*lo
g((-2*I*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(2*I*d*x
+ 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I
*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) -
 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - sqrt(2)*((3*A - 17*
I*B)*e^(6*I*d*x + 6*I*c) + 2*(3*A + 8*I*B)*e^(4*I*d*x + 4*I*c) - 2*(3*A - 2
*I*B)*e^(2*I*d*x + 2*I*c) - 3*A - 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c)
)*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^(5/2)*sqrt(cot(d*x +
 c))), x)
```

3.565 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=214

$$\frac{13A-37iB}{60a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{}{5d}$$

```
[Out] ((1/8 + I/8)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (
I*A - B)/(5*d*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)) + (A + (11*I
)*B)/(30*a*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (13*A - (37
*I)*B)/(60*a^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 0.757366, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {4241, 3595, 3596, 12, 3544, 205}

$$\frac{13A-37iB}{60a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{}{5d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)),
x]
```

```
[Out] ((1/8 + I/8)*(I*A + B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ I*a*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (
I*A - B)/(5*d*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(5/2)) + (A + (11*I
)*B)/(30*a*d*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^(3/2)) + (13*A - (37
*I)*B)/(60*a^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3596

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((a*A + b*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(2*f*m*
(b*c - a*d)), x] + Dist[1/(2*a*m*(b*c - a*d)), Int[(a + b*Tan[e + f*x])^(m
+ 1)*(c + d*Tan[e + f*x])^n*Simp[A*(b*c*m - a*d*(2*m + n + 1)) + B*(a*c*m -
 b*d*(n + 1)) + d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x], x], x], x] /; FreeQ
[{a, b, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0]
&& LtQ[m, 0] &&  !GtQ[n, 0]
```

Rule 12

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

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{iA-B}{5d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int -}{5}$$

$$= \frac{iA-B}{5d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+11iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{iA-B}{5d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+11iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{iA-B}{5d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+11iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{iA-B}{5d\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+11iB}{30ad\sqrt{\cot(c+dx)}(a+ia\tan(c+}$$

$$= \frac{\left(\frac{1}{8}+\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} + \frac{}{5}$$

Mathematica [A] time = 7.57418, size = 169, normalized size = 0.79

$$\frac{\cot^{\frac{3}{2}}(c+dx)\sec^2(c+dx)\left(40(B+iA)\sin(2(c+dx))+4(7A-13iB)\cos(2(c+dx))-\frac{30(A-iB)e^{3i(c+dx)}\tanh^{-1}\left(\frac{e^{i(c+dx)}}{\sqrt{-1+e^{2i(c+dx)}}}\right)}{\sqrt{-1+e^{2i(c+dx)}}}+\right.}{120a^2d(\cot(c+dx)+i)^2\sqrt{a+ia\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(
5/2)),x]
```

```
[Out] (Cot[c + d*x]^(3/2)*Sec[c + d*x]^2*(2*A + (22*I)*B - (30*(A - I*B)*E^((3*I)
*(c + d*x))*ArcTanh[E^(I*(c + d*x))/Sqrt[-1 + E^((2*I)*(c + d*x))]])/Sqrt[-
1 + E^((2*I)*(c + d*x))] + 4*(7*A - (13*I)*B)*Cos[2*(c + d*x)] + 40*(I*A +
B)*Sin[2*(c + d*x)]))/(120*a^2*d*(I + Cot[c + d*x])^2*Sqrt[a + I*a*Tan[c +
```

d*x]])

Maple [B] time = 0.535, size = 1212, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] (1/120+1/120*I)/d/a^3*(60*I*A*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)*arctan((1/2+1
/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-13*A*sin(d*x+c)*((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)+15*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*2^(1/2))*2^(1/2)+37*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-4
0*B*cos(d*x+c)^3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+40*B*cos(d*x+c)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)-30*B*2^(1/2)*cos(d*x+c)*sin(d*x+c)*arctan((1/2+1/
2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-30*I*A*cos(d*x+c)*sin(d*x+c
)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-28*
I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-52*I*B*sin(d*
x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2-40*A*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*cos(d*x+c)^3+40*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x
+c)-60*I*B*cos(d*x+c)^3*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*2^(1/2))+30*I*B*cos(d*x+c)^2*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-15*I*A*sin(d*x+c)*arctan((1/2+1/2*I)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+45*I*B*cos(d*x+c)*2^(1/2)*ar
ctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+60*B*cos(d*x+c)
^2*sin(d*x+c)*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2))-45*A*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*2^(1/2))*2^(1/2)-15*B*sin(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*2^(1/2))*2^(1/2)-30*A*2^(1/2)*cos(d*x+c)^2*arctan((1/2+1/2*I)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))+28*A*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*cos(d*x+c)^2*sin(d*x+c)-52*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(
d*x+c)^2*sin(d*x+c)-40*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3+4
0*I*A*cos(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+13*I*A*sin(d*x+c)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)+37*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)+40*I*B*cos(d*x+c)^3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-40*I*B*cos(d*x+c
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-15*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*2^(1/2))*2^(1/2)+60*A*cos(d*x+c)^3*2^(1/2)*arctan((1/2
+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2)))*cos(d*x+c)^2*(a*(I*sin(
d*x+c)+cos(d*x+c))/cos(d*x+c))^(1/2)/(4*I*sin(d*x+c)*cos(d*x+c)^2+4*cos(d*x
+c)^3-I*sin(d*x+c)-3*cos(d*x+c))/sin(d*x+c)^2/(cos(d*x+c)/sin(d*x+c))^(3/2)
/((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.0327, size = 1359, normalized size = 6.35

$$\left(15\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{-iA^2-2AB+iB^2}{a^5d^2}}e^{(6idx+6ic)}\log\left(\frac{\left(2\sqrt{\frac{1}{2}}a^3d\sqrt{\frac{-iA^2-2AB+iB^2}{a^5d^2}}e^{(2idx+2ic)}+\sqrt{2}\left((iA+B)e^{(2idx+2ic)}-iA-B\right)\sqrt{\frac{a}{e^{(2idx+2ic)}+1}}\sqrt{\frac{ie^{(2idx+2ic)}+i}{e^{(2idx+2ic)}-1}}e^{(i}}{4iA+4B}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*d
*x + 6*I*c)*log((2*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))
*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqrt
(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*lo
g(-(2*sqrt(1/2)*a^3*d*sqrt((-I*A^2 - 2*A*B + I*B^2)/(a^5*d^2))*e^(2*I*d*x +
 2*I*c) - sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) -
1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) + sqrt(2)*((-17*I*A -
23*B)*e^(6*I*d*x + 6*I*c) + (16*I*A + 34*B)*e^(4*I*d*x + 4*I*c) + (4*I*A -
14*B)*e^(2*I*d*x + 2*I*c) - 3*I*A + 3*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*
sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c)
)*e^(-6*I*d*x - 6*I*c)/(a^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(i\,a\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(
3/2)), x)
```

3.566 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=289

$$-\frac{-7B+iA}{4a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{2\sqrt[4]{}}{}$$

```
[Out] (2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + ((1/8
+ I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*
Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (I*A -
B)/(5*d*Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(5/2)) + (A + (3*I)*B)/(6
*a*d*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)) - (I*A - 7*B)/(4*a^2*
d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```

Rubi [A] time = 1.0316, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.237, Rules used = {4241, 3595, 3601, 3544, 205, 3599, 63, 217, 203}

$$-\frac{-7B+iA}{4a^2d\sqrt{\cot(c+dx)}\sqrt{a+ia\tan(c+dx)}}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)}{a^{5/2}d}+\frac{2\sqrt[4]{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(5/2)),
x]
```


```
[Out] (2*(-1)^(1/4)*B*ArcTan[((-1)^(3/4)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + ((1/8
+ I/8)*(A - I*B)*ArcTanh[((1 + I)*Sqrt[a]*Sqrt[Tan[c + d*x]])/Sqrt[a + I*a*
Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(a^(5/2)*d) + (I*A -
B)/(5*d*Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(5/2)) + (A + (3*I)*B)/(6
*a*d*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^(3/2)) - (I*A - 7*B)/(4*a^2*
d*Sqrt[Cot[c + d*x]]*Sqrt[a + I*a*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3595

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(2*a*f*m), x
] + Dist[1/(2*a^2*m), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])
^(n - 1)*Simp[A*(a*c*m + b*d*n) - B*(b*c*m + a*d*n) - d*(b*B*(m - n) - a*A*
(m + n))*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && LtQ[m, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3544

```
Int[Sqrt[(a_) + (b_.)*tan[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*tan[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Dist[(-2*a*b)/f, Subst[Int[1/(a*c - b*d - 2*a
^2*x^2), x], x, Sqrt[c + d*Tan[e + f*x]]/Sqrt[a + b*Tan[e + f*x]]], x] /; F
reeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && Ne
Q[c^2 + d^2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+ia\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{iA-B}{5d\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}}{}}{5a^2}$$

$$= \frac{iA-B}{5d\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx)}$$

$$= \frac{iA-B}{5d\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx)}$$

$$= \frac{iA-B}{5d\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx)}$$

$$= \frac{iA-B}{5d\cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^{5/2}} + \frac{A+3iB}{6ad\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx)}$$

$$= \frac{\left(\frac{1}{8}-\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} + \frac{}{5d}$$

$$= \frac{\left(\frac{1}{8}-\frac{i}{8}\right)(iA+B)\tanh^{-1}\left(\frac{(1+i)\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} + \frac{}{5d}$$

$$= \frac{2\sqrt[4]{-1}B\tan^{-1}\left(\frac{(-1)^{3/4}\sqrt{a}\sqrt{\tan(c+dx)}}{\sqrt{a+ia\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{a^{5/2}d} + \frac{\left(\frac{1}{8}-\frac{i}{8}\right)(iA}{}$$

Mathematica [A] time = 9.89122, size = 426, normalized size = 1.47

$$\frac{e^{-3i(c+dx)}\sqrt{\cot(c+dx)}\sec^2(c+dx)\left(15(A-iB)e^{5i(c+dx)}\sqrt{-1+e^{2i(c+dx)}}\log\left(\sqrt{-1+e^{2i(c+dx)}}+e^{i(c+dx)}\right)-14Ae^{2i(c+dx)}+34A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^(
5/2)),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(3*A + (3*I)*B - 14*A*E^((2*I)*(c + d*x)) - (24*I)*B*E^
((2*I)*(c + d*x)) + 34*A*E^((4*I)*(c + d*x)) + (144*I)*B*E^((4*I)*(c + d*x)
) - 23*A*E^((6*I)*(c + d*x)) - (123*I)*B*E^((6*I)*(c + d*x)) + 15*(A - I*B)
*E^((5*I)*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[E^(I*(c + d*x)) + S
qrt[-1 + E^((2*I)*(c + d*x))]] + (30*I)*Sqrt[2]*B*E^((5*I)*(c + d*x))*Sqrt[
-1 + E^((2*I)*(c + d*x))]*Log[1 - 3*E^((2*I)*(c + d*x)) - 2*Sqrt[2]*E^(I*(c
 + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]] - (30*I)*Sqrt[2]*B*E^((5*I)*(c + d
*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]*Log[1 - 3*E^((2*I)*(c + d*x)) + 2*Sqrt[
2]*E^(I*(c + d*x))*Sqrt[-1 + E^((2*I)*(c + d*x))]]])*Sec[c + d*x]^2*(A + B*T
an[c + d*x]))/(120*d*E^((3*I)*(c + d*x))*(A*Cos[c + d*x] + B*Sin[c + d*x])*
(a + I*a*Tan[c + d*x])^(5/2))
```

Maple [B] time = 0.577, size = 2158, normalized size = 7.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x)
```

```
[Out] (-1/120-1/120*I)/d/a^3*(60*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*2^(1/2))*cos(d*x+c)^2*sin(d*x+c)*2^(1/2)-37*A*sin(d*x+c)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)+147*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
+240*B*cos(d*x+c)^3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-240*B*cos(d*x+c)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)-30*I*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)*sin(d*x+c)*2^(1/2)+15*A*2^(1/2)*sin(d*x+
c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-45*B*2^(1/
2)*cos(d*x+c)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))
+15*B*2^(1/2)*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))
-60*B*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)+60*B*sin(d*x+c)*ln
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-60*B*sin(d*x+c)*ln(((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)+1)+60*B*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)+
60*I*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*
x+c)^3*2^(1/2)-30*I*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
2^(1/2))*cos(d*x+c)^2*2^(1/2)-45*I*A*2^(1/2)*cos(d*x+c)*arctan((1/2+1/2*I)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-15*I*B*2^(1/2)*sin(d*x+c)*arctan
((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))-60*A*arctan((1/2+1/
2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)^2*sin(d*x+c)*2^(
1/2)+52*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2+252*I
*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^2+40*A*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3-40*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*cos(d*x+c)+60*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)-60*I*B*ln(((cos
```

```
(d*x+c)-1)/sin(d*x+c))^(1/2)+I)+60*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
-1)-60*I*B*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+52*A*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*cos(d*x+c)^2*sin(d*x+c)-252*B*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*cos(d*x+c)^2*sin(d*x+c)-30*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*2^(1/2))*cos(d*x+c)^2*2^(1/2)-40*I*A*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*cos(d*x+c)^3+40*I*A*cos(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+30*
A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*cos(d*x+c)*
sin(d*x+c)*2^(1/2)-120*I*B*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)-1)+120*I*B*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-37*I*A*si
n(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-180*I*B*cos(d*x+c)*ln(((cos(d*x+
c)-1)/sin(d*x+c))^(1/2)-I)+180*I*B*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)+I)-180*I*B*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)+180*I
*B*cos(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)-240*I*B*cos(d*x+c)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)-147*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)-240*B*sin(d*x+c)*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)-I)+15*I*A*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*2
^(1/2)+60*B*arctan((1/2+1/2*I)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*2^(1/2))*c
os(d*x+c)^3*2^(1/2)+240*B*sin(d*x+c)*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)+I)-240*B*sin(d*x+c)*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)-1)+240*B*sin(d*x+c)*cos(d*x+c)^2*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)+1)+120*B*cos(d*x+c)*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)-12
0*B*cos(d*x+c)*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+I)+120*B*cos
(d*x+c)*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-1)-120*B*cos(d*x+c)
*sin(d*x+c)*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+240*I*B*cos(d*x+c)^3*ln
(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)-240*I*B*cos(d*x+c)^3*ln(((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)+I)+240*I*B*cos(d*x+c)^3*ln(((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)-1)-240*I*B*cos(d*x+c)^3*ln(((cos(d*x+c)-1)/sin(d*x+c))^(1/2)+1)+240*
I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*cos(d*x+c)^3-120*I*B*cos(d*x+c)^2*ln(
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)-I)+120*I*B*cos(d*x+c)^2*ln(((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)+I))*cos(d*x+c)^3*(a*(I*sin(d*x+c)+cos(d*x+c))/cos(d*x+c
))^(1/2)/(4*I*sin(d*x+c)*cos(d*x+c)^2+4*cos(d*x+c)^3-I*sin(d*x+c)-3*cos(d*x
+c))/sin(d*x+c)^3/(cos(d*x+c)/sin(d*x+c))^(5/2)/((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 2.8468, size = 2233, normalized size = 7.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="fricas")
```

```
[Out] 1/120*(15*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*
x + 6*I*c)*log((2*I*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))
*e^(2*I*d*x + 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sq
rt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*
x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 15*sqrt
(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log
((-2*I*sqrt(1/2)*a^3*d*sqrt((I*A^2 + 2*A*B - I*B^2)/(a^5*d^2))*e^(2*I*d*x +
 2*I*c) + sqrt(2)*((I*A + B)*e^(2*I*d*x + 2*I*c) - I*A - B)*sqrt(a/(e^(2*I*
d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) -
1))*e^(I*d*x + I*c))*e^(-I*d*x - I*c)/(4*I*A + 4*B)) - 30*a^3*d*sqrt(-4*I*B
^2/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(1/605*(208*sqrt(2)*(B*e^(2*I*d*x + 2*
I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c) + I
)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + (156*I*a^3*d*e^(2*I*d*x + 2*
I*c) - 52*I*a^3*d)*sqrt(-4*I*B^2/(a^5*d^2)))/(B*e^(2*I*d*x + 2*I*c) + B)) +
 30*a^3*d*sqrt(-4*I*B^2/(a^5*d^2))*e^(6*I*d*x + 6*I*c)*log(1/605*(208*sqrt(
2)*(B*e^(2*I*d*x + 2*I*c) - B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^
(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c) + (-156*I
*a^3*d*e^(2*I*d*x + 2*I*c) + 52*I*a^3*d)*sqrt(-4*I*B^2/(a^5*d^2)))/(B*e^(2*
I*d*x + 2*I*c) + B)) - sqrt(2)*((23*A + 123*I*B)*e^(6*I*d*x + 6*I*c) - 2*(1
7*A + 72*I*B)*e^(4*I*d*x + 4*I*c) + 2*(7*A + 12*I*B)*e^(2*I*d*x + 2*I*c) -
3*A - 3*I*B)*sqrt(a/(e^(2*I*d*x + 2*I*c) + 1))*sqrt((I*e^(2*I*d*x + 2*I*c)
+ I)/(e^(2*I*d*x + 2*I*c) - 1))*e^(I*d*x + I*c))*e^(-6*I*d*x - 6*I*c)/(a^3*
d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+I*a*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B \tan(dx+c) + A}{(i a \tan(dx+c) + a)^{\frac{5}{2}} \cot(dx+c)^{\frac{5}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+I*a*tan(d*x+c))^(5/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((I*a*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(
5/2)), x)
```

3.567 $\int \cot^m(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=179

$$\frac{iB\cot^{m-1}(c+dx)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}(1-m,1-n,2-m,-i\tan(c+dx))}{d(1-m)}+$$

```
[Out] ((A - I*B)*AppellF1[1 - m, 1 - n, 1, 2 - m, (-I)*Tan[c + d*x], I*Tan[c + d*
x]]*Cot[c + d*x]^(-1 + m)*(a + I*a*Tan[c + d*x])^n)/(d*(1 - m)*(1 + I*Tan[c
 + d*x])^n) + (I*B*Cot[c + d*x]^(-1 + m)*Hypergeometric2F1[1 - m, 1 - n, 2
- m, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 - m)*(1 + I*Tan[c +
 d*x])^n)
```

Rubi [A] time = 0.428908, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {4241, 3601, 3564, 135, 133, 3599, 66, 64}

$$\frac{(A-iB)\cot^{m-1}(c+dx)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1(1-m;1-n,1;2-m;-i\tan(c+dx),i\tan(c+dx))}{d(1-m)}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^m*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((A - I*B)*AppellF1[1 - m, 1 - n, 1, 2 - m, (-I)*Tan[c + d*x], I*Tan[c + d*
x]]*Cot[c + d*x]^(-1 + m)*(a + I*a*Tan[c + d*x])^n)/(d*(1 - m)*(1 + I*Tan[c
 + d*x])^n) + (I*B*Cot[c + d*x]^(-1 + m)*Hypergeometric2F1[1 - m, 1 - n, 2
- m, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 - m)*(1 + I*Tan[c +
 d*x])^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
```

```
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 && !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \cot^m(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = (\cot^m(c+dx)\tan^m(c+dx))\int \tan^{-m}(c+dx)(a+ia\tan$$

$$= -\left(((-A+iB)\cot^m(c+dx)\tan^m(c+dx))\int \tan^{-m}(c+$$

$$= -\frac{\left(ia^2(-A+iB)\cot^m(c+dx)\tan^m(c+dx)\right)\text{Subst}\left(\int \frac{(-}{}\right.}{d}$$

$$= -\frac{(ia(-A+iB)\cot^m(c+dx)(1+i\tan(c+dx))^{-n}\tan^m(c}{}$$

$$= \frac{(A-iB)F_1(1-m;1-n,1;2-m;-i\tan(c+dx),i\tan(c}{}$$

Mathematica [F] time = 18.9726, size = 0, normalized size = 0.

$$\int \cot^m(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^m*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]

[Out] Integrate[Cot[c + d*x]^m*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 179.186, size = 0, normalized size = 0.

$$\int (\cot(dx+c))^m (a+ia\tan(dx+c))^n (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\cot(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left((A-i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n\left(\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}\right)^m}{e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n*((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*
I*c) - 1))^m/(e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**m*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\cot(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^m*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^m, x)
```

3.568 $\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=247

$$-\frac{2(1-2n)(-2An+3iB)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+dx)\right)}{3d\sqrt{\cot(c+dx)}}-\cdots$$

```
[Out] (-2*(3*B + (2*I)*A*n)*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(3*d) -
(2*A*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n)/(3*d) - (2*(A - I*B)*Appe
llF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a + I*a*Tan[c
+ d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) - (2*(1 - 2*n)*((3
*I)*B - 2*A*n)*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I
*a*Tan[c + d*x])^n)/(3*d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.826763, antiderivative size = 247, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {4241, 3598, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$-\frac{2(A-iB)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}-\frac{2(1-2n)(-2An+\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*(3*B + (2*I)*A*n)*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(3*d) -
(2*A*Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n)/(3*d) - (2*(A - I*B)*Appe
llF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a + I*a*Tan[c
+ d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) - (2*(1 - 2*n)*((3
*I)*B - 2*A*n)*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I
*a*Tan[c + d*x])^n)/(3*d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
```

```
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^n(A}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n}{3d} + \frac{\left(2\sqrt{\cot(c+dx}\right.}{}$$

$$= -\frac{2(3B+2iAn)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{3d} - \frac{2A}{}$$

$$= -\frac{2(3B+2iAn)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{3d} - \frac{2A}{}$$

$$= -\frac{2(3B+2iAn)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{3d} - \frac{2A}{}$$

$$= -\frac{2(3B+2iAn)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{3d} - \frac{2A}{}$$

$$= -\frac{2(3B+2iAn)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{3d} - \frac{2A}{}$$

$$= -\frac{2(3B+2iAn)\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{3d} - \frac{2A}{}$$

Mathematica [F] time = 11.2541, size = 0, normalized size = 0.

$$\int \cot^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Cot[c + d*x]^(5/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.378, size = 0, normalized size = 0.

$$\int (\cot (dx + c))^{\frac{5}{2}} (a + ia \tan (dx + c))^{n} (A + B \tan (dx + c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(i\, a \tan (dx + c) + a)^{n} \cot (dx + c)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^(5/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{\left((A - i\,B)e^{(4i\,dx+4i\,c)} + 2\,Ae^{(2i\,dx+2i\,c)} + A + i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}}{e^{(4i\,dx+4i\,c)} - 2\,e^{(2i\,dx+2i\,c)} + 1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(-((A - I*B)*e^(4*I*d*x + 4*I*c) + 2*A*e^(2*I*d*x + 2*I*c) + A + I*
B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))/(e^(4*I*d*x + 4*I*c) - 2*e^(2*I*d
```

```
*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^(5/2),
 x)
```

3.569 $\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=194

$$-\frac{2iA(1-2n)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}+\frac{2(B+iA)(1$$

```
[Out] (-2*A*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/d + (2*(I*A + B)*AppellF
1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a + I*a*Tan[c + d
*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) - ((2*I)*A*(1 - 2*n)*
Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x]
)^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.5934, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {4241, 3598, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$\frac{2(B+iA)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}-\frac{2iA(1-2n)(1+i\tan$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] (-2*A*Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/d + (2*(I*A + B)*AppellF
1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a + I*a*Tan[c + d
*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) - ((2*I)*A*(1 - 2*n)*
Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x]
)^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3598

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[((A*d - B*c)*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(f*(n +
 1)*(c^2 + d^2)), x] - Dist[1/(a*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f
*x])^m*(c + d*Tan[e + f*x])^(n + 1)*Simp[A*(b*d*m - a*c*(n + 1)) - B*(b*c*m
 + a*d*(n + 1)) - a*(B*c - A*d)*(m + n + 1)*Tan[e + f*x], x], x], x] /; Fre
eQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[n, -1]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
```

```
&& (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^n(A \cdots}{\tan^{\frac{3}{2}}(c+ \cdots}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{d} + \frac{\left(2\sqrt{\cot(c+dx \cdots\right.}{\cdots}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{d} + \left((iA+B)\sqrt{\cot \cdots\right.$$

$$= -\frac{2A\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{d} + \frac{\left(ia^2(iA+B)\sqrt{\cdots}\right.}{\cdots}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{d} - \frac{\left(2a^3(iA+B)\sqrt{\cdots}\right.}{\cdots}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{d} - \frac{2iA(1-2n)\,{}_2F \cdots}{\cdots}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n}{d} + \frac{2(iA+B)F_1\left(\frac{1}{2} \cdots\right.}{\cdots}$$

Mathematica [F] time = 28.1499, size = 0, normalized size = 0.

$$\int \cot^{\frac{3}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Cot[c + d*x]^(3/2)*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.38, size = 0, normalized size = 0.

$$\int (\cot(dx+c))^{\frac{3}{2}} (a+ia\tan(dx+c))^n (A+B\tan(dx+c))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^(3/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left((iA+B)e^{(2i\,dx+2i\,c)}+iA-B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}}{e^{(2i\,dx+2i\,c)}-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(((I*A + B)*e^(2*I*d*x + 2*I*c) + I*A - B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))/(e^(2*I*d*x + 2*I*c) - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*cot(d*x + c)^(3/2),
 x)
```

3.570 $\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=158

$$\frac{2iB(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}+\frac{2(A-iB)(1+i\tan(c+$$

```
[Out] (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]
]*(a + I*a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) +
 ((2*I)*B*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Ta
n[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.391409, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {4241, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$\frac{2(A-iB)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}+\frac{2iB(1+i\tan(c+dx$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```



```
[Out] (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]
]*(a + I*a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) +
 ((2*I)*B*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Ta
n[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
```

```
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+dx))^n(A+}{\sqrt{\tan(c+d}}$$

$$= -\left(\left((-A+iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(}{\sqrt{\tan(c-}}\right.$$

$$= -\frac{\left(ia^2(-A+iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int \frac{(a}{\sqrt{-\frac{i}{a}}}\right.}{d}$$

$$= \frac{\left(2a^3(-A+iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int \frac{(a+iax}{-a^2-}\right.}{d}$$

$$= \frac{2iB\,{}_2F_1\left(\frac{1}{2},1-n;\frac{3}{2};-i\tan(c+dx)\right)(1+i\tan(c+dx))^{-n}(a}{d\sqrt{\cot(c+dx)}}$$

$$= \frac{2(A-iB)F_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)(}{d\sqrt{\cot(c+dx)}}$$

Mathematica [F] time = 21.6215, size = 0, normalized size = 0.

$$\int \sqrt{\cot(c+dx)}(a+ia\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
x]
```

```
[Out] Integrate[Sqrt[Cot[c + d*x]]*(a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),
 x]
```

Maple [F] time = 0.412, size = 0, normalized size = 0.

$$\int \sqrt{\cot(dx+c)}\,(a+ia\tan(dx+c))^n\,(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*sqrt(cot(d*x + c)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(2i\,dx+2i\,c)}+A+iB\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}}{e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)
/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x
+ 2*I*c) - 1))/(e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n*sqrt(cot(d*x + c)),
 x)
```

3.571 $\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=215

$$\frac{2(2Bn+iA(2n+1))(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan(c+dx)\right)}{d(2n+1)\sqrt{\cot(c+dx)}}-\frac{2(B$$

```
[Out] (2*B*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*Sqrt[Cot[c + d*x]]) - (2*(I*A +
 B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a + I*
a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) + (2*(2*B*
n + I*A*(1 + 2*n))*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a
 + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x]
)^n)
```

Rubi [A] time = 0.598159, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {4241, 3597, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$-\frac{2(B+iA)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}+\frac{2(2Bn+iA(2n+$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```



```
[Out] (2*B*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*Sqrt[Cot[c + d*x]]) - (2*(I*A +
 B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a + I*
a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) + (2*(2*B*
n + I*A*(1 + 2*n))*Hypergeometric2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a
 + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x]
)^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
```

```
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}(a+ia\tan(c+dx))^n(A$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(1+2n)\sqrt{\cot(c+dx)}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+ia\tan(c+d}{}}{a(1+2n)}$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(1+2n)\sqrt{\cot(c+dx)}} - \left((iA+B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a}{}$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(1+2n)\sqrt{\cot(c+dx)}} - \frac{\left(ia^2(iA+B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Su}}{d}$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(1+2n)\sqrt{\cot(c+dx)}} + \frac{\left(2a^3(iA+B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Su}}{d}$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(1+2n)\sqrt{\cot(c+dx)}} + \frac{2(2Bn+iA(1+2n))\,{}_2F_1\left(\frac{1}{2},1-n;\frac{3}{2};-i\tan\right.}{d(1+2n}$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(1+2n)\sqrt{\cot(c+dx)}} - \frac{2(iA+B)F_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\right.}{d}$$

Mathematica [F] time = 13.8034, size = 0, normalized size = 0.

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]
],x]
```

```
[Out] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]
], x]
```

Maple [F] time = 0.411, size = 0, normalized size = 0.

$$\int (a+ia\tan(dx+c))^n (A+B\tan(dx+c)) \frac{1}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/sqrt(cot(d*x + c)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((-iA-B)e^{(4i\,dx+4i\,c)}+2\,Be^{(2i\,dx+2i\,c)}+iA-B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^n\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}}{e^{(4i\,dx+4i\,c)}+2\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="fricas")
```

```
[Out] integral(((-I*A - B)*e^(4*I*d*x + 4*I*c) + 2*B*e^(2*I*d*x + 2*I*c) + I*A -
B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((I*e^(2*I*d*x
 + 2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))/(e^(4*I*d*x + 4*I*c) + 2*e^(2*I*d
*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan{(dx+c)}+A)(i\,a\tan{(dx+c)}+a)^n}{\sqrt{\cot{(dx+c)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/sqrt(cot(d*x + c)),
 x)
```

3.572 $\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=291

$$\frac{2\left(2An(2n+3)-iB\left(4n^2+6n+3\right)\right)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F1}\left(\frac{1}{2},1-n,\frac{3}{2},-i\tan\right.}{d(2n+1)(2n+3)\sqrt{\cot(c+dx)}}$$

```
[Out] (2*B*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n)*Cot[c + d*x]^(3/2)) - (2*((2*I)
*B*n - A*(3 + 2*n))*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*Sqrt[C
ot[c + d*x]]) - (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x]
, I*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Ta
n[c + d*x])^n) + (2*(2*A*n*(3 + 2*n) - I*B*(3 + 6*n + 4*n^2))*Hypergeometri
c2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 +
2*n)*(3 + 2*n)*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 0.895361, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {4241, 3597, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$-\frac{2(A-iB)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}+\frac{2\left(2An(2n+3)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),x]
```


```
[Out] (2*B*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n)*Cot[c + d*x]^(3/2)) - (2*((2*I)
*B*n - A*(3 + 2*n))*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*Sqrt[C
ot[c + d*x]]) - (2*(A - I*B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x]
, I*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Ta
n[c + d*x])^n) + (2*(2*A*n*(3 + 2*n) - I*B*(3 + 6*n + 4*n^2))*Hypergeometri
c2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 +
2*n)*(3 + 2*n)*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{(a + ia\tan(c + dx))^n(A + B\tan(c + dx))}{\cot^{\frac{3}{2}}(c + dx)}\,dx = \left(\sqrt{\cot(c + dx)}\sqrt{\tan(c + dx)}\right)\int \tan^{\frac{3}{2}}(c + dx)(a + ia\tan(c + dx))^n(A +$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} + \frac{\left(2\sqrt{\cot(c + dx)}\sqrt{\tan(c + dx)}\right)\int \sqrt{\tan(c +}{}$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} - \frac{2(2iBn - A(3 + 2n))(a + ia\tan(c + dx))^n}{d(1 + 2n)(3 + 2n)\sqrt{\cot(c + dx)}} +$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} - \frac{2(2iBn - A(3 + 2n))(a + ia\tan(c + dx))^n}{d(1 + 2n)(3 + 2n)\sqrt{\cot(c + dx)}} -$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} - \frac{2(2iBn - A(3 + 2n))(a + ia\tan(c + dx))^n}{d(1 + 2n)(3 + 2n)\sqrt{\cot(c + dx)}} -$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} - \frac{2(2iBn - A(3 + 2n))(a + ia\tan(c + dx))^n}{d(1 + 2n)(3 + 2n)\sqrt{\cot(c + dx)}} +$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} - \frac{2(2iBn - A(3 + 2n))(a + ia\tan(c + dx))^n}{d(1 + 2n)(3 + 2n)\sqrt{\cot(c + dx)}} +$$

$$= \frac{2B(a + ia\tan(c + dx))^n}{d(3 + 2n)\cot^{\frac{3}{2}}(c + dx)} - \frac{2(2iBn - A(3 + 2n))(a + ia\tan(c + dx))^n}{d(1 + 2n)(3 + 2n)\sqrt{\cot(c + dx)}} -$$

Mathematica [F] time = 19.0712, size = 0, normalized size = 0.

$$\int \frac{(a + ia\tan(c + dx))^n(A + B\tan(c + dx))}{\cot^{\frac{3}{2}}(c + dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2
),x]
```

```
[Out] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2
), x]
```

Maple [F] time = 0.375, size = 0, normalized size = 0.

$$\int \left(a+ia\tan\left(dx+c\right)\right)^{n}\left(A+B\tan\left(dx+c\right)\right)\left(\cot\left(dx+c\right)\right)^{-\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan\left(dx+c\right)+A)(i\,a\tan\left(dx+c\right)+a)^{n}}{\cot\left(dx+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/cot(d*x + c)^(3/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(-\frac{\left((A-i\,B)e^{(6i\,dx+6i\,c)}-(A-3i\,B)e^{(4i\,dx+4i\,c)}-(A+3i\,B)e^{(2i\,dx+2i\,c)}+A+i\,B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}\sqrt{\frac{i\,e^{(2i\,dx+2i\,c)}+i}{e^{(2i\,dx+2i\,c)}-1}}}{e^{(6i\,dx+6i\,c)}+3\,e^{(4i\,dx+4i\,c)}+3\,e^{(2i\,dx+2i\,c)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorit
hm="fricas")
```

```
[Out] integral(-((A - I*B)*e^(6*I*d*x + 6*I*c) - (A - 3*I*B)*e^(4*I*d*x + 4*I*c)
- (A + 3*I*B)*e^(2*I*d*x + 2*I*c) + A + I*B)*(2*a*e^(2*I*d*x + 2*I*c)/(e^(2
```

```
*I*d*x + 2*I*c) + 1))^n*sqrt((I*e^(2*I*d*x + 2*I*c) + I)/(e^(2*I*d*x + 2*I*
c) - 1))/(e^(6*I*d*x + 6*I*c) + 3*e^(4*I*d*x + 4*I*c) + 3*e^(2*I*d*x + 2*I*
c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c))/cot(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(i\,a\tan(dx+c)+a)^n}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/cot(d*x + c)^(3/2),
 x)
```

3.573 $\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$

Optimal. Leaf size=383

$$-\frac{2\left(4Bn\left(2n^2+8n+9\right)+iA\left(8n^3+32n^2+36n+15\right)\right)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^n\text{Hypergeometric2F}}{d(2n+1)(2n+3)(2n+5)\sqrt{\cot(c+dx)}}$$

```
[Out] (2*B*(a + I*a*Tan[c + d*x])^n)/(d*(5 + 2*n)*Cot[c + d*x]^(5/2)) - (2*((2*I)
*B*n - A*(5 + 2*n))*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n)*(5 + 2*n)*Cot[c
+ d*x]^(3/2)) - (2*((2*I)*A*n*(5 + 2*n) + B*(15 + 10*n + 4*n^2))*(a + I*a*T
an[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*(5 + 2*n)*Sqrt[Cot[c + d*x]]) + (2*(
I*A + B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a
 + I*a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) - (2*
(4*B*n*(9 + 8*n + 2*n^2) + I*A*(15 + 36*n + 32*n^2 + 8*n^3))*Hypergeometric
2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2
*n)*(3 + 2*n)*(5 + 2*n)*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```

Rubi [A] time = 1.26379, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {4241, 3597, 3601, 3564, 130, 430, 429, 3599, 66, 64}

$$\frac{2(B+iA)(1+i\tan(c+dx))^{-n}(a+ia\tan(c+dx))^nF_1\left(\frac{1}{2};1-n,1;\frac{3}{2};-i\tan(c+dx),i\tan(c+dx)\right)}{d\sqrt{\cot(c+dx)}}-\frac{2\left(4Bn\left(2n^2+8n\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(5/2),x]
```


```
[Out] (2*B*(a + I*a*Tan[c + d*x])^n)/(d*(5 + 2*n)*Cot[c + d*x]^(5/2)) - (2*((2*I)
*B*n - A*(5 + 2*n))*(a + I*a*Tan[c + d*x])^n)/(d*(3 + 2*n)*(5 + 2*n)*Cot[c
+ d*x]^(3/2)) - (2*((2*I)*A*n*(5 + 2*n) + B*(15 + 10*n + 4*n^2))*(a + I*a*T
an[c + d*x])^n)/(d*(1 + 2*n)*(3 + 2*n)*(5 + 2*n)*Sqrt[Cot[c + d*x]]) + (2*(
I*A + B)*AppellF1[1/2, 1 - n, 1, 3/2, (-I)*Tan[c + d*x], I*Tan[c + d*x]]*(a
 + I*a*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n) - (2*
(4*B*n*(9 + 8*n + 2*n^2) + I*A*(15 + 36*n + 32*n^2 + 8*n^3))*Hypergeometric
2F1[1/2, 1 - n, 3/2, (-I)*Tan[c + d*x]]*(a + I*a*Tan[c + d*x])^n)/(d*(1 + 2
*n)*(3 + 2*n)*(5 + 2*n)*Sqrt[Cot[c + d*x]]*(1 + I*Tan[c + d*x])^n)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3597

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Sim
p[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist[
1/(a*(m + n)), Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^(n - 1)*Simp
[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (a*A*d*(m + n) - B*(b*d*m - a*c*n))*Ta
n[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m}, x] && NeQ[b*c
- a*d, 0] && EqQ[a^2 + b^2, 0] && GtQ[n, 0]
```

Rule 3601

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(A*b + a*B)/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n, x], x]
- Dist[B/b, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(a - b*Tan[e
+ f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*
d, 0] && EqQ[a^2 + b^2, 0] && NeQ[A*b + a*B, 0]
```

Rule 3564

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> Dist[(a*b)/f, Subst[Int[((a + x)^(m - 1)*(c
 + (d*x)/b)^n)/(b^2 + a*x), x], x, b*Tan[e + f*x]], x] /; FreeQ[{a, b, c, d
, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] && NeQ[c^2 + d^
2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
```

```
Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 3599

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[(b*B)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^n, x], x, Tan[e + f*x]], x
] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a
^2 + b^2, 0] && EqQ[A*b + a*B, 0]
```

Rule 66

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c^IntPar
t[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart[n], Int[(b*x)^m*(1 + (d*
x)/c)^n, x], x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ
[n] &&  !GtQ[c, 0] &&  !GtQ[-(d/(b*c)), 0] && ((RationalQ[m] &&  !(EqQ[n, -
2^(-1)] && EqQ[c^2 - d^2, 0])) ||  !RationalQ[n])
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rubi steps

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \tan^{\frac{5}{2}}(c+dx)(a+ia\tan(c+dx))^n(A+$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \tan^{\frac{3}{2}}(c+d}{}$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} +$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{2B(a+ia\tan(c+dx))^n}{d(5+2n)\cot^{\frac{5}{2}}(c+dx)} - \frac{2(2iBn-A(5+2n))(a+ia\tan(c+dx))^n}{d(3+2n)(5+2n)\cot^{\frac{3}{2}}(c+dx)} -$$

Mathematica [F] time = 22.8617, size = 0, normalized size = 0.

$$\int \frac{(a+ia\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(5/2
),x]
```

```
[Out] Integrate[((a + I*a*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(5/2
), x]
```

Maple [F] time = 0.392, size = 0, normalized size = 0.

$$\int (a + ia\tan(dx + c))^n (A + B\tan(dx + c)) (\cot(dx + c))^{-\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(5/2),x)
```

```
[Out] int((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)(i\,a\tan(dx + c) + a)^n}{\cot(dx + c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(5/2),x, algorit
hm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/cot(d*x + c)^(5/2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((i\,A + B)e^{(8i\,dx+8i\,c)} + (-2i\,A - 4\,B)e^{(6i\,dx+6i\,c)} + 6\,Be^{(4i\,dx+4i\,c)} + (2i\,A - 4\,B)e^{(2i\,dx+2i\,c)} - i\,A + B\right)\left(\frac{2\,ae^{(2i\,dx+2i\,c)}}{e^{(2i\,dx+2i\,c)}+1}\right)^{n}}{e^{(8i\,dx+8i\,c)} + 4\,e^{(6i\,dx+6i\,c)} + 6\,e^{(4i\,dx+4i\,c)} + 4\,e^{(2i\,dx+2i\,c)} + 1}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(5/2),x, algorit
hm="fricas")
```

```
[Out] integral(((I*A + B)*e^(8*I*d*x + 8*I*c) + (-2*I*A - 4*B)*e^(6*I*d*x + 6*I*c
) + 6*B*e^(4*I*d*x + 4*I*c) + (2*I*A - 4*B)*e^(2*I*d*x + 2*I*c) - I*A + B)*
(2*a*e^(2*I*d*x + 2*I*c)/(e^(2*I*d*x + 2*I*c) + 1))^n*sqrt((I*e^(2*I*d*x +
2*I*c) + I)/(e^(2*I*d*x + 2*I*c) - 1))/(e^(8*I*d*x + 8*I*c) + 4*e^(6*I*d*x
+ 6*I*c) + 6*e^(4*I*d*x + 4*I*c) + 4*e^(2*I*d*x + 2*I*c) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))**n*(A+B*tan(d*x+c))/cot(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(ia\tan(dx+c)+a)^n}{\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(5/2),x, algorit
hm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(I*a*tan(d*x + c) + a)^n/cot(d*x + c)^(5/2),
 x)
```

3.574 $\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=229

$$-\frac{2(aB+Ab)\sqrt{\cot(c+dx)}}{d}+\frac{(a(A-B)-b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{(a(A-B)-b(A+B))\,\mathrm{l}}{}$$

```
[Out] -(((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*d)) + ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sq
rt[2]*d) - (2*(A*b + a*B)*Sqrt[Cot[c + d*x]])/d - (2*a*A*Cot[c + d*x]^(3/2)
)/(3*d) + ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(2*Sqrt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[C
ot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.300146, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {3581, 3592, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{2(aB+Ab)\sqrt{\cot(c+dx)}}{d}+\frac{(a(A-B)-b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{(a(A-B)-b(A+B))\,\mathrm{l}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*d)) + ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sq
rt[2]*d) - (2*(A*b + a*B)*Sqrt[Cot[c + d*x]])/d - (2*a*A*Cot[c + d*x]^(3/2)
)/(3*d) + ((a*(A - B) - b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(2*Sqrt[2]*d) - ((a*(A - B) - b*(A + B))*Log[1 + Sqrt[2]*Sqrt[C
ot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
```

```
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \int \sqrt{\cot(c+dx)}(b+a\cot(c+dx))(B+A\cot(c+dx))\,dx$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \int \sqrt{\cot(c+dx)}(-aA+bB+(Ab+a$$

$$= -\frac{2(Ab+aB)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \int \frac{-Ab-}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{2\,\mathrm{Subst}\Big(}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{(b(A-B)}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{(b(A-B)}{}$$

$$= -\frac{2(Ab+aB)\sqrt{\cot(c+dx)}}{d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{(a(A-B)}{}$$

$$= -\frac{(b(A-B)+a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{(b(A}{}$$

Mathematica [A] time = 0.922345, size = 198, normalized size = 0.86

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\Big(6\sqrt{2}(a(A+B)+b(A-B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(6*Sqrt[2]*(b*(A - B) + a*(A + B))*(ArcTan[1 - Sqrt[2]*
Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + 3*Sqrt[2]*(
a*(A - B) - b*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
- Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) - (8*a*A)/Tan[c + d*x
]^(3/2) - (24*(A*b + a*B))/Sqrt[Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/(12*d)
```

Maple [C] time = 0.45, size = 4418, normalized size = 19.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/6/d*2^(1/2)*(-3*I*A*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin
(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*b+3*I*A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*
2^(1/2))*a+3*I*A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(
1/2))*b-3*I*B*sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*a+3*I*B*sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*b+3*I*B*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))
^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-3*I*B*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin
(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b-3*I*A*sin(d*x+c)*cos(d*x+c)*Ellipti
cPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1
-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*a-3*I*A*sin(d*x+c)*cos(d*x+c)
*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*b+3*I*A*sin(d*x+c)*co
s(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-co
s(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a+3*I*A*sin(d
*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticP
i(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b+2*A
*2^(1/2)*cos(d*x+c)^2*a+6*A*2^(1/2)*sin(d*x+c)*cos(d*x+c)*b+6*B*2^(1/2)*sin
(d*x+c)*cos(d*x+c)*a+3*A*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/s
```

in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*a-3*A*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*
x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*b-3*I*A*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c
))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*a-3*I*B*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^
(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*a+3*I*B*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/
2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
b+3*I*B*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipti
cPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-3
*I*B*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi
(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b-3*B*
sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/
2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
a-3*B*sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c
))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*b+6*B*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c)
)^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))
*b-3*B*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/
2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^
(1/2))*a-3*B*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,
1/2*2^(1/2))*b+3*A*sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*a-3*A*sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+si
n(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*b-6*A*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))
^(1/2),1/2*2^(1/2))*a+3*A*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/

```
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/
2),1/2-1/2*I,1/2*2^(1/2))*a-3*A*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c
))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b-3*A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1
/2),1/2-1/2*I,1/2*2^(1/2))*b-6*A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/
2*2^(1/2))*a+3*A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(
1/2))*a-3*B*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1
/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*a-3*B*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1
/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*b+6*
B*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF(((1
-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*b-3*B*sin(d*x+c)*((1
-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin
(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-3*B*sin(d*x+c)*((1-cos(
d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b)*(cos(d*x+c)/sin(d*x+c))^(5/
2)*sin(d*x+c)/cos(d*x+c)^3
```

Maxima [A] time = 1.56179, size = 265, normalized size = 1.16

$$6\sqrt{2}((A+B)a+(A-B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+6\sqrt{2}((A+B)a+(A-B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/12*(6*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqr
t(tan(d*x + c)))) + 6*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(-1/2*sqrt(2)*(
sqrt(2) - 2/sqrt(tan(d*x + c)))) - 3*sqrt(2)*((A - B)*a - (A + B)*b)*log(sq
rt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + 3*sqrt(2)*((A - B)*a - (A
+ B)*b)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*A*a/tan(d
*x + c)^(3/2) - 24*(B*a + A*b)/sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)*cot(d*x + c)^(5/2), x)
```

3.575 $\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=205

$$-\frac{(a(A+B)+b(A-B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{(a(A+B)+b(A-B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}\right.}{2\sqrt{2}d}$$

```
[Out] -(((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*d)) + ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sq
rt[2]*d) - (2*a*A*Sqrt[Cot[c + d*x]])/d - ((b*(A - B) + a*(A + B))*Log[1 -
Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + ((b*(A - B) + a
*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.242498, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3581, 3592, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(a(A+B)+b(A-B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{(a(A+B)+b(A-B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*d)) + ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sq
rt[2]*d) - (2*a*A*Sqrt[Cot[c + d*x]])/d - ((b*(A - B) + a*(A + B))*Log[1 -
Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + ((b*(A - B) + a
*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3592

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[(
B*d*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*
x])^m*Simp[A*c - B*d + (B*c + A*d)*Tan[e + f*x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, m}, x] && NeQ[b*c - a*d, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
```

```
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))(B+A\cot(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$
$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} + \int \frac{-aA+bB+(Ab+aB)\cot(c+d\ldots}{\sqrt{\cot(c+dx)}}$$
$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} + \frac{2\,\mathrm{Subst}\left(\int \frac{aA-bB+(-Ab-aB)x^2}{1+x^4}\,dx, x, \sqrt{\ldots}\right.}{d}$$
$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} + \frac{(b(A-B)+a(A+B))\,\mathrm{Subst}\left(\int \frac{1-x\ldots}{1+x\ldots}\right.}{d}$$
$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} - \frac{(b(A-B)+a(A+B))\,\mathrm{Subst}\left(\int \frac{\sqrt{\ldots}}{-1-\ldots}\right.}{2\sqrt{2}d}$$
$$= -\frac{2aA\sqrt{\cot(c+dx)}}{d} - \frac{(b(A-B)+a(A+B))\log\left(1-\sqrt{2}\sqrt{\ldots}\right.}{2\sqrt{2}d}$$
$$= -\frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{(a(\ldots}{\ldots}$$

Mathematica [A] time = 0.465348, size = 179, normalized size = 0.87

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(2\sqrt{2}(a(A-B)-b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)-\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(2*Sqrt[2]*(a*(A - B) - b*(A + B))*(ArcTan[1 - Sqrt[2]*
Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) - Sqrt[2]*(b*
```

```
(A - B) + a*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] -
Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) - (8*a*A)/Sqrt[Tan[c +
d*x]])*Sqrt[Tan[c + d*x]])/(4*d)
```

Maple [C] time = 0.436, size = 4158, normalized size = 20.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*2^(1/2)*(-B*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipti
cPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a+B
*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)
+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b+2*B*((1-cos(d*x+c)+
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(
d*x+c))^(1/2),1/2*2^(1/2))*a-A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*
2^(1/2))*a+I*A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(
((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x
+c)*a+I*A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-c
os(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a+I*A*((1-co
s(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b-A*((1-cos(d*x+c)+sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^
(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*a-A*((1-cos(d*x+c)+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1
/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*b-A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*
I,1/2*2^(1/2))*cos(d*x+c)*a-A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1
```

/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2
^(1/2))*cos(d*x+c)*b-A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ell
ipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))
*b-I*A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(
d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*b-I*
A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c
)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*a-I*B*((1
-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin
(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*a-I*B*((1-cos(
d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*b+I*A*((1-cos(d*x+c
)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*b+I*B*((1-cos(d*x+c)+sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*
x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*a+I*B*((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))
^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*b+2*A*((1-cos(d*x+c)+sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)
,1/2*2^(1/2))*cos(d*x+c)*b+I*B*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*
2^(1/2))*a+I*B*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+
sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(
((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b-B*((1
-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin
(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*a+B*((1-cos(d*
x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*b-B*((1-cos(d*x+c)+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*a+B*((1-cos(d*x+c)+sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^
(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*b+2*B*((1-cos(d*x+c)+sin(d*x+c))/si

```
n(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),
1/2*2^(1/2))*cos(d*x+c)*a-I*A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1
/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2
^(1/2))*b-I*A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((
(1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a-I*B*((
1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+si
n(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-I*B*((1-cos(d*x+c)+sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*
x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b+2*A*2^(1/2)*cos(d*x+c)*a-B*((1-cos(d*x
+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))
/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a+B*((1-cos(d*x+c)+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)
,1/2-1/2*I,1/2*2^(1/2))*b-A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(
1/2))*a-A*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-c
os(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b+2*A*((1-co
s(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x
+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*b)*(cos(d*x+c)/sin(d*x+c))^(3/2)*sin(d*
x+c)/cos(d*x+c)^2
```

Maxima [A] time = 1.78837, size = 240, normalized size = 1.17

$$\frac{2\sqrt{2}((A-B)a-(A+B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}((A-B)a-(A+B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] 1/4*(2*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt
(tan(d*x + c)))) + 2*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(-1/2*sqrt(2)*(s
```

```
qrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*((A + B)*a + (A - B)*b)*log(sqrt(
2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*((A + B)*a + (A - B)*
b)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*A*a/sqrt(tan(d
*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B \tan (dx + c) + A)(b \tan (dx + c) + a) \cot (dx + c)^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)*cot(d*x + c)^(3/2), x)
```

3.576 $\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=205

$$-\frac{(a(A-B)-b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{(a(A-B)-b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c-\right.}{2\sqrt{2}d}$$

```
[Out] ((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d
) - ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*d) + (2*b*B)/(d*Sqrt[Cot[c + d*x]]) - ((a*(A - B) - b*(A + B))*Log[1 - S
qrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + ((a*(A - B) - b*
(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.241681, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {3581, 3591, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{(a(A-B)-b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{(a(A-B)-b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c-\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((b*(A - B) + a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d
) - ((b*(A - B) + a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*d) + (2*b*B)/(d*Sqrt[Cot[c + d*x]]) - ((a*(A - B) - b*(A + B))*Log[1 - S
qrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + ((a*(A - B) - b*
(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))(A+B\tan(c+dx))\,dx &= \int \frac{(b+a\cot(c+dx))(B+A\cot(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx\\
&= \frac{2bB}{d\sqrt{\cot(c+dx)}} + \int \frac{Ab+aB+(aA-bB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx\\
&= \frac{2bB}{d\sqrt{\cot(c+dx)}} + \frac{2\,\text{Subst}\left(\int \frac{-Ab-aB+(-aA+bB)x^2}{1+x^4}\,dx, x, \sqrt{\cot(}\right.}{d}\\
&= \frac{2bB}{d\sqrt{\cot(c+dx)}} - \frac{(b(A-B)+a(A+B))\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x\right.}{d}\\
&= \frac{2bB}{d\sqrt{\cot(c+dx)}} - \frac{(b(A-B)+a(A+B))\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\right.}{2d}\\
&= \frac{2bB}{d\sqrt{\cot(c+dx)}} - \frac{(a(A-B)-b(A+B))\log\left(1-\sqrt{2}\sqrt{\cot(c}\right.}{2\sqrt{2}d}\\
&= \frac{(b(A-B)+a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{(b(A}{}\end{aligned}$$

Mathematica [A] time = 0.209834, size = 178, normalized size = 0.87

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(2\sqrt{2}(a(A+B)+b(A-B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*(2*Sqrt[2]*(b*(A - B) + a*(A + B))*(ArcTan[1 - Sqrt[2]
*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + Sqrt[2]*(a
*(A - B) - b*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] -
 Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) - 8*b*B*Sqrt[Tan[c + d
*x]])*Sqrt[Tan[c + d*x]])/(4*d)
```

Maple [C] time = 0.47, size = 2187, normalized size = 10.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] -1/2/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x+c)-1
)*(-I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*Ellipti
cPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a+I
*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((
(1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b+I*B*si
n(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-co
s(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-I*B*sin(d*x
+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x
+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b-I*B*sin(d*x+c)*(
(cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+s
in(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a-I*A*sin(d*x+c)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b+I*A*sin(d*x+c)*((cos(d*x+c
)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d
*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))
/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b+I*A*sin(d*x+c)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(
d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a+A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))
^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin
```

```
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),
1/2-1/2*I,1/2*2^(1/2))*b+A*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))
/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*a-A*sin(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*
x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*b-2*A*sin(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*a-B*sin
(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x
+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos
(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-B*sin(d*x+c)
*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)
+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b-B*sin(d*x+c)*Ellipt
icPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((
1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*a-B*sin(d*x+c)*EllipticPi(((
1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d
*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*b+2*B*sin(d*x+c)*((1-cos(d*x+c)+sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x
+c))^(1/2),1/2*2^(1/2))*b-2*B*cos(d*x+c)*2^(1/2)*b+2*B*2^(1/2)*b)/cos(d*x+c
)/sin(d*x+c)^3
```

Maxima [A] time = 1.67797, size = 240, normalized size = 1.17

$$-\frac{2\sqrt{2}((A+B)a+(A-B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}((A+B)a+(A-B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] -1/4*(2*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqr
t(tan(d*x + c)))) + 2*sqrt(2)*((A + B)*a + (A - B)*b)*arctan(-1/2*sqrt(2)*(
sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*((A - B)*a - (A + B)*b)*log(sqrt
(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*((A - B)*a - (A + B)
```

```
*b)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*B*b*sqrt(tan(
d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan{(c + dx)})(a + b\tan{(c + dx)})\sqrt{\cot{(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))*sqrt(cot(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx + c) + A)(b\tan(dx + c) + a)\sqrt{\cot(dx + c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))*(A+B*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)*sqrt(cot(d*x + c)), x)
```

3.577 $\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=229

$$\frac{2(aB+Ab)}{d\sqrt{\cot(c+dx)}}+\frac{(a(A+B)+b(A-B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{(a(A+B)+b(A-B))\log\left(\cot(c+d\right.}{2\sqrt{2}d}$$

```
[Out] ((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d
) - ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*d) + (2*b*B)/(3*d*Cot[c + d*x]^(3/2)) + (2*(A*b + a*B))/(d*Sqrt[Cot[c +
d*x]]) + ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[
c + d*x]])/(2*Sqrt[2]*d) - ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.283349, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.323, Rules used = {3581, 3591, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2(aB+Ab)}{d\sqrt{\cot(c+dx)}}+\frac{(a(A+B)+b(A-B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{(a(A+B)+b(A-B))\log\left(\cot(c+d\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```


```
[Out] ((a*(A - B) - b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d
) - ((a*(A - B) - b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[
2]*d) + (2*b*B)/(3*d*Cot[c + d*x]^(3/2)) + (2*(A*b + a*B))/(d*Sqrt[Cot[c +
d*x]]) + ((b*(A - B) + a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[
c + d*x]])/(2*Sqrt[2]*d) - ((b*(A - B) + a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3591

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Simp[((
b*c - a*d)*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^
2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[a*A*c +
 b*B*c + A*b*d - a*B*d - (A*b*c - a*B*c - a*A*d - b*B*d)*Tan[e + f*x], x],
x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && LtQ[m,
 -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
```

```
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \int \frac{(b+a\cot(c+dx))(B+A\cot(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2bB}{3d\cot^{\frac{3}{2}}(c+dx)} + \int \frac{Ab+aB+(aA-bB)\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

$$= \frac{2bB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab+aB)}{d\sqrt{\cot(c+dx)}} + \int \frac{aA-bB-(Ab+aB)\cot(c+d}{\sqrt{\cot(c+dx)}}$$

$$= \frac{2bB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab+aB)}{d\sqrt{\cot(c+dx)}} + \frac{2\,\text{Subst}\left(\int \frac{-aA+bB+(Ab+aB)x^2}{1+x^4}\,dx, x,\right.}{d}$$

$$= \frac{2bB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab+aB)}{d\sqrt{\cot(c+dx)}} - \frac{(b(A-B)+a(A+B))\,\text{Subst}\left(\int \frac{1}{1}\right.}{d}$$

$$= \frac{2bB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab+aB)}{d\sqrt{\cot(c+dx)}} + \frac{(b(A-B)+a(A+B))\,\text{Subst}\left(\int \right.}{2\sqrt{2}d}$$

$$= \frac{2bB}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab+aB)}{d\sqrt{\cot(c+dx)}} + \frac{(b(A-B)+a(A+B))\log\left(1-\sqrt{2}\right.}{2\sqrt{2}d}$$

$$= \frac{(a(A-B)-b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{(a(A-B)-b(A}{}$$

Mathematica [A] time = 0.502773, size = 198, normalized size = 0.86

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(6\sqrt{2}(a(A-B)-b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(6*Sqrt[2]*(a*(A - B) - b*(A + B))*
(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d
*x]]]) - 3*Sqrt[2]*(b*(A - B) + a*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*
x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) -
 24*(A*b + a*B)*Sqrt[Tan[c + d*x]] - 8*b*B*Tan[c + d*x]^(3/2)))/(12*d)
```

Maple [C] time = 0.489, size = 2365, normalized size = 10.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/6/d*2^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x+c)-1)*(-3*I*B*sin(d*x+c)*cos(d*x+c)
*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c)
)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*a-3*I*A*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/s
in(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(d*x+c)*cos(d*x+c)*a+3*I*B*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*(
(cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d
*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(d*x+c)*cos(d*x+c)*b+3*I
*B*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*E
llipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2
))*a+3*I*A*sin(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/
2*2^(1/2))*b-3*I*A*sin(d*x+c)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+
c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*b-3*I*B*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)
+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)
*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*sin(d*x+c)*cos(d*x+c)*b+3*I*A*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-co
s(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*sin(d*x+c)*cos(d*x+c)*a+3*A*sin(d*x+c)*cos(d*x+c)*EllipticPi((
(1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((1-cos(
d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*a+3*A*sin(d*x+c)*cos(d*x+c)*Ellipt
icPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((
1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*b-6*A*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin
(d*x+c))/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))
^(1/2),1/2*2^(1/2))*sin(d*x+c)*cos(d*x+c)*b+3*A*sin(d*x+c)*cos(d*x+c)*((1-c
os(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
```

```
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)+sin(d
*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a+3*A*sin(d*x+c)*cos(d*x+c)
*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi(((1-cos(d*x+c)
+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b+3*B*sin(d*x+c)*cos(
d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/
2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*a-3*B*sin(d*x+c
)*cos(d*x+c)*EllipticPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*b-6*B*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF(((1-cos(d*x+c)+sin(
d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*sin(d*x+c)*cos(d*x+c)*a+3*B*sin(d*x+
c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((
(1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a-3*B*si
n(d*x+c)*cos(d*x+c)*((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipt
icPi(((1-cos(d*x+c)+sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b+
6*A*2^(1/2)*cos(d*x+c)^2*b+2*B*2^(1/2)*sin(d*x+c)*cos(d*x+c)*b+6*B*2^(1/2)*
cos(d*x+c)^2*a-6*A*2^(1/2)*cos(d*x+c)*b-2*B*2^(1/2)*sin(d*x+c)*b-6*B*2^(1/2
)*cos(d*x+c)*a)/cos(d*x+c)/sin(d*x+c)^4/(cos(d*x+c)/sin(d*x+c))^(1/2)
```

Maxima [A] time = 1.68964, size = 267, normalized size = 1.17

$$-\frac{6\sqrt{2}((A-B)a-(A+B)b)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+6\sqrt{2}((A-B)a-(A+B)b)\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/12*(6*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sq
rt(tan(d*x + c)))) + 6*sqrt(2)*((A - B)*a - (A + B)*b)*arctan(-1/2*sqrt(2)*
(sqrt(2) - 2/sqrt(tan(d*x + c)))) + 3*sqrt(2)*((A + B)*a + (A - B)*b)*log(s
qrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 3*sqrt(2)*((A + B)*a + (A
 - B)*b)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*(B*b + 3
*(B*a + A*b)/tan(d*x + c))*tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))}{\sqrt{\cot(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))/sqrt(cot(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)(b\tan(dx + c) + a)}{\sqrt{\cot(dx + c)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)/sqrt(cot(d*x + c)), x)
```

3.578 $\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=326

$$\frac{2\left(a^2A-2abB-Ab^2\right)\sqrt{\cot(c+dx)}}{d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*(a^2*A - A*b^2 - 2*a*b*B
)*Sqrt[Cot[c + d*x]])/d - (2*a*(7*A*b + 5*a*B)*Cot[c + d*x]^(3/2))/(15*d) -
 (2*a*A*Cot[c + d*x]^(3/2)*(b + a*Cot[c + d*x]))/(5*d) + ((2*a*b*(A - B) +
a^2*(A + B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x
]])/(2*Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sq
rt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.613995, antiderivative size = 326, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3581, 3607, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2\left(a^2A-2abB-Ab^2\right)\sqrt{\cot(c+dx)}}{d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*(a^2*A - A*b^2 - 2*a*b*B
)*Sqrt[Cot[c + d*x]])/d - (2*a*(7*A*b + 5*a*B)*Cot[c + d*x]^(3/2))/(15*d) -
 (2*a*A*Cot[c + d*x]^(3/2)*(b + a*Cot[c + d*x]))/(5*d) + ((2*a*b*(A - B) +
a^2*(A + B) - b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x
]])/(2*Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sq
rt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) && !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2(B+A\cot(c+dx))\,dx$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)(b+a\cot(c+dx))}{5d} - \frac{2}{5}\int \sqrt{\cot(c+dx)}$$

$$= -\frac{2a(7Ab+5aB)\cot^{\frac{3}{2}}(c+dx)}{15d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)(b+a\,\mathrm{co}}{5d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a(7Ab+5aB)\cot^{\frac{3}{2}}}{15d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a(7Ab+5aB)\cot^{\frac{3}{2}}}{15d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a(7Ab+5aB)\cot^{\frac{3}{2}}}{15d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a(7Ab+5aB)\cot^{\frac{3}{2}}}{15d}$$

$$= \frac{2\left(a^2A-Ab^2-2abB\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a(7Ab+5aB)\cot^{\frac{3}{2}}}{15d}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(\right.}{\sqrt{2}d}$$

Mathematica [A] time = 1.85171, size = 255, normalized size = 0.78

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(30\sqrt{2}\left(a^2(A-B)-2ab(A+B)+b^2(B-A)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{t}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*(30*Sqrt[2]*(a^2*(A - B) + b^2*(-A + B) - 2*a*b*(A + B
))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c
+ d*x]]]) - 15*Sqrt[2]*(2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*(Log[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c +
d*x]] + Tan[c + d*x]]) + (24*a^2*A)/Tan[c + d*x]^(5/2) + (40*a*(2*A*b + a*B
))/Tan[c + d*x]^(3/2) - (120*(a^2*A - A*b^2 - 2*a*b*B))/Sqrt[Tan[c + d*x]])
```

```
*Sqrt[Tan[c + d*x]])/(60*d)
```

Maple [C] time = 0.641, size = 13170, normalized size = 40.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.71818, size = 377, normalized size = 1.16

$$-\frac{30\sqrt{2}\left((A-B)a^2-2(A+B)ab-(A-B)b^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+30\sqrt{2}\left((A-B)a^2-2(A+B)ab-(A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/60*(30*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(1/2*sq
rt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 30*sqrt(2)*((A - B)*a^2 - 2*(A +
B)*a*b - (A - B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c))))
 + 15*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(sqrt(2)/sqrt(
tan(d*x + c)) + 1/tan(d*x + c) + 1) - 15*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a
*b - (A + B)*b^2)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + 2
4*A*a^2/tan(d*x + c)^(5/2) - 120*(A*a^2 - 2*B*a*b - A*b^2)/sqrt(tan(d*x + c
)) + 40*(B*a^2 + 2*A*a*b)/tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^2\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2*cot(d*x + c)^(7/2), x
)
```

3.579 $\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=294

$$\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B\right.}{}$$

```
[Out] -((((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*d)) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (2*a*(5*A*b + 3*a*B)*Sqr
t[Cot[c + d*x]])/(3*d) - (2*a*A*Sqrt[Cot[c + d*x]]*(b + a*Cot[c + d*x]))/(3
*d) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot
[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2
*a*b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2
]*d)
```

Rubi [A] time = 0.545908, antiderivative size = 294, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3581, 3607, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*d)) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (2*a*(5*A*b + 3*a*B)*Sqr
t[Cot[c + d*x]])/(3*d) - (2*a*A*Sqrt[Cot[c + d*x]]*(b + a*Cot[c + d*x]))/(3
*d) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot
[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2
*a*b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2
]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^2(B+A\cot(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}{3d} - \frac{2}{3}\int \frac{\frac{1}{2}b(aA-3bB$$

$$= -\frac{2a(5Ab+3aB)\sqrt{\cot(c+dx)}}{3d} - \frac{2aA\sqrt{\cot(c+dx)}(b+a\,\mathrm{co}$$

$$= -\frac{2a(5Ab+3aB)\sqrt{\cot(c+dx)}}{3d} - \frac{2aA\sqrt{\cot(c+dx)}(b+a\,\mathrm{co}$$

$$= -\frac{2a(5Ab+3aB)\sqrt{\cot(c+dx)}}{3d} - \frac{2aA\sqrt{\cot(c+dx)}(b+a\,\mathrm{co}$$

$$= -\frac{2a(5Ab+3aB)\sqrt{\cot(c+dx)}}{3d} - \frac{2aA\sqrt{\cot(c+dx)}(b+a\,\mathrm{co}$$

$$= -\frac{2a(5Ab+3aB)\sqrt{\cot(c+dx)}}{3d} - \frac{2aA\sqrt{\cot(c+dx)}(b+a\,\mathrm{co}$$

$$= -\frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\mathrm{co}}\right.}{\sqrt{2}d}$$

Mathematica [A] time = 1.22596, size = 226, normalized size = 0.77

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(6\sqrt{2}\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(6*Sqrt[2]*(2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*
(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d
*x]]]) + 3*Sqrt[2]*(a^2*(A - B) + b^2*(-A + B) - 2*a*b*(A + B))*(Log[1 - Sq
rt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x
]] + Tan[c + d*x]]) - (8*a^2*A)/Tan[c + d*x]^(3/2) - (24*a*(2*A*b + a*B))/S
qrt[Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/(12*d)
```

Maple [C] time = 0.531, size = 6783, normalized size = 23.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.75074, size = 340, normalized size = 1.16

$$6\sqrt{2}\Big((A+B)a^2+2(A-B)ab-(A+B)b^2\Big)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+6\sqrt{2}\Big((A+B)a^2+2(A-B)ab-(A+B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/12*(6*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*arctan(1/2*sqrt
(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 6*sqrt(2)*((A + B)*a^2 + 2*(A - B)*
a*b - (A + B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) -
3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*log(sqrt(2)/sqrt(tan(
d*x + c)) + 1/tan(d*x + c) + 1) + 3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b -
(A - B)*b^2)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*A*a^
2/tan(d*x + c)^(3/2) - 24*(B*a^2 + 2*A*a*b)/sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^2\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2*cot(d*x + c)^(5/2), x
)
```

3.580 $\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=276

$$-\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+\right.}{}$$

```
[Out] -(((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*d)) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*b^2*B)/(d*Sqrt[Cot[c
+ d*x]]) - (2*a^2*A*Sqrt[Cot[c + d*x]])/d - ((2*a*b*(A - B) + a^2*(A + B) -
 b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2
]*d) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.44283, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3581, 3604, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*d)) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Arc
Tan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*b^2*B)/(d*Sqrt[Cot[c
+ d*x]]) - (2*a^2*A*Sqrt[Cot[c + d*x]])/d - ((2*a*b*(A - B) + a^2*(A + B) -
 b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2
]*d) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^2(B+A\cot(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

$$= \frac{2b^2B}{d\sqrt{\cot(c+dx)}} - \int \frac{-b(Ab+2aB)-\left(2aAb+a^2B-b^2B\right)\mathrm{c}}{\sqrt{\cot(c+d}}$$

$$= \frac{2b^2B}{d\sqrt{\cot(c+dx)}} - \frac{2a^2A\sqrt{\cot(c+dx)}}{d} - \int \frac{a^2A-b(Ab+2a}{}$$

$$= \frac{2b^2B}{d\sqrt{\cot(c+dx)}} - \frac{2a^2A\sqrt{\cot(c+dx)}}{d} - \frac{2\,\mathrm{Subst}\left(\int \frac{-a^2A+b(}{}\right.}{}$$

$$= \frac{2b^2B}{d\sqrt{\cot(c+dx)}} - \frac{2a^2A\sqrt{\cot(c+dx)}}{d} + \frac{\left(a^2(A-B)-b^2(A\right.}{}$$

$$= \frac{2b^2B}{d\sqrt{\cot(c+dx)}} - \frac{2a^2A\sqrt{\cot(c+dx)}}{d} + \frac{\left(a^2(A-B)-b^2(A\right.}{}$$

$$= \frac{2b^2B}{d\sqrt{\cot(c+dx)}} - \frac{2a^2A\sqrt{\cot(c+dx)}}{d} - \frac{\left(2ab(A-B)+a^2(A\right.}{}$$

$$= -\frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\mathrm{co}}\right.}{\sqrt{2}d}$$

Mathematica [A] time = 0.842522, size = 221, normalized size = 0.8

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(2\sqrt{2}\left(a^2(A-B)-2ab(A+B)+b^2(B-A)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(2*Sqrt[2]*(a^2*(A - B) + b^2*(-A + B) - 2*a*b*(A + B))
*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c +
d*x]]]) - Sqrt[2]*(2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*(Log[1 - Sqrt
[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]]) - (8*a^2*A)/Sqrt[Tan[c + d*x]] + 8*b^2*B*Sqrt[Tan[c + d*x
]])*Sqrt[Tan[c + d*x]])/(4*d)
```

Maple [C] time = 0.429, size = 6423, normalized size = 23.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.7437, size = 329, normalized size = 1.19

$$\frac{8\,Bb^2\sqrt{\tan\left(dx+c\right)}+2\,\sqrt{2}\left((A-B)a^2-2\,(A+B)ab-(A-B)b^2\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\,\sqrt{2}\left((A-B)a^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/4*(8*B*b^2*sqrt(tan(d*x + c)) + 2*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b -
(A - B)*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sqrt(
2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2)
 - 2/sqrt(tan(d*x + c)))) + sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*
b^2)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*((A + B
)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/ta
n(d*x + c) + 1) - 8*A*a^2/sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^2\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2*cot(d*x + c)^(3/2), x
)
```

3.581 $\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=283

$$-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-\right.}{}$$

```
[Out] ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*b^2*B)/(3*d*Cot[c + d*x]
^(3/2)) + (2*b*(A*b + 2*a*B))/(d*Sqrt[Cot[c + d*x]]) - ((a^2*(A - B) - b^2*
(A - B) - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]]
)/(2*Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt
[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.433677, antiderivative size = 283, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.303, Rules used = {3581, 3604, 3628, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{\left(a^2(A-B)-2ab(A+B)-b^2(A-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*d) - ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*b^2*B)/(3*d*Cot[c + d*x]
^(3/2)) + (2*b*(A*b + 2*a*B))/(d*Sqrt[Cot[c + d*x]]) - ((a^2*(A - B) - b^2*
(A - B) - 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]]
)/(2*Sqrt[2]*d) + ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*Log[1 + Sqrt
[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^2(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^2(B+A\cot(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2b^2B}{3d\cot^{\frac{3}{2}}(c+dx)} - \int \frac{-b(Ab+2aB) - \left(2aAb+a^2B-b^2B\right)}{\cot^{\frac{3}{2}}(c+}$$

$$= \frac{2b^2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{d\sqrt{\cot(c+dx)}} - \int \frac{-2aAb-a^2B+b^2}{}$$

$$= \frac{2b^2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{d\sqrt{\cot(c+dx)}} - \frac{2\,\mathrm{Subst}\left(\int \frac{2aAb+a^2B-}{}\right.}{}$$

$$= \frac{2b^2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{d\sqrt{\cot(c+dx)}} + \frac{\left(a^2(A-B)-b^2(A-\right.}{}$$

$$= \frac{2b^2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{d\sqrt{\cot(c+dx)}} - \frac{\left(a^2(A-B)-b^2(A-\right.}{}$$

$$= \frac{2b^2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{d\sqrt{\cot(c+dx)}} - \frac{\left(a^2(A-B)-b^2(A-\right.}{}$$

$$= \frac{\left(2ab(A-B)+a^2(A+B)-b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot\right.}{\sqrt{2}d}$$

Mathematica [A] time = 0.542237, size = 226, normalized size = 0.8

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(6\sqrt{2}\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\mathrm{ta}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]),x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(6*Sqrt[2]*(2*a*b*(A - B) + a^2*(A
+ B) - b^2*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sq
rt[2]*Sqrt[Tan[c + d*x]]]) + 3*Sqrt[2]*(a^2*(A - B) + b^2*(-A + B) - 2*a*b*
(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt
[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) - 24*b*(A*b + 2*a*B)*Sqrt[Tan[c + d
*x]] - 8*b^2*B*Tan[c + d*x]^(3/2)))/(12*d)
```

Maple [C] time = 0.478, size = 3582, normalized size = 12.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/6/d*2^(1/2)*(cos(d*x+c)-1)*(6*A*cos(d*x+c)^2*2^(1/2)*b^2+3*A*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*b^2+6*A*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*a^2-6*A*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)
*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*b^2+3*B*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*a^
2-3*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin
(d*x+c)*b^2+3*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(
d*x+c)*sin(d*x+c)*a^2-3*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(
1/2))*cos(d*x+c)*sin(d*x+c)*b^2-3*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*a^2+3*A*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*b^2-3*A*((cos(d*x+c)-1+sin(
d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*a^2-2*B*sin(d*x+c
)*2^(1/2)*b^2+3*I*B*cos(d*x+c)*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
```

2),1/2+1/2*I,1/2*2^(1/2))-3*I*B*cos(d*x+c)*sin(d*x+c)*b^2*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*I*B*cos(d*x+c)*sin(d*x+c)*a^2*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*I*B*cos(d*x+c)*sin(d*x+
c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*I*A*cos(d*x
+c)*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x
+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ellipt
icPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3
*I*A*cos(d*x+c)*sin(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+
c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^
(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/
2*2^(1/2))+6*I*B*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-
1/2*I,1/2*2^(1/2))*a*b+6*I*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))*a*b-6*I*A*cos(d*x+c)*sin(d*x+c)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a*b-6*I*B*cos(d*x+c)*sin(d*x+c)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a*b+6*B*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*a*b+6*B*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*
a*b-12*B*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d
x+c))^(1/2)(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticF((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*
a*b+6*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*s
in(d*x+c)*a*b+6*A*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ellipti
cPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*co
s(d*x+c)*sin(d*x+c)*a*b-12*B*cos(d*x+c)*2^(1/2)*a*b+12*B*cos(d*x+c)^2*2^(1/

```
2)*a*b+2*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)*b^2-6*A*cos(d*x+c)*2^(1/2)*b^2-3*I
*A*cos(d*x+c)*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*
2^(1/2))+3*I*A*cos(d*x+c)*sin(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2-1/2*I,1/2*2^(1/2)))*(cos(d*x+c)+1)^2*(cos(d*x+c)/sin(d*x+c))^(1/2)/cos(d*
x+c)^2/sin(d*x+c)^3
```

Maxima [A] time = 1.58911, size = 343, normalized size = 1.21

$$-\frac{6\sqrt{2}\left((A+B)a^2+2\,(A-B)ab-(A+B)b^2\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+6\sqrt{2}\left((A+B)a^2+2\,(A-B)ab-(A+\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/12*(6*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*arctan(1/2*sqr
t(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 6*sqrt(2)*((A + B)*a^2 + 2*(A - B)
*a*b - (A + B)*b^2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) -
 3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*log(sqrt(2)/sqrt(tan
(d*x + c)) + 1/tan(d*x + c) + 1) + 3*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b -
 (A - B)*b^2)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*(B*
b^2 + 3*(2*B*a*b + A*b^2)/tan(d*x + c))*tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))(a + b\tan(c + dx))^2 \sqrt{\cot(c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))**2*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2*sqrt(cot(c + d*x)), x
)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx + c) + A)(b\tan(dx + c) + a)^2 \sqrt{\cot(dx + c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^2*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2*sqrt(cot(d*x + c)), x
)
```

3.582 $\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=317

$$\frac{2\left(a^2B+2aAb-b^2B\right)}{d\sqrt{\cot(c+dx)}}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{\left(a^2(A+B)\right.}{}$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*b^2*B)/(5*d*Cot[c + d*x]
^(5/2)) + (2*b*(A*b + 2*a*B))/(3*d*Cot[c + d*x]^(3/2)) + (2*(2*a*A*b + a^2*
B - b^2*B))/(d*Sqrt[Cot[c + d*x]]) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A
 + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) -
((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d
*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.488767, antiderivative size = 317, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3581, 3604, 3628, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2\left(a^2B+2aAb-b^2B\right)}{d\sqrt{\cot(c+dx)}}+\frac{\left(a^2(A+B)+2ab(A-B)-b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{\left(a^2(A+B)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```



```
[Out] ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*d) - ((a^2*(A - B) - b^2*(A - B) - 2*a*b*(A + B))*ArcTan
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*b^2*B)/(5*d*Cot[c + d*x]
^(5/2)) + (2*b*(A*b + 2*a*B))/(3*d*Cot[c + d*x]^(3/2)) + (2*(2*a*A*b + a^2*
B - b^2*B))/(d*Sqrt[Cot[c + d*x]]) + ((2*a*b*(A - B) + a^2*(A + B) - b^2*(A
 + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) -
((2*a*b*(A - B) + a^2*(A + B) - b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d
*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3604

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*tan[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -Simp
[((B*c - A*d)*(b*c - a*d)^2*(c + d*Tan[e + f*x])^(n + 1))/(f*d^2*(n + 1)*(c
^2 + d^2)), x] + Dist[1/(d*(c^2 + d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*S
imp[B*(b*c - a*d)^2 + A*d*(a^2*c - b^2*c + 2*a*b*d) + d*(B*(a^2*c - b^2*c +
 2*a*b*d) + A*(2*a*b*c - a^2*d + b^2*d))*Tan[e + f*x] + b^2*B*(c^2 + d^2)*T
an[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c
- a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
```

```
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^2(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \int \frac{(b+a\cot(c+dx))^2(B+A\cot(c+dx))}{\cot^{\frac{7}{2}}(c+dx)}\,dx$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} - \int \frac{-b(Ab+2aB)-\left(2aAb+a^2B-b^2B\right)\cot(c+dx)}{\cot^{\frac{5}{2}}(c+dx)}$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{3d\cot^{\frac{3}{2}}(c+dx)} - \int \frac{-2aAb-a^2B+b^2B-\left(a^2A-\right.}{\cot^{\frac{3}{2}}(c+}$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(2aAb+a^2B-b^2B\right)}{d\sqrt{\cot(c+dx)}} - \int \frac{-a^2A}{}$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(2aAb+a^2B-b^2B\right)}{d\sqrt{\cot(c+dx)}} - \frac{2\,\mathrm{Subst}}{}$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(2aAb+a^2B-b^2B\right)}{d\sqrt{\cot(c+dx)}} - \frac{\left(a^2(A-\right.}{}$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(2aAb+a^2B-b^2B\right)}{d\sqrt{\cot(c+dx)}} - \frac{\left(a^2(A-\right.}{}$$

$$= \frac{2b^2B}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b(Ab+2aB)}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(2aAb+a^2B-b^2B\right)}{d\sqrt{\cot(c+dx)}} + \frac{\left(2ab(A\right.}{}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)-2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{\left(\right.}{}$$

Mathematica [A] time = 1.14443, size = 255, normalized size = 0.8

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(30\sqrt{2}\left(a^2(A-B)-2ab(A+B)+b^2(B-A)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{t}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^2*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(30*Sqrt[2]*(a^2*(A - B) + b^2*(-A
+ B) - 2*a*b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 +
```

```
Sqrt[2]*Sqrt[Tan[c + d*x]]]) - 15*Sqrt[2]*(2*a*b*(A - B) + a^2*(A + B) - b^
2*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sq
rt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) - 120*(2*a*A*b + a^2*B - b^2*B)*S
qrt[Tan[c + d*x]] - 40*b*(A*b + 2*a*B)*Tan[c + d*x]^(3/2) - 24*b^2*B*Tan[c
+ d*x]^(5/2)))/(60*d)
```

Maple [C] time = 0.521, size = 3748, normalized size = 11.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] 1/30/d*2^(1/2)*(cos(d*x+c)-1)*(20*B*sin(d*x+c)*2^(1/2)*cos(d*x+c)^2*a*b-15*
A*sin(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c
))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+
c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2
*2^(1/2))+15*B*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2+1/2*I,1/2*2^(1/2))-15*B*sin(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*B*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-15*B*sin(d*x+c)*b^2*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-30*B*sin(d*x+
c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x
+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*Ellip
ticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+30*B*sin(d*
x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*Ell
ipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+15*A*sin(
d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin
(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/
2))-15*A*sin(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*c
```

os(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))+15*A*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((co
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2-1/2*I,1/2*2^(1/2))-20*B*cos(d*x+c)*sin(d*x+c)*2^(1/2)*a*b+30*A*s
in(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))*a*b+30*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin
(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*co
s(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*a*b-60*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2)*cos(d*x+c)^2*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2*2^(1/2))*a*b-30*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))*a*b+60*A*2^(1/2)*cos(d*x+c)^3*a*b+10*A*sin(d
*x+c)*2^(1/2)*b^2*cos(d*x+c)^2-60*A*2^(1/2)*cos(d*x+c)^2*a*b-10*A*cos(d*x+c
)*sin(d*x+c)*2^(1/2)*b^2-6*b^2*B*2^(1/2)-36*B*2^(1/2)*b^2*cos(d*x+c)^3-30*B
*2^(1/2)*a^2*cos(d*x+c)^2+36*B*2^(1/2)*b^2*cos(d*x+c)^2+6*B*cos(d*x+c)*2^(1
/2)*b^2-30*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+
sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+
1/2*I,1/2*2^(1/2))*a*b+30*I*A*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a*b-30*I*B*sin(d*x+c)*((cos(d*x+c)-1)/sin
(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a*b+30*I*B*sin(d*x+c)*((co
s(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a*b+30*B*2^
(1/2)*a^2*cos(d*x+c)^3-30*B*sin(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((
cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a*b+15*I*A*sin(d*x+c)*a^2*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-15*I*A*sin(d*x+c)*b^2*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-15*I*A*si
n(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s

```
in(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(
1/2))+15*I*A*sin(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2-1/2*I,1/2*2^(1/2))-15*I*B*sin(d*x+c)*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2
)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*B*sin(d*x+c)*b^2*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+15*I*B*sin(d*x+c)*a^2*((
cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2
)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2*EllipticPi((-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-15*I*B*si
n(d*x+c)*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/s
in(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*cos(d*x+c)^2
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(
1/2)))*(cos(d*x+c)+1)^2/cos(d*x+c)^2/sin(d*x+c)^4/(cos(d*x+c)/sin(d*x+c))^(
1/2)
```

Maxima [A] time = 1.57241, size = 381, normalized size = 1.2

$$\frac{8\left(3\,Bb^2+\frac{5\left(2\,Bab+Ab^2\right)}{\tan(dx+c)}+\frac{15\left(Ba^2+2\,Aab-Bb^2\right)}{\tan(dx+c)^2}\right)\tan\left(dx+c\right)^{\frac{5}{2}}-30\,\sqrt{2}\left((A-B)a^2-2\,(A+B)ab-(A-B)b^2\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/60*(8*(3*B*b^2 + 5*(2*B*a*b + A*b^2)/tan(d*x + c) + 15*(B*a^2 + 2*A*a*b -
 B*b^2)/tan(d*x + c)^2)*tan(d*x + c)^(5/2) - 30*sqrt(2)*((A - B)*a^2 - 2*(A
 + B)*a*b - (A - B)*b^2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c))
)) - 30*sqrt(2)*((A - B)*a^2 - 2*(A + B)*a*b - (A - B)*b^2)*arctan(-1/2*sqr
t(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - 15*sqrt(2)*((A + B)*a^2 + 2*(A - B
)*a*b - (A + B)*b^2)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) +
 15*sqrt(2)*((A + B)*a^2 + 2*(A - B)*a*b - (A + B)*b^2)*log(-sqrt(2)/sqrt(t
an(d*x + c)) + 1/tan(d*x + c) + 1))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))^2}{\sqrt{\cot(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**2*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**2/sqrt(cot(c + d*x)), x
)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)(b\tan(dx + c) + a)^2}{\sqrt{\cot(dx + c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^2*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^2/sqrt(cot(d*x + c)), x
)
```

3.583 $\int \cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=421

$$\frac{2a\left(7a^2A-21abB-18Ab^2\right)\cot^{\frac{3}{2}}(c+dx)}{21d}+\frac{2\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\sqrt{\cot(c+dx)}}{d}-\frac{\left(-3a^2b(A+B)+a^3(A-\right.}{}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Sqrt[Cot[c + d*x]])
/d + (2*a*(7*a^2*A - 18*A*b^2 - 21*a*b*B)*Cot[c + d*x]^(3/2))/(21*d) - (2*a
^2*(11*A*b + 7*a*B)*Cot[c + d*x]^(5/2))/(35*d) - (2*a*A*Cot[c + d*x]^(3/2)*
(b + a*Cot[c + d*x])^2)/(7*d) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(
A + B) + b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(
2*Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A +
 B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.861724, antiderivative size = 421, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3581, 3607, 3637, 3630, 3528, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2a\left(7a^2A-21abB-18Ab^2\right)\cot^{\frac{3}{2}}(c+dx)}{21d}+\frac{2\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)\sqrt{\cot(c+dx)}}{d}-\frac{\left(-3a^2b(A+B)+a^3(A-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*(3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Sqrt[Cot[c + d*x]])
/d + (2*a*(7*a^2*A - 18*A*b^2 - 21*a*b*B)*Cot[c + d*x]^(3/2))/(21*d) - (2*a
^2*(11*A*b + 7*a*B)*Cot[c + d*x]^(5/2))/(35*d) - (2*a*A*Cot[c + d*x]^(3/2)*
(b + a*Cot[c + d*x])^2)/(7*d) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(
A + B) + b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(
2*Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A +
```

```
B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) && !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] && !LeQ[m, -1]
```

Rule 3528

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
```

```
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Int
[(a + b*Tan[e + f*x])^(m - 1)*Simp[a*c - b*d + (b*c + a*d)*Tan[e + f*x], x]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2,
 0] && GtQ[m, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \sqrt{\cot(c+dx)}(b+a\cot(c+dx))^3(B+A\cot(c+dx))\,dx$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)(b+a\cot(c+dx))^2}{7d} - \frac{2}{7}\int \sqrt{\cot(c+dx}$$

$$= -\frac{2a^2(11Ab+7aB)\cot^{\frac{5}{2}}(c+dx)}{35d} - \frac{2aA\cot^{\frac{3}{2}}(c+dx)(b+a}{7d}$$

$$= \frac{2a\left(7a^2A-18Ab^2-21abB\right)\cot^{\frac{3}{2}}(c+dx)}{21d} - \frac{2a^2(11Ab+7a}{3}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\cot(c+dx)}}{d} + \frac{2a\left(7a^2A\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\cot(c+dx)}}{d} + \frac{2a\left(7a^2A\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\cot(c+dx)}}{d} + \frac{2a\left(7a^2A\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\cot(c+dx)}}{d} + \frac{2a\left(7a^2A\right.}{}$$

$$= \frac{2\left(3a^2Ab-Ab^3+a^3B-3ab^2B\right)\sqrt{\cot(c+dx)}}{d} + \frac{2a\left(7a^2A\right.}{}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\tan}{\sqrt{2}d}$$

Mathematica [A] time = 3.74665, size = 326, normalized size = 0.77

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{a\left(a^2A-3abB-3Ab^2\right)}{3\tan^{\frac{3}{2}}(c+dx)}-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)+b^3(B-A)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}\right.\right.}{2\sqrt{2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*(-((3*a^2*b*(A - B) + b^3*(-A + B) + a^3*(A + B) - 3*
a*b^2*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]
*Sqrt[Tan[c + d*x]]]))/(2*Sqrt[2]) - ((a^3*(A - B) + 3*a*b^2*(-A + B) - 3*a
^2*b*(A + B) + b^3*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d
*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(4*Sqrt[2]) - (
a^3*A)/(7*Tan[c + d*x]^(7/2)) - (a^2*(3*A*b + a*B))/(5*Tan[c + d*x]^(5/2))
+ (a*(a^2*A - 3*A*b^2 - 3*a*b*B))/(3*Tan[c + d*x]^(3/2)) + (3*a^2*A*b - A*b
^3 + a^3*B - 3*a*b^2*B)/Sqrt[Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/d
```

Maple [C] time = 1.012, size = 18631, normalized size = 44.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.5499, size = 494, normalized size = 1.17

$$-\frac{210\sqrt{2}\left((A+B)a^3+3(A-B)a^2b-3(A+B)ab^2-(A-B)b^3\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+210\sqrt{2}\left((A+B)a^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/420*(210*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A -
 B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 210*sqrt(2)
*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(-1/
2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - 105*sqrt(2)*((A - B)*a^3 - 3*
(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(sqrt(2)/sqrt(tan(d*x + c
)) + 1/tan(d*x + c) + 1) + 105*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(
A - B)*a*b^2 + (A + B)*b^3)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c
) + 1) + 120*A*a^3/tan(d*x + c)^(7/2) - 840*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2
- A*b^3)/sqrt(tan(d*x + c)) - 280*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2)/tan(d*x +
 c)^(3/2) + 168*(B*a^3 + 3*A*a^2*b)/tan(d*x + c)^(5/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^3\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*cot(d*x + c)^(9/2), x
)
```

3.584 $\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=380

$$\frac{2a\left(5a^2A-15abB-14Ab^2\right)\sqrt{\cot(c+dx)}}{5d}+\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\log\left(\cot(c+dx)-\sqrt{\ }\right.}{2\sqrt{2}d}$$

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*a*(5*a^2*A - 14*A*b^2 - 15*a*b*B)*Sqrt[Cot[c + d*x]])/(5*d)
 - (2*a^2*(9*A*b + 5*a*B)*Cot[c + d*x]^(3/2))/(15*d) - (2*a*A*Sqrt[Cot[c +
d*x]]*(b + a*Cot[c + d*x])^2)/(5*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3
*(A + B) - 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*
x]])/(2*Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^
2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d
)
```

Rubi [A] time = 0.769157, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3581, 3607, 3637, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2a\left(5a^2A-15abB-14Ab^2\right)\sqrt{\cot(c+dx)}}{5d}+\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\log\left(\cot(c+dx)-\sqrt{\ }\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*a*(5*a^2*A - 14*A*b^2 - 15*a*b*B)*Sqrt[Cot[c + d*x]])/(5*d)
 - (2*a^2*(9*A*b + 5*a*B)*Cot[c + d*x]^(3/2))/(15*d) - (2*a*A*Sqrt[Cot[c +
d*x]]*(b + a*Cot[c + d*x])^2)/(5*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3
*(A + B) - 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*
x]])/(2*Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^
2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d
```

```
)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
```

```
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^3(B+A\cot(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2}{5d} - \frac{2}{5}\int \frac{(b+a\cot(}{}$$

$$= -\frac{2a^2(9Ab+5aB)\cot^{\frac{3}{2}}(c+dx)}{15d} - \frac{2aA\sqrt{\cot(c+dx)}(b+a}{5d}$$

$$= \frac{2a\left(5a^2A-14Ab^2-15abB\right)\sqrt{\cot(c+dx)}}{5d} - \frac{2a^2(9Ab+5}{}$$

$$= \frac{2a\left(5a^2A-14Ab^2-15abB\right)\sqrt{\cot(c+dx)}}{5d} - \frac{2a^2(9Ab+5}{}$$

$$= \frac{2a\left(5a^2A-14Ab^2-15abB\right)\sqrt{\cot(c+dx)}}{5d} - \frac{2a^2(9Ab+5}{}$$

$$= \frac{2a\left(5a^2A-14Ab^2-15abB\right)\sqrt{\cot(c+dx)}}{5d} - \frac{2a^2(9Ab+5}{}$$

$$= \frac{2a\left(5a^2A-14Ab^2-15abB\right)\sqrt{\cot(c+dx)}}{5d} - \frac{2a^2(9Ab+5}{}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\mathrm{ta}}{\sqrt{2}d}$$

Mathematica [A] time = 2.33852, size = 286, normalized size = 0.75

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{\left(-3a^2b(A+B)+a^3(A-B)+3ab^2(B-A)+b^3(A+B)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{2\sqrt{2}} + \frac{a\left(a^2A-3\right.}{\sqrt{\mathrm{ta}}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*(-((a^3*(A - B) + 3*a*b^2*(-A + B) - 3*a^2*b*(A + B)
+ b^3*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]
*Sqrt[Tan[c + d*x]]]))/(2*Sqrt[2]) + ((3*a^2*b*(A - B) + b^3*(-A + B) + a^3
```

```
*(A + B) - 3*a*b^2*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d
*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(4*Sqrt[2]) - (
a^3*A)/(5*Tan[c + d*x]^(5/2)) - (a^2*(3*A*b + a*B))/(3*Tan[c + d*x]^(3/2))
+ (a*(a^2*A - 3*A*b^2 - 3*a*b*B))/Sqrt[Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/d
```

Maple [C] time = 0.796, size = 17628, normalized size = 46.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.70487, size = 446, normalized size = 1.17

$$-\frac{30\sqrt{2}\left((A-B)a^3-3\,(A+B)a^2b-3\,(A-B)ab^2+(A+B)b^3\right)\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+30\sqrt{2}\left((A-B)a^3-3\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/60*(30*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B
)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 30*sqrt(2)*((
A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(-1/2*s
qrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + 15*sqrt(2)*((A + B)*a^3 + 3*(A -
 B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*log(sqrt(2)/sqrt(tan(d*x + c)) +
 1/tan(d*x + c) + 1) - 15*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B
)*a*b^2 - (A - B)*b^3)*log(-sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1
) + 24*A*a^3/tan(d*x + c)^(5/2) - 120*(A*a^3 - 3*B*a^2*b - 3*A*a*b^2)/sqrt(
tan(d*x + c)) + 40*(B*a^3 + 3*A*a^2*b)/tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^3\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*cot(d*x + c)^(7/2), x
)
```

3.585 $\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=374

$$-\frac{2a\left(a^2B+3aAb+2b^2B\right)\sqrt{\cot(c+dx)}}{d}+\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\log\left(\cot(c+dx)-\sqrt{\right.}}{2\sqrt{2}d}$$

```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + ((3*a^2*b*(A - B) - b^3*(A -
 B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]]
)/(Sqrt[2]*d) - (2*a*(3*a*A*b + a^2*B + 2*b^2*B)*Sqrt[Cot[c + d*x]])/d - (2
*a^2*(a*A + 3*b*B)*Cot[c + d*x]^(3/2))/(3*d) + (2*b*B*(b + a*Cot[c + d*x])^
2)/(d*Sqrt[Cot[c + d*x]]) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A +
B) + b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sq
rt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))
*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.769716, antiderivative size = 374, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3581, 3605, 3637, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{2a\left(a^2B+3aAb+2b^2B\right)\sqrt{\cot(c+dx)}}{d}+\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\log\left(\cot(c+dx)-\sqrt{\right.}}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```



```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + ((3*a^2*b*(A - B) - b^3*(A -
 B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]]
)/(Sqrt[2]*d) - (2*a*(3*a*A*b + a^2*B + 2*b^2*B)*Sqrt[Cot[c + d*x]])/d - (2
*a^2*(a*A + 3*b*B)*Cot[c + d*x]^(3/2))/(3*d) + (2*b*B*(b + a*Cot[c + d*x])^
2)/(d*Sqrt[Cot[c + d*x]]) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A +
B) + b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sq
rt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))
*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3637

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)])^(n_.)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> Simp[(b*C*Tan[e + f*x]*(c + d*Tan[e + f*x])^(n +
 1))/(d*f*(n + 2)), x] - Dist[1/(d*(n + 2)), Int[(c + d*Tan[e + f*x])^n*Sim
p[b*c*C - a*A*d*(n + 2) - (A*b + a*B - b*C)*d*(n + 2)*Tan[e + f*x] - (a*C*d
*(n + 2) - b*(c*C - B*d*(n + 2)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] &&
 !LtQ[n, -1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
```

```
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

$$= \frac{2bB(b+a\cot(c+dx))^2}{d\sqrt{\cot(c+dx)}} - 2\int \frac{(b+a\cot(c+dx))\left(-\frac{1}{2}b(A\right.}{}$$

$$= -\frac{2a^2(aA+3bB)\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{2bB(b+a\cot(c+dx))^2}{d\sqrt{\cot(c+dx)}}$$

$$= -\frac{2a\left(3aAb+a^2B+2b^2B\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(aA+3bB)}{3d}$$

$$= -\frac{2a\left(3aAb+a^2B+2b^2B\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(aA+3bB)}{3d}$$

$$= -\frac{2a\left(3aAb+a^2B+2b^2B\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(aA+3bB)}{3d}$$

$$= -\frac{2a\left(3aAb+a^2B+2b^2B\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(aA+3bB)}{3d}$$

$$= -\frac{2a\left(3aAb+a^2B+2b^2B\right)\sqrt{\cot(c+dx)}}{d} - \frac{2a^2(aA+3bB)}{3d}$$

$$= -\frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\,\mathrm{t}}{\sqrt{2}d}$$

Mathematica [A] time = 2.10353, size = 270, normalized size = 0.72

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)+b^3(B-A)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{2\sqrt{2}} + \frac{\left(-3a^2b(A+B\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*(((3*a^2*b*(A - B) + b^3*(-A + B) + a^3*(A + B) - 3*a
*b^2*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*
```

```
Sqrt[Tan[c + d*x]]]))/(2*Sqrt[2]) + ((a^3*(A - B) + 3*a*b^2*(-A + B) - 3*a^
2*b*(A + B) + b^3*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(4*Sqrt[2]) - (a
^3*A)/(3*Tan[c + d*x]^(3/2)) - (a^2*(3*A*b + a*B))/Sqrt[Tan[c + d*x]] + b^3
*B*Sqrt[Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/d
```

Maple [C] time = 0.577, size = 9099, normalized size = 24.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.67002, size = 424, normalized size = 1.13

$$\frac{24\,Bb^3\sqrt{\tan\left(dx+c\right)}+6\,\sqrt{2}\left((A+B)a^3+3\,(A-B)a^2b-3\,(A+B)ab^2-(A-B)b^3\right)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/12*(24*B*b^3*sqrt(tan(d*x + c)) + 6*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*
b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan
(d*x + c)))) + 6*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 -
 (A - B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - 3*sqr
t(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(sq
rt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + 3*sqrt(2)*((A - B)*a^3 - 3
*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(-sqrt(2)/sqrt(tan(d*x +
 c)) + 1/tan(d*x + c) + 1) - 8*A*a^3/tan(d*x + c)^(3/2) - 24*(B*a^3 + 3*A*a
^2*b)/sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^3\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*cot(d*x + c)^(5/2), x
)
```

3.586 $\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=372

$$-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{\left(3a^2b(A-B)+a^3(A\right.}{}$$

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + ((a^3*(A - B) - 3*a*b^2*(A -
 B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]]
)/(Sqrt[2]*d) + (2*b^2*(3*A*b + 7*a*B))/(3*d*Sqrt[Cot[c + d*x]]) - (2*a^2*(
3*a*A + b*B)*Sqrt[Cot[c + d*x]])/(3*d) + (2*b*B*(b + a*Cot[c + d*x])^2)/(3*
d*Cot[c + d*x]^(3/2)) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a
*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2
]*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.694769, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3581, 3605, 3635, 3630, 3534, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{\left(3a^2b(A-B)+a^3(A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```



```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + ((a^3*(A - B) - 3*a*b^2*(A -
 B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]]
)/(Sqrt[2]*d) + (2*b^2*(3*A*b + 7*a*B))/(3*d*Sqrt[Cot[c + d*x]]) - (2*a^2*(
3*a*A + b*B)*Sqrt[Cot[c + d*x]])/(3*d) + (2*b*B*(b + a*Cot[c + d*x])^2)/(3*
d*Cot[c + d*x]^(3/2)) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a
*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2
]*d) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*Log
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3630

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a +
 b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)), x] + Int[(a + b*Tan[e + f*x])^m*Si
mp[A - C + B*Tan[e + f*x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
NeQ[A*b^2 - a*b*B + a^2*C, 0] &&  !LeQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
```

```
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2bB(b+a\cot(c+dx))^2}{3d\cot^{\frac{3}{2}}(c+dx)} - \frac{2}{3}\int \frac{(b+a\cot(c+dx))\left(-\frac{1}{2}b(3\right.}{}$$

$$= \frac{2b^2(3Ab+7aB)}{3d\sqrt{\cot(c+dx)}} + \frac{2bB(b+a\cot(c+dx))^2}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{2}{3}\int \frac{\frac{1}{2}b\left(9a\right.}{}$$

$$= \frac{2b^2(3Ab+7aB)}{3d\sqrt{\cot(c+dx)}} - \frac{2a^2(3aA+bB)\sqrt{\cot(c+dx)}}{3d} + \frac{2bB(b}{3d}$$

$$= \frac{2b^2(3Ab+7aB)}{3d\sqrt{\cot(c+dx)}} - \frac{2a^2(3aA+bB)\sqrt{\cot(c+dx)}}{3d} + \frac{2bB(b}{3d}$$

$$= \frac{2b^2(3Ab+7aB)}{3d\sqrt{\cot(c+dx)}} - \frac{2a^2(3aA+bB)\sqrt{\cot(c+dx)}}{3d} + \frac{2bB(b}{3d}$$

$$= \frac{2b^2(3Ab+7aB)}{3d\sqrt{\cot(c+dx)}} - \frac{2a^2(3aA+bB)\sqrt{\cot(c+dx)}}{3d} + \frac{2bB(b}{3d}$$

$$= \frac{2b^2(3Ab+7aB)}{3d\sqrt{\cot(c+dx)}} - \frac{2a^2(3aA+bB)\sqrt{\cot(c+dx)}}{3d} + \frac{2bB(b}{3d}$$

$$= -\frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\mathrm{t}}{\sqrt{2}d}$$

Mathematica [A] time = 2.07442, size = 270, normalized size = 0.73

$$2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\left(-3a^2b(A+B)+a^3(A-B)+3ab^2(B-A)+b^3(A+B)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{2\sqrt{2}} - \frac{\left(3a^2b(A-B\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((a^3*(A - B) + 3*a*b^2*(-A + B)
- 3*a^2*b*(A + B) + b^3*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] -
ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(2*Sqrt[2]) - ((3*a^2*b*(A - B) +
b^3*(-A + B) + a^3*(A + B) - 3*a*b^2*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c +
 d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
))/(4*Sqrt[2]) - (a^3*A)/Sqrt[Tan[c + d*x]] + b^2*(A*b + 3*a*B)*Sqrt[Tan[c
+ d*x]] + (b^3*B*Tan[c + d*x]^(3/2))/3))/d
```

Maple [C] time = 0.63, size = 8955, normalized size = 24.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.5331, size = 427, normalized size = 1.15

$$-\frac{\frac{24\,Aa^3}{\sqrt{\tan(dx+c)}} - 6\,\sqrt{2}\Big((A-B)a^3 - 3\,(A+B)a^2b - 3\,(A-B)ab^2 + (A+B)b^3\Big)\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2} + \frac{2}{\sqrt{\tan(dx+c)}}\right)\right) - 6\,\sqrt{2}\Big((A-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] -1/12*(24*A*a^3/sqrt(tan(d*x + c)) - 6*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2
*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(ta
n(d*x + c)))) - 6*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2
+ (A + B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - 3*sq
rt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*log(s
qrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + 3*sqrt(2)*((A + B)*a^3 +
3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*log(-sqrt(2)/sqrt(tan(d*x
+ c)) + 1/tan(d*x + c) + 1) - 8*(B*b^3 + 3*(3*B*a*b^2 + A*b^3)/tan(d*x + c)
)*tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^3\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*cot(d*x + c)^(3/2), x
)
```

3.587 $\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=380

$$\frac{2b\left(14a^2B+15aAb-5b^2B\right)}{5d\sqrt{\cot(c+dx)}}-\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+d}\right.}{2\sqrt{2}d}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*b^2*(5*A*b + 9*a*B))/(15*d*Cot[c + d*x]^(3/2)) + (2*b*(15*a
*A*b + 14*a^2*B - 5*b^2*B))/(5*d*Sqrt[Cot[c + d*x]]) + (2*b*B*(b + a*Cot[c
+ d*x])^2)/(5*d*Cot[c + d*x]^(5/2)) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a
^2*b*(A + B) + b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*
x]])/(2*Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^
3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d
)
```

Rubi [A] time = 0.714132, antiderivative size = 380, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3581, 3605, 3635, 3628, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2b\left(14a^2B+15aAb-5b^2B\right)}{5d\sqrt{\cot(c+dx)}}-\frac{\left(-3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)+b^3(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+d}\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*b^2*(5*A*b + 9*a*B))/(15*d*Cot[c + d*x]^(3/2)) + (2*b*(15*a
*A*b + 14*a^2*B - 5*b^2*B))/(5*d*Sqrt[Cot[c + d*x]]) + (2*b*B*(b + a*Cot[c
+ d*x])^2)/(5*d*Cot[c + d*x]^(5/2)) - ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a
^2*b*(A + B) + b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*
x]])/(2*Sqrt[2]*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^
3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d
```

)

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^3(A+B\tan(c+dx))\,dx = \int \frac{(b+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{7}{2}}(c+dx)}\,dx$$

$$= \frac{2bB(b+a\cot(c+dx))^2}{5d\cot^{\frac{5}{2}}(c+dx)} - \frac{2}{5}\int \frac{(b+a\cot(c+dx))\left(-\frac{1}{2}b(\right.}{}$$

$$= \frac{2b^2(5Ab+9aB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{2bB(b+a\cot(c+dx))^2}{5d\cot^{\frac{5}{2}}(c+dx)} + \frac{2}{5}\int \frac{\frac{1}{2}b\left(1\right.}{}$$

$$= \frac{2b^2(5Ab+9aB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b\left(15aAb+14a^2B-5b^2B\right)}{5d\sqrt{\cot(c+dx)}} + \frac{2bB(b}{5a}$$

$$= \frac{2b^2(5Ab+9aB)}{15d\cot^{\frac{3}{2}}(c+dx)} + \frac{2b\left(15aAb+14a^2B-5b^2B\right)}{5d\sqrt{\cot(c+dx)}} + \frac{2bB(b}{5a}$$

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$$= \frac{\left(3a^2b(A-B)-b^3(A-B)+a^3(A+B)-3ab^2(A+B)\right)\mathrm{ta}}{\sqrt{2}d}$$

Mathematica [A] time = 1.26847, size = 287, normalized size = 0.76

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)+b^3(B-A)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{2\sqrt{2}}+b\left(3a^2B\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]),x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((3*a^2*b*(A - B) + b^3*(-A + B)
 + a^3*(A + B) - 3*a*b^2*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] -
 ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(2*Sqrt[2]) - ((a^3*(A - B) + 3*a
*b^2*(-A + B) - 3*a^2*b*(A + B) + b^3*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]
]))/(4*Sqrt[2]) + b*(3*a*A*b + 3*a^2*B - b^2*B)*Sqrt[Tan[c + d*x]] + (b^2*(
A*b + 3*a*B)*Tan[c + d*x]^(3/2))/3 + (b^3*B*Tan[c + d*x]^(5/2))/5))/d
```

Maple [C] time = 0.702, size = 4947, normalized size = 13.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x)
```

```
[Out] 1/30/d*2^(1/2)*(cos(d*x+c)-1)*(90*A*2^(1/2)*cos(d*x+c)^3*a*b^2+90*B*2^(1/2)
*cos(d*x+c)^3*a^2*b-45*sin(d*x+c)*B*cos(d*x+c)^2*b^2*((cos(d*x+c)-1)/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a+45*sin(d*x+c)*B*cos(d*x+c)^2*a^2*((cos(d
*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b-45*sin(d*x+c)*B*cos(d*x+c
)^2*b^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*
x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a-90*sin(d*x
+c)*B*cos(d*x+c)^2*a^2*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin
(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*El
lipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*b+45*sin
(d*x+c)*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2
))*a^2*b+45*sin(d*x+c)*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1
/2*I,1/2*2^(1/2))*a*b^2+45*sin(d*x+c)*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a^2*b+45*sin(d*x+c)*A*cos(d*x+c)^2*(-(cos(
```

d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a*b^2-90*sin(d*x+c)*A*cos(d
x+c)^2(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*a*b^2+45*sin(d*x+c)*B*c
os(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+si
n(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a^2*b-36
*2^(1/2)*B*cos(d*x+c)^3*b^3+6*2^(1/2)*B*cos(d*x+c)*b^3+30*2^(1/2)*B*cos(d*x
+c)^2*sin(d*x+c)*a*b^2-6*B*2^(1/2)*b^3-90*2^(1/2)*A*cos(d*x+c)^2*a*b^2-10*2
^(1/2)*sin(d*x+c)*A*cos(d*x+c)*b^3-90*2^(1/2)*B*cos(d*x+c)^2*a^2*b+15*sin(d
*x+c)*B*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*
x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Elli
pticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))
*a^3-15*sin(d*x+c)*B*cos(d*x+c)^2*b^3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1
/2*I,1/2*2^(1/2))+15*sin(d*x+c)*B*cos(d*x+c)^2*a^3*((cos(d*x+c)-1)/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))-15*sin(d*x+c)*B*cos(d*x+c)^2*(-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)
*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b^3+30*sin(d*x+c)*B*cos(d*x+c)^2*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*b^3-30*2^(1/2)*sin(d*x+c)*B*cos(d
*x+c)*a*b^2-15*sin(d*x+c)*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*
x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/si
n(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/
2-1/2*I,1/2*2^(1/2))*a^3-15*sin(d*x+c)*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b^3-15*sin(d*x+c)*A*cos(d*x+c)^2*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c)
)^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a^3-15*sin(d*x+c)*A*cos(d*x+
c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b^3+30*sin(d*x+
c)*A*cos(d*x+c)^2*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c
)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellipti
cF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*a^3+45*I*A*co
s(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d

*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ell
ipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)
)*a^2*b-45*I*A*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+
1/2*I,1/2*2^(1/2))*a*b^2-45*I*A*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((c
os(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a^2*b+45*I*A*cos(d*x+c)^2*sin(d*x+c)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a*b^2-45*I*B*cos(d*x+c
)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1
+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*a^2*b
-45*I*B*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))
^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1
/2*2^(1/2))*a*b^2+45*I*B*cos(d*x+c)^2*sin(d*x+c)*EllipticPi((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a^2*((cos(d*x+c)-1)/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*b+45*I*B*cos(d*x+c)^2*sin(d*x+c)*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b^2*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*a+36*B*cos(d*x+c)^2*2^(1/
2)*b^3+15*I*A*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1
/2*I,1/2*2^(1/2))*a^3-15*I*A*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*b^3-15*I*A*cos(d*x+c)^2*sin(d*x+c)*(-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d
*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a^3+15*I*A*cos(d*x+c)^2*sin
(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*
x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b^3+15*I*B*c
os(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))*a^3+15*I*B*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1
/2*I,1/2*2^(1/2))*b^3-15*I*B*cos(d*x+c)^2*sin(d*x+c)*(-(cos(d*x+c)-1-sin(d*

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x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*a^3-15*I*B*cos(d*x+c)^2*sin(d*x+c)*Ellipti
cPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*b^
3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^
(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+10*2^(1/2)*A*cos(d*x+c)
^2*sin(d*x+c)*b^3)*(cos(d*x+c)+1)^2*(cos(d*x+c)/sin(d*x+c))^(1/2)/cos(d*x+c
)^3/sin(d*x+c)^3
```

Maxima [A] time = 1.62235, size = 451, normalized size = 1.19

$$8\left(3\,Bb^3+\frac{5\left(3\,Bab^2+Ab^3\right)}{\tan(dx+c)}+\frac{15\left(3\,Ba^2b+3\,Aab^2-Bb^3\right)}{\tan(dx+c)^2}\right)\tan\left(dx+c\right)^{\frac{5}{2}}-30\,\sqrt{2}\left((A+B)a^3+3\,(A-B)a^2b-3\,(A+B)ab^2-(A-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] 1/60*(8*(3*B*b^3 + 5*(3*B*a*b^2 + A*b^3)/tan(d*x + c) + 15*(3*B*a^2*b + 3*A
*a*b^2 - B*b^3)/tan(d*x + c)^2)*tan(d*x + c)^(5/2) - 30*sqrt(2)*((A + B)*a^
3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(1/2*sqrt(2)*(sq
rt(2) + 2/sqrt(tan(d*x + c)))) - 30*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b
- 3*(A + B)*a*b^2 - (A - B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(
d*x + c)))) + 15*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 +
 (A + B)*b^3)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 15*sqr
t(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*log(-s
qrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan (c + dx)) (a + b\tan (c + dx))^3 \sqrt{\cot (c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))**3*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3*sqrt(cot(c + d*x)), x
)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (dx + c) + A)(b\tan (dx + c) + a)^3 \sqrt{\cot (dx + c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^3*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3*sqrt(cot(d*x + c)), x
)
```

3.588 $\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=421

$$\frac{2b\left(18a^2B+21aAb-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)}+\frac{2\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)}{d\sqrt{\cot(c+dx)}}+\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B\right.}{2\sqrt{2}d}$$

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*b^2*(7*A*b + 11*a*B))/(35*d*Cot[c + d*x]^(5/2)) + (2*b*(21*
a*A*b + 18*a^2*B - 7*b^2*B))/(21*d*Cot[c + d*x]^(3/2)) + (2*(3*a^2*A*b - A*
b^3 + a^3*B - 3*a*b^2*B))/(d*Sqrt[Cot[c + d*x]]) + (2*b*B*(b + a*Cot[c + d*
x])^2)/(7*d*Cot[c + d*x]^(7/2)) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A
+ B) - 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])
/(2*Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A
 + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.782665, antiderivative size = 421, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3581, 3605, 3635, 3628, 3529, 3534, 1168, 1162, 617, 204, 1165, 628}

$$\frac{2b\left(18a^2B+21aAb-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)}+\frac{2\left(3a^2Ab+a^3B-3ab^2B-Ab^3\right)}{d\sqrt{\cot(c+dx)}}+\frac{\left(3a^2b(A-B)+a^3(A+B)-3ab^2(A+B)-b^3(A-B\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - ((a^3*(A - B) - 3*a*b^2*(A - B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(
Sqrt[2]*d) + (2*b^2*(7*A*b + 11*a*B))/(35*d*Cot[c + d*x]^(5/2)) + (2*b*(21*
a*A*b + 18*a^2*B - 7*b^2*B))/(21*d*Cot[c + d*x]^(3/2)) + (2*(3*a^2*A*b - A*
b^3 + a^3*B - 3*a*b^2*B))/(d*Sqrt[Cot[c + d*x]]) + (2*b*B*(b + a*Cot[c + d*
x])^2)/(7*d*Cot[c + d*x]^(7/2)) + ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A
+ B) - 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])
/(2*Sqrt[2]*d) - ((3*a^2*b*(A - B) - b^3*(A - B) + a^3*(A + B) - 3*a*b^2*(A
 + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3635

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.
)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(c^2*C - B*c*d + A*d^2)*(c +
d*Tan[e + f*x])^(n + 1))/(d^2*f*(n + 1)*(c^2 + d^2)), x] + Dist[1/(d*(c^2 +
 d^2)), Int[(c + d*Tan[e + f*x])^(n + 1)*Simp[a*d*(A*c - c*C + B*d) + b*(c^
2*C - B*c*d + A*d^2) + d*(A*b*c + a*B*c - b*c*C - a*A*d + b*B*d + a*C*d)*Ta
n[e + f*x] + b*C*(c^2 + d^2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c,
d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[c^2 + d^2, 0] && LtQ[n, -
1]
```

Rule 3628

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2
- a*b*B + a^2*C)*(a + b*Tan[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 + b^2)), x
] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[b*B + a*(A -
C) - (A*b - a*B - b*C)*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
 C}, x] && NeQ[A*b^2 - a*b*B + a^2*C, 0] && LtQ[m, -1] && NeQ[a^2 + b^2, 0]
```

Rule 3529

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]), x_Symbol] :> Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^(m + 1))
/(f*(m + 1)*(a^2 + b^2)), x] + Dist[1/(a^2 + b^2), Int[(a + b*Tan[e + f*x])
^(m + 1)*Simp[a*c + b*d - (b*c - a*d)*Tan[e + f*x], x], x], x] /; FreeQ[{a,
 b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && LtQ[m, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
```

```
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^3(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \int \frac{(b+a\cot(c+dx))^3(B+A\cot(c+dx))}{\cot^{\frac{9}{2}}(c+dx)}\,dx$$

$$= \frac{2bB(b+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} - \frac{2}{7}\int \frac{(b+a\cot(c+dx))\left(-\frac{1}{2}b(7Ab+11aB)-\right.}{}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2bB(b+a\cot(c+dx))^2}{7d\cot^{\frac{7}{2}}(c+dx)} + \frac{2}{7}\int \frac{\frac{1}{2}b\left(21aAb+18a^2B\right.}{}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b\left(21aAb+18a^2B-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)} + \frac{2bB(b+a\cot(c+d}{7d\cot^{\frac{7}{2}}(c+dx)}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b\left(21aAb+18a^2B-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(3a^2Ab-Ab^3+a\right.}{d\sqrt{\cot(c+}}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b\left(21aAb+18a^2B-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(3a^2Ab-Ab^3+a\right.}{d\sqrt{\cot(c+}}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b\left(21aAb+18a^2B-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(3a^2Ab-Ab^3+a\right.}{d\sqrt{\cot(c+}}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b\left(21aAb+18a^2B-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(3a^2Ab-Ab^3+a\right.}{d\sqrt{\cot(c+}}$$

$$= \frac{2b^2(7Ab+11aB)}{35d\cot^{\frac{5}{2}}(c+dx)} + \frac{2b\left(21aAb+18a^2B-7b^2B\right)}{21d\cot^{\frac{3}{2}}(c+dx)} + \frac{2\left(3a^2Ab-Ab^3+a\right.}{d\sqrt{\cot(c+}}$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)-3a^2b(A+B)+b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\right.}{\sqrt{2}d}$$

Mathematica [A] time = 2.53018, size = 327, normalized size = 0.78

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{1}{3}b\left(3a^2B+3aAb-b^2B\right)\tan^{\frac{3}{2}}(c+dx)-\frac{\left(-3a^2b(A+B)+a^3(A-B)+3ab^2(B-A)+b^3(A+B)\right)\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{t\right.\right.}}{2\sqrt{2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^3*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((a^3*(A - B) + 3*a*b^2*(-A + B)
 - 3*a^2*b*(A + B) + b^3*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] -
 ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(2*Sqrt[2]) + ((3*a^2*b*(A - B) +
 b^3*(-A + B) + a^3*(A + B) - 3*a*b^2*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]
]))/(4*Sqrt[2]) + (3*a^2*A*b - A*b^3 + a^3*B - 3*a*b^2*B)*Sqrt[Tan[c + d*x]
] + (b*(3*a*A*b + 3*a^2*B - b^2*B)*Tan[c + d*x]^(3/2))/3 + (b^2*(A*b + 3*a*
B)*Tan[c + d*x]^(5/2))/5 + (b^3*B*Tan[c + d*x]^(7/2))/7))/d
```

Maple [C] time = 0.781, size = 5111, normalized size = 12.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [A] time = 1.59752, size = 500, normalized size = 1.19

$$\frac{8\left(15\,Bb^3+\frac{21\left(3\,Bab^2+Ab^3\right)}{\tan(dx+c)}+\frac{35\left(3\,Ba^2b+3\,Aab^2-Bb^3\right)}{\tan(dx+c)^2}+\frac{105\left(Ba^3+3\,Aa^2b-3\,Bab^2-Ab^3\right)}{\tan(dx+c)^3}\right)\tan\left(dx+c\right)^{\frac{7}{2}}-210\,\sqrt{2}\left((A-B)a^3-3\,(A+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/420*(8*(15*B*b^3 + 21*(3*B*a*b^2 + A*b^3)/tan(d*x + c) + 35*(3*B*a^2*b +
3*A*a*b^2 - B*b^3)/tan(d*x + c)^2 + 105*(B*a^3 + 3*A*a^2*b - 3*B*a*b^2 - A*
b^3)/tan(d*x + c)^3)*tan(d*x + c)^(7/2) - 210*sqrt(2)*((A - B)*a^3 - 3*(A +
 B)*a^2*b - 3*(A - B)*a*b^2 + (A + B)*b^3)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/
sqrt(tan(d*x + c)))) - 210*sqrt(2)*((A - B)*a^3 - 3*(A + B)*a^2*b - 3*(A -
B)*a*b^2 + (A + B)*b^3)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c))
)) - 105*sqrt(2)*((A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)
*b^3)*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + 105*sqrt(2)*((
A + B)*a^3 + 3*(A - B)*a^2*b - 3*(A + B)*a*b^2 - (A - B)*b^3)*log(-sqrt(2)/
sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))(a + b\tan(c + dx))^3}{\sqrt{\cot(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**3*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**3/sqrt(cot(c + d*x)), x
)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)(b\tan(dx + c) + a)^3}{\sqrt{\cot(dx + c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^3*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^3/sqrt(cot(d*x + c)), x
)
```

3.589 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=325

$$\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

```
[Out] ((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*b^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(a^(5/2)*(a^2 + b^2)*d) + (2*(A*b - a*B)*Sqrt[Cot
[c + d*x]])/(a^2*d) - (2*A*Cot[c + d*x]^(3/2))/(3*a*d) + ((a*(A - B) + b*(A
 + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2
+ b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + C
ot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 1.12914, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3607, 3647, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] ((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*b^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(a^(5/2)*(a^2 + b^2)*d) + (2*(A*b - a*B)*Sqrt[Cot
[c + d*x]])/(a^2*d) - (2*A*Cot[c + d*x]^(3/2))/(3*a*d) + ((a*(A - B) + b*(A
 + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2
+ b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + C
ot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) && !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] && !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] && !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
```

```
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \int \frac{\cot^{\frac{5}{2}}(c+dx)(B+A\cot(c+dx))}{b+a\cot(c+dx)}\,dx$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad} - \frac{2\int \frac{\sqrt{\cot(c+dx)}\left(\frac{3Ab}{2}+\frac{3}{2}aA\cot(c+dx)+\frac{3}{2}(Ab-aB)\cot^2(c+dx)\right)}{b+a\cot(c+dx)}\,dx}{3a}$$

$$= \frac{2(Ab-aB)\sqrt{\cot(c+dx)}}{a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad} + \frac{4\int \frac{\frac{3}{4}b(Ab-aB)-\frac{3}{4}a^2B\cot(c+dx)-\frac{3}{4}(a^2}{\sqrt{\cot(c+dx)}(b+a\cot}}{3a^2}$$

$$= \frac{2(Ab-aB)\sqrt{\cot(c+dx)}}{a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad} + \frac{4\int \frac{\frac{3}{4}a^2(Ab-aB)-\frac{3}{4}a^2(aA+bB)\cot(c+d}{\sqrt{\cot(c+dx)}}}{3a^2\left(a^2+b^2\right)}$$

$$= \frac{2(Ab-aB)\sqrt{\cot(c+dx)}}{a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad} + \frac{8\,\mathrm{Subst}\left(\int \frac{-\frac{3}{4}a^2(Ab-aB)+\frac{3}{4}a^2(aA+}{1+x^4}\right.}{3a^2\left(a^2+b\right.}$$

$$= \frac{2(Ab-aB)\sqrt{\cot(c+dx)}}{a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad} - \frac{\left(2b^3(Ab-aB)\right)\mathrm{Subst}\left(\int \frac{1}{b+ax^2}\right.}{a^2\left(a^2+b^2\right)}$$

$$= -\frac{2b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{5/2}\left(a^2+b^2\right)d} + \frac{2(Ab-aB)\sqrt{\cot(c+dx)}}{a^2d} - \frac{2A\cot^{\frac{3}{2}}(c}{3ad}$$

$$= -\frac{2b^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{5/2}\left(a^2+b^2\right)d} + \frac{2(Ab-aB)\sqrt{\cot(c+dx)}}{a^2d} - \frac{2A\cot^{\frac{3}{2}}(c}{3ad}$$

$$= \frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(b(A-B)-a(A+B))\,\mathrm{ta}}{\sqrt{2}\,(a}$$

Mathematica [A] time = 1.64012, size = 272, normalized size = 0.84

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{24b^{5/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}\left(a^2+b^2\right)} - \frac{6\sqrt{2}(a(A+B)+b(B-A))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{a^2+b^2}\right.}{12d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*((-6*Sqrt[2]*(b*(-A + B) + a*(A + B))*(ArcTan[1 - Sqrt
[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(a^2 + b
```

```
^2) + (24*b^(5/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a
]])/(a^(5/2)*(a^2 + b^2)) - (3*Sqrt[2]*(a*(A - B) + b*(A + B))*(Log[1 - Sqr
t[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]
] + Tan[c + d*x]]))/(a^2 + b^2) + (8*A)/(a*Tan[c + d*x]^(3/2)) + (24*(-(A*b
) + a*B))/(a^2*Sqrt[Tan[c + d*x]]))*Sqrt[Tan[c + d*x]])/(12*d)
```

Maple [C] time = 1.073, size = 22300, normalized size = 68.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{b\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/(b*tan(d*x + c) + a), x)
```

3.590 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=297

$$\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c-\right.}}{2\sqrt{2}d\left(a^2+b^2\right)}$$

```
[Out] -(((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*b^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*S
qrt[Cot[c + d*x]])/Sqrt[b]])/(a^(3/2)*(a^2 + b^2)*d) - (2*A*Sqrt[Cot[c + d*
x]])/(a*d) + ((b*(A - B) - a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] +
Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*Log[1 +
 Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.771008, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3581, 3607, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c-\right.}}{2\sqrt{2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] -(((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*b^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*S
qrt[Cot[c + d*x]])/Sqrt[b]])/(a^(3/2)*(a^2 + b^2)*d) - (2*A*Sqrt[Cot[c + d*
x]])/(a*d) + ((b*(A - B) - a*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] +
Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*Log[1 +
 Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
```

```
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \int \frac{\cot^{\frac{3}{2}}(c+dx)(B+A\cot(c+dx))}{b+a\cot(c+dx)}\,dx$$

$$= -\frac{2A\sqrt{\cot(c+dx)}}{ad} - \frac{2\int \frac{\frac{Ab}{2}+\frac{1}{2}aA\cot(c+dx)+\frac{1}{2}(Ab-aB)\cot^2(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}\,dx}{a}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}}{ad} - \frac{2\int \frac{\frac{1}{2}a(aA+bB)+\frac{1}{2}a(Ab-aB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{a\left(a^2+b^2\right)} - \frac{\left(b^2(Ab-aB)\right)\int \frac{}{\sqrt{\text{co}}}}{a\left(a^2\right.}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}}{ad} - \frac{4\,\text{Subst}\left(\int \frac{-\frac{1}{2}a(aA+bB)-\frac{1}{2}a(Ab-aB)x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{a\left(a^2+b^2\right)d} -$$

$$= -\frac{2A\sqrt{\cot(c+dx)}}{ad} + \frac{\left(2b^2(Ab-aB)\right)\text{Subst}\left(\int \frac{1}{b+ax^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{a\left(a^2+b^2\right)d} - \frac{(b}{}$$

$$= \frac{2b^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{3/2}\left(a^2+b^2\right)d} - \frac{2A\sqrt{\cot(c+dx)}}{ad} + \frac{(b(A-B)-a(A+B}{}$$

$$= \frac{2b^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{3/2}\left(a^2+b^2\right)d} - \frac{2A\sqrt{\cot(c+dx)}}{ad} + \frac{(b(A-B)-a(A+B}{}$$

$$= -\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} + \frac{(a(A-B)+b(A+B))}{\sqrt{2}\,(}$$

Mathematica [A] time = 0.876817, size = 249, normalized size = 0.84

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{8b^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\left(a^2+b^2\right)} + \frac{2\sqrt{2}(a(A-B)+b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{a^2+b^2} - \right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((2*Sqrt[2]*(a*(A - B) + b*(A + B))*(ArcTan[1 - Sqrt[2]
*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(a^2 + b^2)
 + (8*b^(3/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/
(a^(3/2)*(a^2 + b^2)) - (Sqrt[2]*(b*(-A + B) + a*(A + B))*(Log[1 - Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + T
an[c + d*x]]))/(a^2 + b^2) - (8*A)/(a*Sqrt[Tan[c + d*x]]))*Sqrt[Tan[c + d*x
]])/(4*d)
```

Maple [C] time = 0.668, size = 20614, normalized size = 69.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{b\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a), x)
```

3.591 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=278

$$-\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

```
[Out] -(((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*Sqrt[b]*(A*b - a*B)*ArcTan[(Sqrt[a]*S
qrt[Cot[c + d*x]])/Sqrt[b]])/(Sqrt[a]*(a^2 + b^2)*d) - ((a*(A - B) + b*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) + ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.459772, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3581, 3612, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}+\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] -(((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*Sqrt[b]*(A*b - a*B)*ArcTan[(Sqrt[a]*S
qrt[Cot[c + d*x]])/Sqrt[b]])/(Sqrt[a]*(a^2 + b^2)*d) - ((a*(A - B) + b*(A +
 B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 +
b^2)*d) + ((a*(A - B) + b*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3612

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*Sqrt[(c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)]])/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[1
/(a^2 + b^2), Int[Simp[A*(a*c + b*d) + B*(b*c - a*d) - (A*(b*c - a*d) - B*(
a*c + b*d))*Tan[e + f*x], x]/Sqrt[c + d*Tan[e + f*x]], x], x] - Dist[((b*c
- a*d)*(B*a - A*b))/(a^2 + b^2), Int[(1 + Tan[e + f*x]^2)/((a + b*Tan[e + f
*x])*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x
] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{a+b\tan(c+dx)}\,dx = \int \frac{\sqrt{\cot(c+dx)}(B+A\cot(c+dx))}{b+a\cot(c+dx)}\,dx$$

$$= \frac{\int \frac{-Ab+aB+(aA+bB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{a^2+b^2} + \frac{(b(Ab-aB))\int \frac{1+\cot^2(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{Ab-aB+(-aA-bB)x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{\left(a^2+b^2\right)d} + \frac{(b(Ab-aB))\,\mathrm{Subst}\left(\int \frac{}{\sqrt{-}}\right.}{\left(a^2+\right.}$$

$$= -\frac{(2b(Ab-aB))\,\mathrm{Subst}\left(\int \frac{1}{b+ax^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))}{}$$

$$= -\frac{2\sqrt{b}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{\sqrt{a}\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x}\right.}{2\left(a^2+b^2\right)d}$$

$$= -\frac{2\sqrt{b}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{\sqrt{a}\left(a^2+b^2\right)d} - \frac{(a(A-B)+b(A+B))\log\left(1-\sqrt{2}\sqrt{\mathrm{co}}\right.}{2\sqrt{2}\left(a^2+b^2\right)}$$

$$= -\frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))}{\sqrt{2}}$$

Mathematica [A] time = 0.376939, size = 215, normalized size = 0.77

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-2\sqrt{2}(a(A+B)+b(B-A))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(-2*Sqrt[2]*(b*(-A + B) + a*(A + B))*(ArcTan[1 - Sqrt[2
]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + (8*Sqrt[b
]*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[a] - Sqrt[
2]*(a*(A - B) + b*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))*Sqrt[Tan[c + d*x
]])/(4*(a^2 + b^2)*d)
```

Maple [C] time = 0.438, size = 4107, normalized size = 14.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d*2^(1/2)/a/(a^2+b^2)^(3/2)/(a+b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a
)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)-1)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1)/sin(d*x+c))^(1/2)*(2*a^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*B*b^3+2*A*EllipticF((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(a^2+b^2)^(3/2)*a^2+2
*A*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(a^
2+b^2)^(3/2)*b^2-2*A*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
),1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4-2*A*EllipticF((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2*2^(1/2))*(a^2+b^2)^(1/2)*b^4+I*A*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/
2)*a^2*b^2-A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1
/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a^2+A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4-A*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^
2+b^2)^(3/2)*a^2+A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
,1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4+2*a^3*EllipticPi((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))*A*b^2+
2*a*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^
2)^(1/2)),1/2*2^(1/2))*b^4*A-2*a^3*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*A*b^2-2*a*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1
/2*2^(1/2))*b^4*A+B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a^2-B*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4+B*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/
2))*(a^2+b^2)^(3/2)*a^2-B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4-2*a^4*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))
*B*b-2*a^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+
(a^2+b^2)^(1/2)),1/2*2^(1/2))*B*b^3+2*a^4*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*B*b-2*a^2*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/
2)-a),1/2*2^(1/2))*B*b^2*(a^2+b^2)^(1/2)-I*A*EllipticPi((-(cos(d*x+c)-1-sin
(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4-I*A*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/
```

```
2))*(a^2+b^2)^(3/2)*a^2-I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4-I*B*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/
2)*a^2+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2
*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^3+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a^2+I*A*Elli
pticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))
*(a^2+b^2)^(1/2)*a^4+3*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b^2+A*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2
)*a*b^3-A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*
I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a*b+3*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b+3*A*Ellip
ticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*
(a^2+b^2)^(1/2)*a^2*b^2+A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^3-2*a^2*EllipticPi((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2
))*A*b^2*(a^2+b^2)^(1/2)+2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))*b^3*A*(a^2+b^2)^(1/2)*a-2*a^2
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^
(1/2)),1/2*2^(1/2))*B*b^2*(a^2+b^2)^(1/2)+2*a^3*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*B*b*(a
^2+b^2)^(1/2)+I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a^2+I*B*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^4+3*I
*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2
^(1/2))*(a^2+b^2)^(1/2)*a^2*b^2+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b+I*B*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^
2+b^2)^(3/2)*a*b+I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^3-I*A*EllipticPi((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a*
b-I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/
2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b-I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b^2-I*A*Ellip
ticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*
(a^2+b^2)^(1/2)*a*b^3-3*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b-3*I*B*EllipticPi((-(
cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)
^(1/2)*a^2*b^2-I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)
,1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^3-I*B*EllipticPi((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a*b+
3*I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/
2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a*b-4*A*EllipticF
```

```
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*(a^2+b^2)^(1/2)
*a^3*b-4*A*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1
/2))*(a^2+b^2)^(1/2)*a^2*b^2-4*A*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2),1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^3-A*EllipticPi((-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a*b
+3*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2
*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b-2*a^2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*A*b^2*(a^2+b^2)^
(1/2)+2*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^
2+b^2)^(1/2)-a),1/2*2^(1/2))*b^3*A*(a^2+b^2)^(1/2)*a-B*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)
*a*b-B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1
/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b+B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b^2+B*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^
2+b^2)^(1/2)*a*b^3-B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a*b-B*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3*b+
B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^
(1/2))*(a^2+b^2)^(1/2)*a^2*b^2+B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin
(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^3+2*a^3*EllipticP
i((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2
*2^(1/2))*B*b*(a^2+b^2)^(1/2))/sin(d*x+c)^2/cos(d*x+c)*(cos(d*x+c)+1)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\sqrt{\cot{(c + dx)}}}{a + b\tan{(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(cot(c + d*x))/(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan{(dx + c)} + A)\sqrt{\cot{(dx + c)}}}{b\tan{(dx + c)} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a), x)
```

3.592 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=278

$$-\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}+\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

```
[Out] ((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*Sqrt[a]*(A*b - a*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(Sqrt[b]*(a^2 + b^2)*d) - ((b*(A - B) - a*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) + ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.46298, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {3581, 3613, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}+\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])),x]
```


```
[Out] ((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*Sqrt[a]*(A*b - a*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(Sqrt[b]*(a^2 + b^2)*d) - ((b*(A - B) - a*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)*d) + ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c
+ d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3613

```
Int[(((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_
.)*(x_)])^(n_))/((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> Dist[
1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n*Simp[a*A + b*B - (A*b - a*B)*Tan[
e + f*x], x], x], x] + Dist[(b*(A*b - a*B))/(a^2 + b^2), Int[((c + d*Tan[e
+ f*x])^n*(1 + Tan[e + f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ
[c^2 + d^2, 0]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))}\,dx = \int \frac{B+A\cot(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}\,dx$$

$$= \frac{\int \frac{aA+bB+(Ab-aB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{a^2+b^2} - \frac{(a(Ab-aB))\int \frac{1+\cot^2(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}\,dx}{a^2+b^2}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{-aA-bB+(-Ab+aB)x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{\left(a^2+b^2\right)d} - \frac{(a(Ab-aB))\,\mathrm{Subst}\left(\int \frac{}{\sqrt{-}} \right.}{\left(a^2+\right.}$$

$$= \frac{(2a(Ab-aB))\,\mathrm{Subst}\left(\int \frac{1}{b+ax^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{\left(a^2+b^2\right)d} + \frac{(b(A-B)-a(A+B))\,\mathrm{Su}}{(a}$$

$$= \frac{2\sqrt{a}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\left(a^2+b^2\right)d} - \frac{(b(A-B)-a(A+B))\,\mathrm{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-} \right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= \frac{2\sqrt{a}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{\sqrt{b}\left(a^2+b^2\right)d} - \frac{(b(A-B)-a(A+B))\log\left(1-\sqrt{2}\sqrt{\cot(\right.}{2\sqrt{2}\left(a^2+b^2\right)d}$$

$$= \frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(a(A-B)+b(A+B))\,\mathrm{ta}}{\sqrt{2}\,(a}$$

<u>Mathematica</u> [A] time = 0.402428, size = 215, normalized size = 0.77

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(2\sqrt{2}(a(A-B)+b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])),x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*(2*Sqrt[2]*(a*(A - B) + b*(A + B))*(ArcTan[1 - Sqrt[2]
*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + (8*Sqrt[a]
*(A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[b] - Sqrt[2
]*(b*(-A + B) + a*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*
x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))*Sqrt[Tan[c + d*x
]])/(4*(a^2 + b^2)*d)
```

Maple [C] time = 0.43, size = 3684, normalized size = 13.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2/d*2^(1/2)/(a^2+b^2)^(3/2)/(a+b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a)*
((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1
/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*(cos(d*x+c)+1)^2*(cos(d*x
+c)-1)*(-3*I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2
+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^2-2*B*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*a^4+2*B*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(
1/2)),1/2*2^(1/2))*a^4+3*I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b+B*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3
/2)*b-B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3-B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*b^3+B*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2
)^(3/2)*a+B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/
2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*b-B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))
/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3-B*EllipticPi(
(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b
^2)^(1/2)*b^3-2*B*(a^2+b^2)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))*a^3-2*B*(a^2+b^2)^(1/2
)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)
^(1/2)-a),1/2*2^(1/2))*a^3+2*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))*a^2*b^2-2*B*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2
^(1/2))*a^2*b^2+I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a+I*B*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*b^3-A*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/
2))*(a^2+b^2)^(1/2)*a^2*b+A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^2-I*B*EllipticPi((-(co
s(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(
3/2)*b-I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3+2*B*(a^2+b^2)^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)
)*a^2*b-I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/
2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3-I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x
```

```
+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*b^3-I*A*Ellip
ticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*
(a^2+b^2)^(3/2)*a-I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1
/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*b-I*B*EllipticPi((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a-I*B
*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(
1/2))*(a^2+b^2)^(1/2)*b^3-A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b+A*EllipticPi((-(cos(
d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/
2)*a*b^2+2*A*(a^2+b^2)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))*a^2*b-2*A*(a^2+b^2)^(1/2)*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1
/2)),1/2*2^(1/2))*a*b^2+2*A*(a^2+b^2)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*a^2*b+A*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))*(a^2+b^2)^(3/2)*a-A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*b-A*EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^3+A*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*(a^2+b^2)^(1/2)*b^3+A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a-A*EllipticPi((-(cos(d*x+c
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*b-
A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^
(1/2))*(a^2+b^2)^(1/2)*a^3+A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x
+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*b^3-2*A*EllipticPi((-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2)
)*a^3*b-2*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b
+(a^2+b^2)^(1/2)),1/2*2^(1/2))*a*b^3+2*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x
+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*a^3*b+2*A*Ell
ipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2
)-a),1/2*2^(1/2))*a*b^3+B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a+3*I*A*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)
*a*b^2+I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^2-3*I*A*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b-I*B*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*(a^2+b^2)^(1/2)*a*b^2-I*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^2*b+I*B*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2
)^(1/2)*a^2*b-2*A*(a^2+b^2)^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),-a/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2))*a*b^2-3*B*EllipticPi
((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+
b^2)^(1/2)*a^2*b-3*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/
2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^2-3*B*EllipticPi((-(cos(d*x+c
```

```
)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*a^
2*b-3*B*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,
1/2*2^(1/2))*(a^2+b^2)^(1/2)*a*b^2+2*B*(a^2+b^2)^(1/2)*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),a/(a+b+(a^2+b^2)^(1/2)),1/2*2^(1/2))*a
^2*b+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I
,1/2*2^(1/2))*(a^2+b^2)^(3/2)*a+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*b+I*A*EllipticPi((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(a^2+b^
2)^(1/2)*a^3+I*A*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1
/2-1/2*I,1/2*2^(1/2))*(a^2+b^2)^(1/2)*b^3+I*B*EllipticPi((-(cos(d*x+c)-1-si
n(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*(a^2+b^2)^(3/2)*b+I*B*El
lipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2
))*(a^2+b^2)^(1/2)*a^3)/sin(d*x+c)^3/(cos(d*x+c)/sin(d*x+c))^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorithm="
maxima")

[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorithm="
fricas")

[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan(c + dx)}{(a + b\tan(c + dx))\sqrt{\cot(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/((a + b*tan(c + d*x))*sqrt(cot(c + d*x))), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx + c) + A}{(b\tan(dx + c) + a)\sqrt{\cot(dx + c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)*sqrt(cot(d*x + c))), x
)
```

3.593 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=297

$$\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

```
[Out] ((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*a^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(b^(3/2)*(a^2 + b^2)*d) + (2*B)/(b*d*Sqrt[Cot[c +
 d*x]]) + ((a*(A - B) + b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sq
rt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 0.760464, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3581, 3609, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(a(A-B)+b(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])),x]
```


```
[Out] ((b*(A - B) - a*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(
a^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*
x]]])/(Sqrt[2]*(a^2 + b^2)*d) - (2*a^(3/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(b^(3/2)*(a^2 + b^2)*d) + (2*B)/(b*d*Sqrt[Cot[c +
 d*x]]) + ((a*(A - B) + b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot
[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d) - ((a*(A - B) + b*(A + B))*Log[1 + Sq
rt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
```

```
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = \int \frac{B+A\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(b+a\cot(c+dx))}\,dx$$

$$= \frac{2B}{bd\sqrt{\cot(c+dx)}} + \frac{2\int \frac{\frac{1}{2}(Ab-aB)-\frac{1}{2}bB\cot(c+dx)-\frac{1}{2}aB\cot^2(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}\,dx}{b}$$

$$= \frac{2B}{bd\sqrt{\cot(c+dx)}} + \frac{2\int \frac{\frac{1}{2}b(Ab-aB)-\frac{1}{2}b(aA+bB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{b\left(a^2+b^2\right)} + \frac{\left(a^2(Ab-aB)\right)\int \frac{1}{\sqrt{\cot(c+}}}{b\left(a^2+b\right.}$$

$$= \frac{2B}{bd\sqrt{\cot(c+dx)}} + \frac{4\,\mathrm{Subst}\left(\int \frac{-\frac{1}{2}b(Ab-aB)+\frac{1}{2}b(aA+bB)x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{b\left(a^2+b^2\right)d} + \frac{\left(a^2\right.}{}$$

$$= \frac{2B}{bd\sqrt{\cot(c+dx)}} - \frac{\left(2a^2(Ab-aB)\right)\mathrm{Subst}\left(\int \frac{1}{b+ax^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{b\left(a^2+b^2\right)d} - \frac{(b(A-}{}$$

$$= -\frac{2a^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}\left(a^2+b^2\right)d} + \frac{2B}{bd\sqrt{\cot(c+dx)}} - \frac{(b(A-B)-a(A+B}{}$$

$$= -\frac{2a^{3/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}\left(a^2+b^2\right)d} + \frac{2B}{bd\sqrt{\cot(c+dx)}} + \frac{(a(A-B)+b(A+B}{}$$

$$= \frac{(b(A-B)-a(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} - \frac{(b(A-B)-a(A+B))\tan}{\sqrt{2}\left(a^2\right.}$$

Mathematica [A] time = 0.549299, size = 251, normalized size = 0.85

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(8a^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)-8\sqrt{b}B\left(a^2+b^2\right)\sqrt{\tan(c+dx)}+2\sqrt{2}b^{3/2}(b(A-B)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*(2*Sqrt[2]*b^(3/2)*(b*(A - B) - a*(A + B))*(ArcTan[1 -
 Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]) + 8*
a^(3/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]] - Sqrt[
2]*b^(3/2)*(a*(A - B) + b*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Ta
n[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) - 8*Sqrt[
b]*(a^2 + b^2)*B*Sqrt[Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/(4*b^(3/2)*(a^2 +
b^2)*d)
```

Maple [C] time = 0.401, size = 9867, normalized size = 33.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B \tan(dx + c) + A}{(b \tan(dx + c) + a) \cot(dx + c)^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)*cot(d*x + c)^(3/2)), x
)
```

3.594 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=325

$$\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c-\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

```
[Out] -(((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*a^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*S
qrt[Cot[c + d*x]])/Sqrt[b]])/(b^(5/2)*(a^2 + b^2)*d) + (2*B)/(3*b*d*Cot[c +
 d*x]^(3/2)) + (2*(A*b - a*B))/(b^2*d*Sqrt[Cot[c + d*x]]) + ((b*(A - B) - a
*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a
^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
+ Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rubi [A] time = 1.09039, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)}-\frac{(b(A-B)-a(A+B))\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c-\right.}{2\sqrt{2}d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] -(((a*(A - B) + b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]
*(a^2 + b^2)*d)) + ((a*(A - B) + b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c +
 d*x]]])/(Sqrt[2]*(a^2 + b^2)*d) + (2*a^(5/2)*(A*b - a*B)*ArcTan[(Sqrt[a]*S
qrt[Cot[c + d*x]])/Sqrt[b]])/(b^(5/2)*(a^2 + b^2)*d) + (2*B)/(3*b*d*Cot[c +
 d*x]^(3/2)) + (2*(A*b - a*B))/(b^2*d*Sqrt[Cot[c + d*x]]) + ((b*(A - B) - a
*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a
^2 + b^2)*d) - ((b*(A - B) - a*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
+ Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = \int \frac{B+A\cot(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(b+a\cot(c+dx))}\,dx$$

$$= \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2\int \frac{\frac{3}{2}(Ab-aB)-\frac{3}{2}bB\cot(c+dx)-\frac{3}{2}aB\cot^2(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(b+a\cot(c+dx))}\,dx}{3b}$$

$$= \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{b^2d\sqrt{\cot(c+dx)}} + \frac{4\int \frac{-\frac{3}{4}\left(aAb-a^2B+b^2B\right)-\frac{3}{4}Ab^2\cot(c+dx)-\frac{3}{4}a(A}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}}{3b^2}$$

$$= \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{b^2d\sqrt{\cot(c+dx)}} + \frac{4\int \frac{-\frac{3}{4}b^2(aA+bB)-\frac{3}{4}b^2(Ab-aB)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{3b^2\left(a^2+b^2\right)}$$

$$= \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{b^2d\sqrt{\cot(c+dx)}} + \frac{8\,\text{Subst}\left(\int \frac{\frac{3}{4}b^2(aA+bB)+\frac{3}{4}b^2(Ab-aB)x^2}{1+x^4}\,dx,\right.}{3b^2\left(a^2+b^2\right)d}$$

$$= \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{b^2d\sqrt{\cot(c+dx)}} + \frac{\left(2a^3(Ab-aB)\right)\text{Subst}\left(\int \frac{1}{b+ax^2}\,dx,x,\right.}{b^2\left(a^2+b^2\right)d}$$

$$= \frac{2a^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}\left(a^2+b^2\right)d} + \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{b^2d\sqrt{\cot(c+dx)}} +$$

$$= \frac{2a^{5/2}(Ab-aB)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}\left(a^2+b^2\right)d} + \frac{2B}{3bd\cot^{\frac{3}{2}}(c+dx)} + \frac{2(Ab-aB)}{b^2d\sqrt{\cot(c+dx)}} +$$

$$= -\frac{(a(A-B)+b(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)d} + \frac{(a(A-B)+b(A+B)}{\sqrt{2}}$$

Mathematica [A] time = 0.997929, size = 272, normalized size = 0.84

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{24a^{5/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}\left(a^2+b^2\right)} + \frac{6\sqrt{2}(a(A-B)+b(A+B))\left(\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\right)}{a^2+b^2}\right.}{12d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*((6*Sqrt[2]*(a*(A - B) + b*(A + B))*
(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d
*x]]]))/(a^2 + b^2) + (24*a^(5/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c
 + d*x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)) - (3*Sqrt[2]*(b*(-A + B) + a*(A +
 B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*
Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(a^2 + b^2) + (24*(A*b - a*B)*Sqrt[Tan
[c + d*x]])/b^2 + (8*B*Tan[c + d*x]^(3/2))/b))/(12*d)
```

Maple [C] time = 0.772, size = 12107, normalized size = 37.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorithm="
fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorithm="
giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)*cot(d*x + c)^(5/2)), x
)
```

3.595 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=438

$$\frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{ad\left(a^2+b^2\right)(a\cot(c+dx)+b)}-\frac{\left(2a^2A-abB+3Ab^2\right)\sqrt{\cot(c+dx)}}{a^2d\left(a^2+b^2\right)}+\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\log\left(\right.}{2\sqrt{2}d\left(a^2+b^2\right.}$$

```
[Out] -(((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((a^2*(A - B) - b^2*(A - B) + 2*a*
b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) + (b^(3/2)*(7*a^2*A*b + 3*A*b^3 - 5*a^3*B - a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(a^(5/2)*(a^2 + b^2)^2*d) - ((2*a^2*A + 3*A*b^2 -
 a*b*B)*Sqrt[Cot[c + d*x]])/(a^2*(a^2 + b^2)*d) + (b*(A*b - a*B)*Cot[c + d*
x]^(3/2))/(a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])) + ((2*a*b*(A - B) - a^2*(A
 + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2
*Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Lo
g[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*
d)
```

Rubi [A] time = 1.29836, antiderivative size = 438, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3605, 3647, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{ad\left(a^2+b^2\right)(a\cot(c+dx)+b)}-\frac{\left(2a^2A-abB+3Ab^2\right)\sqrt{\cot(c+dx)}}{a^2d\left(a^2+b^2\right)}+\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\log\left(\right.}{2\sqrt{2}d\left(a^2+b^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```

```
[Out] -(((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((a^2*(A - B) - b^2*(A - B) + 2*a*
b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) + (b^(3/2)*(7*a^2*A*b + 3*A*b^3 - 5*a^3*B - a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(a^(5/2)*(a^2 + b^2)^2*d) - ((2*a^2*A + 3*A*b^2 -
 a*b*B)*Sqrt[Cot[c + d*x]])/(a^2*(a^2 + b^2)*d) + (b*(A*b - a*B)*Cot[c + d*
x]^(3/2))/(a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])) + ((2*a*b*(A - B) - a^2*(A
```

```
 + B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2
*Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Lo
g[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*
d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
```

```
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
```

```
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \int \frac{\cot^{\frac{5}{2}}(c+dx)(B+A\cot(c+dx))}{(b+a\cot(c+dx))^2}\,dx$$

$$= \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{a(a^2+b^2)d(b+a\cot(c+dx))} - \frac{\int \frac{\sqrt{\cot(c+dx)}\left(-\frac{3}{2}b(Ab-aB)+a(Ab-aB)\cot(c+dx)-\frac{1}{2}(2a^2}{b+a\cot(c+dx)}}{a(a^2+b^2)}$$

$$= -\frac{(2a^2A+3Ab^2-abB)\sqrt{\cot(c+dx)}}{a^2(a^2+b^2)d} + \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{a(a^2+b^2)d(b+a\cot(c+dx))} + \frac{2\int}{}$$

$$= -\frac{(2a^2A+3Ab^2-abB)\sqrt{\cot(c+dx)}}{a^2(a^2+b^2)d} + \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{a(a^2+b^2)d(b+a\cot(c+dx))} + \frac{2\int}{}$$

$$= -\frac{(2a^2A+3Ab^2-abB)\sqrt{\cot(c+dx)}}{a^2(a^2+b^2)d} + \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{a(a^2+b^2)d(b+a\cot(c+dx))} + \frac{4\,\mathrm{Su}}{}$$

$$= -\frac{(2a^2A+3Ab^2-abB)\sqrt{\cot(c+dx)}}{a^2(a^2+b^2)d} + \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{a(a^2+b^2)d(b+a\cot(c+dx))} + \frac{(b^2}{}$$

$$= \frac{b^{3/2}(7a^2Ab+3Ab^3-5a^3B-ab^2B)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{5/2}(a^2+b^2)^2d} - \frac{(2a^2A+3Ab^2-ab}{a^2(a^2+}$$

$$= \frac{b^{3/2}(7a^2Ab+3Ab^3-5a^3B-ab^2B)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{5/2}(a^2+b^2)^2d} - \frac{(2a^2A+3Ab^2-ab}{a^2(a^2+}$$

$$= -\frac{(a^2(A-B)-b^2(A-B)+2ab(A+B))\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}(a^2+b^2)^2d} + \frac{(a^2(A}{}$$

Mathematica [A] time = 5.55864, size = 383, normalized size = 0.87

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{4b^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}(a^2+b^2)} - \frac{8b^{3/2}(3a^2Ab-2a^3B+Ab^3)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{5/2}(a^2+b^2)^2} + \frac{2\sqrt{2}(a^2(A-B)+2ab(A+B)+b^2(}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
```

```
x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*((2*Sqrt[2]*(a^2*(A - B) + b^2*(-A +
 B) + 2*a*b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]]))/(a^2 + b^2)^2 + (4*b^(3/2)*(-(A*b) + a*B)*ArcT
an[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(a^(5/2)*(a^2 + b^2)) - (8*b^(3/2
)*(3*a^2*A*b + A*b^3 - 2*a^3*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]
])/(a^(5/2)*(a^2 + b^2)^2) - (Sqrt[2]*(2*a*b*(-A + B) + a^2*(A + B) - b^2*(
A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[
2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(a^2 + b^2)^2 - (8*A)/(a^2*Sqrt[Tan
[c + d*x]]) + (4*b^2*(-(A*b) + a*B)*Sqrt[Tan[c + d*x]])/(a^2*(a^2 + b^2)*(a
 + b*Tan[c + d*x]))))/(4*d)
```

Maple [C] time = 1.804, size = 57937, normalized size = 132.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^2, x
)
```

3.596 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=392

$$\frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{ad\left(a^2+b^2\right)(a\cot(c+dx)+b)}-\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)^2}+\frac{(a^2}{}$$

```
[Out] -((((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((2*a*b*(A - B) - a^2*(A + B) + b^
2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) - (Sqrt[b]*(5*a^2*A*b + A*b^3 - 3*a^3*B + a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt[C
ot[c + d*x]])/Sqrt[b]])/(a^(3/2)*(a^2 + b^2)^2*d) + (b*(A*b - a*B)*Sqrt[Cot
[c + d*x]])/(a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])) - ((a^2*(A - B) - b^2*(A
 - B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/
(2*Sqrt[2]*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*
Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^
2*d)
```

Rubi [A] time = 0.940141, antiderivative size = 392, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3581, 3605, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{ad\left(a^2+b^2\right)(a\cot(c+dx)+b)}-\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)^2}+\frac{(a^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,x]
```


```
[Out] -((((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((2*a*b*(A - B) - a^2*(A + B) + b^
2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) - (Sqrt[b]*(5*a^2*A*b + A*b^3 - 3*a^3*B + a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt[C
ot[c + d*x]])/Sqrt[b]])/(a^(3/2)*(a^2 + b^2)^2*d) + (b*(A*b - a*B)*Sqrt[Cot
[c + d*x]])/(a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])) - ((a^2*(A - B) - b^2*(A
 - B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/
(2*Sqrt[2]*(a^2 + b^2)^2*d) + ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*
Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^
```

2*d)

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^2}\,dx = \int \frac{\cot^{\frac{3}{2}}(c+dx)(B+A\cot(c+dx))}{(b+a\cot(c+dx))^2}\,dx$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{a\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{\int \frac{-\frac{1}{2}b(Ab-aB)+a(Ab-aB)\cot(c+dx)-\frac{1}{2}\left(2a^2A+Ab^2+abB\right.}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}}{a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{a\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{\int \frac{a\left(2aAb-a^2B+b^2B\right)-a\left(a^2A-Ab^2+2abB\right)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{a\left(a^2+b^2\right)^2}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{a\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{2\,\mathrm{Subst}\left(\int \frac{-a\left(2aAb-a^2B+b^2B\right)+a\left(a^2A-Ab^2+2abB\right)x}{1+x^4}\right.}{a\left(a^2+b^2\right)^2 d}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{a\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{\left(b\left(5a^2Ab+Ab^3-3a^3B+ab^2B\right)\right)\mathrm{Subst}\left(\int\right.}{a\left(a^2+b^2\right)^2 d}$$

$$= -\frac{\sqrt{b}\left(5a^2Ab+Ab^3-3a^3B+ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{3/2}\left(a^2+b^2\right)^2 d} + \frac{b(Ab-aB)\sqrt{\mathrm{co}}}{a\left(a^2+b^2\right)d(b+a}$$

$$= -\frac{\sqrt{b}\left(5a^2Ab+Ab^3-3a^3B+ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{a^{3/2}\left(a^2+b^2\right)^2 d} + \frac{b(Ab-aB)\sqrt{\mathrm{co}}}{a\left(a^2+b^2\right)d(b+a}$$

$$= -\frac{\left(2ab(A-B)-a^2(A+B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} + \frac{\left(2ab(\right.}{}$$

Mathematica [A] time = 2.62431, size = 341, normalized size = 0.87

$$\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{4\sqrt{b}\left(a^2+b^2\right)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}}+2\sqrt{2}\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\left(\tan^{-1}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^2,
x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(2*Sqrt[2]*(2*a*b*(A - B) - a^2*(A +
 B) + b^2*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sqr
t[2]*Sqrt[Tan[c + d*x]]]) + (4*Sqrt[b]*(a^2 + b^2)*(A*b - a*B)*ArcTan[(Sqrt
[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/a^(3/2) + (8*Sqrt[b]*(2*a*A*b - a^2*B + b
^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[a] - Sqrt[2]*(a^2*
(A - B) + b^2*(-A + B) + 2*a*b*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]
 + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]) + (4
*b*(a^2 + b^2)*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(a*(a + b*Tan[c + d*x]))))/(
4*(a^2 + b^2)^2*d)
```

Maple [C] time = 1.192, size = 36048, normalized size = 92.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^2, x
)
```

3.597 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=390

$$-\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{d\left(a^2+b^2\right)(a\cot(c+dx)+b)}-\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)^2}+$$

```
[Out] ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) +
 ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[c + d*x]
])/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*(a^2 + b^2)^2*d) - ((A*b - a*B)*Sqrt[Cot[c +
d*x]])/((a^2 + b^2)*d*(b + a*Cot[c + d*x])) - ((2*a*b*(A - B) - a^2*(A + B)
 + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt
[2]*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Log[1 +
 Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d)
```

Rubi [A] time = 0.9201, antiderivative size = 390, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3581, 3608, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{d\left(a^2+b^2\right)(a\cot(c+dx)+b)}-\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) +
 ((3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[c + d*x]
])/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*(a^2 + b^2)^2*d) - ((A*b - a*B)*Sqrt[Cot[c +
d*x]])/((a^2 + b^2)*d*(b + a*Cot[c + d*x])) - ((2*a*b*(A - B) - a^2*(A + B)
 + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt
[2]*(a^2 + b^2)^2*d) + ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Log[1 +
 Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d)
```


Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^2}\,dx = \int \frac{\sqrt{\cot(c+dx)}(B+A\cot(c+dx))}{(b+a\cot(c+dx))^2}\,dx$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{\left(a^2+b^2\right)d(b+a\cot(c+dx))} + \frac{\int \frac{-\frac{1}{2}a(Ab-aB)+a(aA+bB)\cot(c+dx)+\frac{1}{2}a(Ab-aB)\cot^2(c}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}}{a\left(a^2+b^2\right)}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{\left(a^2+b^2\right)d(b+a\cot(c+dx))} + \frac{\int \frac{a\left(a^2A-Ab^2+2abB\right)+a\left(2aAb-a^2B+b^2B\right)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,dx}{a\left(a^2+b^2\right)^2}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{\left(a^2+b^2\right)d(b+a\cot(c+dx))} + \frac{2\,\mathrm{Subst}\left(\int \frac{-a\left(a^2A-Ab^2+2abB\right)-a\left(2aAb-a^2B+b^2B\right)x}{1+x^4}\right.}{a\left(a^2+b^2\right)^2 d}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{\left(a^2+b^2\right)d(b+a\cot(c+dx))} + \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\mathrm{Subst}\left(\int \frac{1}{b+a}\right.}{\left(a^2+b^2\right)^2 d}$$

$$= \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\left(a^2+b^2\right)^2 d} - \frac{(Ab-aB)\sqrt{\cot(c+}}{\left(a^2+b^2\right)d(b+a\cot(c-}$$

$$= \frac{\left(3a^2Ab-Ab^3-a^3B+3ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\left(a^2+b^2\right)^2 d} - \frac{(Ab-aB)\sqrt{\cot(c+}}{\left(a^2+b^2\right)d(b+a\cot(c-}$$

$$= \frac{\left(a^2(A-B)-b^2(A-B)+2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} - \frac{\left(a^2(A-\right.}{}$$

Mathematica [A] time = 2.86223, size = 336, normalized size = 0.86

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{4\left(a^2+b^2\right)(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}+2\sqrt{2}\left(a^2(A-B)+2ab(A+B)+b^2(B-A)\right)\left(\tan^{-1}\left(1\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^2),
x]
```

```
[Out] -(Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(2*Sqrt[2]*(a^2*(A - B) + b^2*(-A +
 B) + 2*a*b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]]) - (4*(a^2 + b^2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]
*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*Sqrt[b]) + (8*Sqrt[b]*(a^2*A - A*b^
2 + 2*a*b*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[a] + Sqrt[2
]*(2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c +
 d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
) - (4*(a^2 + b^2)*(-(A*b) + a*B)*Sqrt[Tan[c + d*x]])/(a + b*Tan[c + d*x]))
)/(4*(a^2 + b^2)^2*d)
```

Maple [C] time = 0.824, size = 40736, normalized size = 104.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A+B\tan(c+dx)}{(a+b\tan(c+dx))^2\sqrt{\cot(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Integral((A + B*tan(c + d*x))/((a + b*tan(c + d*x))**2*sqrt(cot(c + d*x))),
 x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^2\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^2*sqrt(cot(d*x + c))),
 x)
```

3.598 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=392

$$\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{bd\left(a^2+b^2\right)(a\cot(c+dx)+b)}+\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)^2}-\frac{\left(a^2(\right.}{}$$

```
[Out] ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) -
 (Sqrt[a]*(a^2*A*b - 3*A*b^3 + a^3*B + 5*a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[
c + d*x]])/Sqrt[b]])/(b^(3/2)*(a^2 + b^2)^2*d) + (a*(A*b - a*B)*Sqrt[Cot[c
+ d*x]])/(b*(a^2 + b^2)*d*(b + a*Cot[c + d*x])) + ((a^2*(A - B) - b^2*(A -
B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*
Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*Log
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d
)
```

Rubi [A] time = 0.916095, antiderivative size = 392, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 13, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.394, Rules used = {3581, 3609, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{bd\left(a^2+b^2\right)(a\cot(c+dx)+b)}+\frac{\left(a^2(A-B)+2ab(A+B)-b^2(A-B)\right)\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d\left(a^2+b^2\right)^2}-\frac{\left(a^2(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c
+ d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(
A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d) -
 (Sqrt[a]*(a^2*A*b - 3*A*b^3 + a^3*B + 5*a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[
c + d*x]])/Sqrt[b]])/(b^(3/2)*(a^2 + b^2)^2*d) + (a*(A*b - a*B)*Sqrt[Cot[c
+ d*x]])/(b*(a^2 + b^2)*d*(b + a*Cot[c + d*x])) + ((a^2*(A - B) - b^2*(A -
B) + 2*a*b*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*
Sqrt[2]*(a^2 + b^2)^2*d) - ((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*Log
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d
```

)

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
```

```
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx = \int \frac{B+A\cot(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2}\,dx$$

$$= \frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{b\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{\int \frac{\frac{1}{2}\left(-aAb-a^2B-2b^2B\right)-b(Ab-aB)\cot(c+dx)+\frac{1}{2}a(Ab-a}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))}}{b\left(a^2+b^2\right)}$$

$$= \frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{b\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{\int \frac{-b\left(2aAb-a^2B+b^2B\right)+b\left(a^2A-Ab^2+2abB\right)\cot(c+dx)}{\sqrt{\cot(c+dx)}}\,d}{b\left(a^2+b^2\right)^2}$$

$$= \frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{b\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{2\,\mathrm{Subst}\left(\int \frac{b\left(2aAb-a^2B+b^2B\right)-b\left(a^2A-Ab^2+2abB\right)x}{1+x^4}\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= \frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{b\left(a^2+b^2\right)d(b+a\cot(c+dx))} - \frac{\left(a\left(a^2Ab-3Ab^3+a^3B+5ab^2B\right)\right)\mathrm{Subst}\left(\right.}{b\left(a^2+b^2\right)^2 d}$$

$$= -\frac{\sqrt{a}\left(a^2Ab-3Ab^3+a^3B+5ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}\left(a^2+b^2\right)^2 d} + \frac{a(Ab-aB)\sqrt{c}}{b\left(a^2+b^2\right)d(b+}$$

$$= -\frac{\sqrt{a}\left(a^2Ab-3Ab^3+a^3B+5ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{3/2}\left(a^2+b^2\right)^2 d} + \frac{a(Ab-aB)\sqrt{c}}{b\left(a^2+b^2\right)d(b+}$$

$$= \frac{\left(2ab(A-B)-a^2(A+B)+b^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2 d} - \frac{\left(2ab(\right.}{}$$

Mathematica [A] time = 2.552, size = 342, normalized size = 0.87

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{4\sqrt{a}(a^2+b^2)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}}-2\sqrt{2}\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)\left(\tan^{-1}\left(1\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^2),
x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-2*Sqrt[2]*(2*a*b*(A - B) - a^2*(A
+ B) + b^2*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + Sq
rt[2]*Sqrt[Tan[c + d*x]]]) + (4*Sqrt[a]*(a^2 + b^2)*(A*b - a*B)*ArcTan[(Sqr
t[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/b^(3/2) + (8*Sqrt[a]*(-2*A*b^3 + a*(a^2
+ 3*b^2)*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/b^(3/2) + Sqrt[2]
*(a^2*(A - B) + b^2*(-A + B) + 2*a*b*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c +
 d*x]] + Tan[c + d*x]] - Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
) + (4*a*(a^2 + b^2)*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(b*(a + b*Tan[c + d*x]
))))/(4*(a^2 + b^2)^2*d)
```

Maple [C] time = 0.675, size = 40734, normalized size = 103.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(dx+c\right)+A}{\left(b\tan\left(dx+c\right)+a\right)^2\cot\left(dx+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^2*cot(d*x + c)^(3/2)),
 x)
```

3.599 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx$

Optimal. Leaf size=437

$$\frac{a(Ab-aB)}{bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a\cot(c+dx)+b)}-\frac{-3a^2B+aAb-2b^2B}{b^2d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}}+\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)l}{2\sqrt{2}d\left(a^2\right.}$$

```
[Out] -(((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((a^2*(A - B) - b^2*(A - B) + 2*a*
b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) - (a^(3/2)*(a^2*A*b + 5*A*b^3 - 3*a^3*B - 7*a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(b^(5/2)*(a^2 + b^2)^2*d) - (a*A*b - 3*a^2*B - 2*
b^2*B)/(b^2*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]) + (a*(A*b - a*B))/(b*(a^2 + b
^2)*d*Sqrt[Cot[c + d*x]]*(b + a*Cot[c + d*x])) + ((2*a*b*(A - B) - a^2*(A +
 B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*S
qrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Log[
1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d)
```

Rubi [A] time = 1.28165, antiderivative size = 437, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a(Ab-aB)}{bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a\cot(c+dx)+b)}-\frac{-3a^2B+aAb-2b^2B}{b^2d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}}+\frac{\left(a^2(-(A+B))+2ab(A-B)+b^2(A+B)\right)l}{2\sqrt{2}d\left(a^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2),x]
```


```
[Out] -(((a^2*(A - B) - b^2*(A - B) + 2*a*b*(A + B))*ArcTan[1 - Sqrt[2]*Sqrt[Cot[
c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d)) + ((a^2*(A - B) - b^2*(A - B) + 2*a*
b*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^2*d
) - (a^(3/2)*(a^2*A*b + 5*A*b^3 - 3*a^3*B - 7*a*b^2*B)*ArcTan[(Sqrt[a]*Sqrt
[Cot[c + d*x]])/Sqrt[b]])/(b^(5/2)*(a^2 + b^2)^2*d) - (a*A*b - 3*a^2*B - 2*
b^2*B)/(b^2*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]) + (a*(A*b - a*B))/(b*(a^2 + b
^2)*d*Sqrt[Cot[c + d*x]]*(b + a*Cot[c + d*x])) + ((2*a*b*(A - B) - a^2*(A +
 B) + b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*S
```

```
qrt[2]*(a^2 + b^2)^2*d) - ((2*a*b*(A - B) - a^2*(A + B) + b^2*(A + B))*Log[
1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^2*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
```

```
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^2}\,dx = \int \frac{B+A\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(b+a\cot(c+dx))^2}\,dx$$

$$= \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))} - \frac{\int \frac{\frac{1}{2}\left(aAb-3a^2B-2b^2B\right)-b(Ab-aB)\cot(c\cdots}{\cot^{\frac{3}{2}}(c+dx)(b+a\,c\cdots}}{b\left(a^2+b\cdots\right.}$$

$$= -\frac{aAb-3a^2B-2b^2B}{b^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))} - \cdots$$

$$= -\frac{aAb-3a^2B-2b^2B}{b^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))} - \cdots$$

$$= -\frac{aAb-3a^2B-2b^2B}{b^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))} - \cdots$$

$$= -\frac{aAb-3a^2B-2b^2B}{b^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))} - \cdots$$

$$= -\frac{a^{3/2}\left(a^2Ab+5Ab^3-3a^3B-7ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}\left(a^2+b^2\right)^2d} - \frac{aAb-3a^2B-\cdots}{b^2\left(a^2+b^2\right)d\sqrt{\mathrm{co}\cdots}}$$

$$= -\frac{a^{3/2}\left(a^2Ab+5Ab^3-3a^3B-7ab^2B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{b^{5/2}\left(a^2+b^2\right)^2d} - \frac{aAb-3a^2B-\cdots}{b^2\left(a^2+b^2\right)d\sqrt{\mathrm{co}\cdots}}$$

$$= -\frac{\left(a^2(A-B)-b^2(A-B)+2ab(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}\left(a^2+b^2\right)^2d} + \frac{\left(a^2(A\cdots\right.}{\cdots}$$

Mathematica [A] time = 3.36217, size = 390, normalized size = 0.89

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{4a^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}\left(a^2+b^2\right)} + \frac{8a^{3/2}\left(a^2Ab-2a^3B-4ab^2B+3Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}\left(a^2+b^2\right)^2} + \frac{2\sqrt{2}\left(a^2(A-B)+2ab(A-\cdots\right.}{\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^2),
```

```
x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*((2*Sqrt[2]*(a^2*(A - B) + b^2*(-A +
 B) + 2*a*b*(A + B))*(ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]]))/(a^2 + b^2)^2 + (4*a^(3/2)*(-(A*b) + a*B)*ArcT
an[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)) + (8*a^(3/2
)*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*
x]])/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)^2) - (Sqrt[2]*(2*a*b*(-A + B) + a^2*(A
+ B) - b^2*(A + B))*(Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - L
og[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(a^2 + b^2)^2 + (8*B*Sq
rt[Tan[c + d*x]])/b^2 + (4*a^2*(-(A*b) + a*B)*Sqrt[Tan[c + d*x]])/(b^2*(a^2
 + b^2)*(a + b*Tan[c + d*x]))))/(4*d)
```

Maple [C] time = 0.888, size = 42723, normalized size = 97.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+b*tan(d*x+c))**2,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^2\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^2,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^2*cot(d*x + c)^(5/2)),
 x)
```

3.600 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=601

$$\frac{b(Ab-aB)\cot^{\frac{5}{2}}(c+dx)}{2ad\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}+\frac{b\left(13a^2Ab-9a^3B-ab^2B+5Ab^3\right)\cot^{\frac{3}{2}}(c+dx)}{4a^2d\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}-\frac{\left(31a^2Ab^2+8a^4A-11a^3bB-3a\right.}{4a^3d\left(a^2\right.}$$

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((a^3*(A - B)
- 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (b^(3/2)*(63*a^4*A*b + 46*a^2*A
*b^3 + 15*A*b^5 - 35*a^5*B - 6*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[
Cot[c + d*x]])/Sqrt[b]])/(4*a^(7/2)*(a^2 + b^2)^3*d) - ((8*a^4*A + 31*a^2*A
*b^2 + 15*A*b^4 - 11*a^3*b*B - 3*a*b^3*B)*Sqrt[Cot[c + d*x]])/(4*a^3*(a^2 +
 b^2)^2*d) + (b*(A*b - a*B)*Cot[c + d*x]^(5/2))/(2*a*(a^2 + b^2)*d*(b + a*C
ot[c + d*x])^2) + (b*(13*a^2*A*b + 5*A*b^3 - 9*a^3*B - a*b^2*B)*Cot[c + d*x
]^(3/2))/(4*a^2*(a^2 + b^2)^2*d*(b + a*Cot[c + d*x])) + ((3*a^2*b*(A - B) -
 b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c +
d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^
3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x
]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d)
```

Rubi [A] time = 1.84497, antiderivative size = 601, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 15, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.454, Rules used = {3581, 3605, 3645, 3647, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{b(Ab-aB)\cot^{\frac{5}{2}}(c+dx)}{2ad\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}+\frac{b\left(13a^2Ab-9a^3B-ab^2B+5Ab^3\right)\cot^{\frac{3}{2}}(c+dx)}{4a^2d\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}-\frac{\left(31a^2Ab^2+8a^4A-11a^3bB-3a\right.}{4a^3d\left(a^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((a^3*(A - B)
- 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + (b^(3/2)*(63*a^4*A*b + 46*a^2*A
```

```
*b^3 + 15*A*b^5 - 35*a^5*B - 6*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[
Cot[c + d*x]])/Sqrt[b]])/(4*a^(7/2)*(a^2 + b^2)^3*d) - ((8*a^4*A + 31*a^2*A
*b^2 + 15*A*b^4 - 11*a^3*b*B - 3*a*b^3*B)*Sqrt[Cot[c + d*x]])/(4*a^3*(a^2 +
 b^2)^2*d) + (b*(A*b - a*B)*Cot[c + d*x]^(5/2))/(2*a*(a^2 + b^2)*d*(b + a*C
ot[c + d*x])^2) + (b*(13*a^2*A*b + 5*A*b^3 - 9*a^3*B - a*b^2*B)*Cot[c + d*x
]^(3/2))/(4*a^2*(a^2 + b^2)^2*d*(b + a*Cot[c + d*x])) + ((3*a^2*b*(A - B) -
 b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c +
d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^
3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x
]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \int \frac{\cot^{\frac{7}{2}}(c+dx)(B+A\cot(c+dx))}{(b+a\cot(c+dx))^3}\,dx$$

$$= \frac{b(Ab-aB)\cot^{\frac{5}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\int \frac{\cot^{\frac{3}{2}}(c+dx)\left(-\frac{5}{2}b(Ab-aB)+2a(Ab-aB)\cot(c+dx)-\right.}{(b+a\cot(c+dx))^2}}{2a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)\cot^{\frac{5}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{b\left(13a^2Ab+5Ab^3-9a^3B-ab^2B\right)\cot^{\frac{3}{2}}(}{4a^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx)}$$

$$= -\frac{\left(8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B\right)\sqrt{\cot(c+dx)}}{4a^3\left(a^2+b^2\right)^2d} + \frac{b(Ab-}{2a\left(a^2+b^2\right)}$$

$$= -\frac{\left(8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B\right)\sqrt{\cot(c+dx)}}{4a^3\left(a^2+b^2\right)^2d} + \frac{b(Ab-}{2a\left(a^2+b^2\right)}$$

$$= -\frac{\left(8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B\right)\sqrt{\cot(c+dx)}}{4a^3\left(a^2+b^2\right)^2d} + \frac{b(Ab-}{2a\left(a^2+b^2\right)}$$

$$= -\frac{\left(8a^4A+31a^2Ab^2+15Ab^4-11a^3bB-3ab^3B\right)\sqrt{\cot(c+dx)}}{4a^3\left(a^2+b^2\right)^2d} + \frac{b(Ab-}{2a\left(a^2+b^2\right)}$$

$$= \frac{b^{3/2}\left(63a^4Ab+46a^2Ab^3+15Ab^5-35a^5B-6a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(}}{\sqrt{b}}\right.}{4a^{7/2}\left(a^2+b^2\right)^3d}$$

$$= \frac{b^{3/2}\left(63a^4Ab+46a^2Ab^3+15Ab^5-35a^5B-6a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(}}{\sqrt{b}}\right.}{4a^{7/2}\left(a^2+b^2\right)^3d}$$

$$= -\frac{\left(a^3(A-B)-3ab^2(A-B)+3a^2b(A+B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(}\right.}{\sqrt{2}\left(a^2+b^2\right)^3d}$$

Mathematica [A] time = 6.46933, size = 602, normalized size = 1.

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{3b^2(Ab-aB)\left(\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{\tan(c+dx)}}{a(a+b\tan(c+dx))}\right)}{8a^2\left(a^2+b^2\right)}-\frac{b^{3/2}\left(3a^2Ab-2a^3B+Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{2a^{7/2}\left(a^2+b^2\right)^2}-\frac{b^{3/2}\left(3a^2Ab\ldots\right.}{\ldots}\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((a^3*(A - B) - 3*a*b^2*(A - B) +
 3*a^2*b*(A + B) - b^3*(A + B))*(Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*
x]]] - Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(4*(a^2 + b^2)^3) -
 (b^(3/2)*(3*a^2*A*b + A*b^3 - 2*a^3*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])
/Sqrt[a]])/(2*a^(7/2)*(a^2 + b^2)^2) - (b^(3/2)*(6*a^4*A*b + 3*a^2*A*b^3 +
A*b^5 - 3*a^5*B + a^3*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/
(a^(7/2)*(a^2 + b^2)^3) + ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3
*a*b^2*(A + B))*(Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]
 - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(8*(a^2 + b
^2)^3) - A/(a^3*Sqrt[Tan[c + d*x]]) - (b^2*(A*b - a*B)*Sqrt[Tan[c + d*x]])/
(4*a^2*(a^2 + b^2)*(a + b*Tan[c + d*x])^2) - (b^2*(3*a^2*A*b + A*b^3 - 2*a^
3*B)*Sqrt[Tan[c + d*x]])/(2*a^3*(a^2 + b^2)^2*(a + b*Tan[c + d*x])) - (3*b^
2*(A*b - a*B)*(ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]/(a^(3/2)*Sqrt[b
]) + Sqrt[Tan[c + d*x]]/(a*(a + b*Tan[c + d*x])))))/(8*a^2*(a^2 + b^2))))/d
```

Maple [C] time = 4.692, size = 159192, normalized size = 264.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^3, x
)
```

3.601 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=534

$$\frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2ad\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}+\frac{b\left(11a^2Ab-7a^3B+ab^2B+3Ab^3\right)\sqrt{\cot(c+dx)}}{4a^2d\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}-\frac{\left(3a^2b(A+B)+a^3(A-B)-3a\right.}{}$$

```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((3*a^2*b*(A -
 B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (Sqrt[b]*(35*a^4*A*b + 6*a^2*A*
b^3 + 3*A*b^5 - 15*a^5*B + 18*a^3*b^2*B + a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot
[c + d*x]])/Sqrt[b]])/(4*a^(5/2)*(a^2 + b^2)^3*d) + (b*(A*b - a*B)*Cot[c +
d*x]^(3/2))/(2*a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) + (b*(11*a^2*A*b + 3
*A*b^3 - 7*a^3*B + a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*a^2*(a^2 + b^2)^2*d*(b +
 a*Cot[c + d*x])) - ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3
*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a
^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A
 + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2
+ b^2)^3*d)
```

Rubi [A] time = 1.36501, antiderivative size = 534, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3605, 3645, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2ad\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}+\frac{b\left(11a^2Ab-7a^3B+ab^2B+3Ab^3\right)\sqrt{\cot(c+dx)}}{4a^2d\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}-\frac{\left(3a^2b(A+B)+a^3(A-B)-3a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,x]
```



```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((3*a^2*b*(A -
 B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (Sqrt[b]*(35*a^4*A*b + 6*a^2*A*
b^3 + 3*A*b^5 - 15*a^5*B + 18*a^3*b^2*B + a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot
[c + d*x]])/Sqrt[b]])/(4*a^(5/2)*(a^2 + b^2)^3*d) + (b*(A*b - a*B)*Cot[c +
```

```
d*x]^(3/2))/(2*a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) + (b*(11*a^2*A*b + 3
*A*b^3 - 7*a^3*B + a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*a^2*(a^2 + b^2)^2*d*(b +
 a*Cot[c + d*x])) - ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3
*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a
^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A
 + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2
+ b^2)^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^3}\,dx = \int \frac{\cot^{\frac{5}{2}}(c+dx)(B+A\cot(c+dx))}{(b+a\cot(c+dx))^3}\,dx$$

$$= \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\int \frac{\sqrt{\cot(c+dx)}\left(-\frac{3}{2}b(Ab-aB)+2a(Ab-aB)\cot(c+dx)\right.}{(b+a\cot(c+dx))}}{2a\left(a^2+b^2\right.}$$

$$= \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\cot}}{4a^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx}$$

$$= \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\cot}}{4a^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx}$$

$$= \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\cot}}{4a^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx}$$

$$= \frac{b(Ab-aB)\cot^{\frac{3}{2}}(c+dx)}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{b\left(11a^2Ab+3Ab^3-7a^3B+ab^2B\right)\sqrt{\cot}}{4a^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx}$$

$$= -\frac{\sqrt{b}\left(35a^4Ab+6a^2Ab^3+3Ab^5-15a^5B+18a^3b^2B+ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c}}{\sqrt{b}}\right.}{4a^{5/2}\left(a^2+b^2\right)^3d}$$

$$= -\frac{\sqrt{b}\left(35a^4Ab+6a^2Ab^3+3Ab^5-15a^5B+18a^3b^2B+ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c}}{\sqrt{b}}\right.}{4a^{5/2}\left(a^2+b^2\right)^3d}$$

$$= -\frac{\left(3a^2b(A-B)-b^3(A-B)-a^3(A+B)+3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(}\right.}{\sqrt{2}\left(a^2+b^2\right)^3d}$$

Mathematica [A] time = 6.38155, size = 566, normalized size = 1.06

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{3b(Ab-aB)\left(\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{\tan(c+dx)}}{a(a+b\tan(c+dx))}\right)}{8a\left(a^2+b^2\right)} + \frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab^2(A+B)-b^3(A-B)\right)\left(\sqrt{2}\tan^{-1}(1\right.}{4\left(a^2+b^2\right)^3}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^3,
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((3*a^2*b*(A - B) - b^3*(A - B) -
 a^3*(A + B) + 3*a*b^2*(A + B))*(Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*
x]]] - Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(4*(a^2 + b^2)^3) +
 (Sqrt[b]*(2*a*A*b - a^2*B + b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqr
t[a]])/(2*a^(3/2)*(a^2 + b^2)^2) + (Sqrt[b]*(3*a^2*A*b - A*b^3 - a^3*B + 3*
a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*(a^2 + b^2)
^3) - ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*(Sqr
t[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Sqrt[2]*Log[1 + S
qrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(8*(a^2 + b^2)^3) + (b*(A*b - a
*B)*Sqrt[Tan[c + d*x]])/(4*a*(a^2 + b^2)*(a + b*Tan[c + d*x])^2) + (b*(2*a*
A*b - a^2*B + b^2*B)*Sqrt[Tan[c + d*x]])/(2*a*(a^2 + b^2)^2*(a + b*Tan[c +
d*x])) + (3*b*(A*b - a*B)*(ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]/(a^
(3/2)*Sqrt[b]) + Sqrt[Tan[c + d*x]]/(a*(a + b*Tan[c + d*x]))))/(8*a*(a^2 +
b^2))))/d
```

Maple [C] time = 2.611, size = 100786, normalized size = 188.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^3, x
)
```

3.602 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=534

$$\frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2ad\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}-\frac{\left(9a^2Ab-5a^3B+3ab^2B+Ab^3\right)\sqrt{\cot(c+dx)}}{4ad\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}-\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab\right.}{}$$

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3
*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + ((15*a^4*A*b - 18*a^2*A*b^3 - A*b^
5 - 3*a^5*B + 26*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[c + d*x]])
/Sqrt[b]])/(4*a^(3/2)*Sqrt[b]*(a^2 + b^2)^3*d) + (b*(A*b - a*B)*Sqrt[Cot[c
+ d*x]])/(2*a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) - ((9*a^2*A*b + A*b^3 -
 5*a^3*B + 3*a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*a*(a^2 + b^2)^2*d*(b + a*Cot[c
 + d*x])) - ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)^3*d) + ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3
*d)
```

Rubi [A] time = 1.38785, antiderivative size = 534, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3605, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2ad\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}-\frac{\left(9a^2Ab-5a^3B+3ab^2B+Ab^3\right)\sqrt{\cot(c+dx)}}{4ad\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}-\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^3),x]
```

```
[Out] ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((a^3*(A - B) - 3
*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) + ((15*a^4*A*b - 18*a^2*A*b^3 - A*b^
5 - 3*a^5*B + 26*a^3*b^2*B - 3*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[c + d*x]])
/Sqrt[b]])/(4*a^(3/2)*Sqrt[b]*(a^2 + b^2)^3*d) + (b*(A*b - a*B)*Sqrt[Cot[c
```

```
+ d*x]])/(2*a*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) - ((9*a^2*A*b + A*b^3 -
 5*a^3*B + 3*a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*a*(a^2 + b^2)^2*d*(b + a*Cot[c
 + d*x])) - ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B)
)*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2
)^3*d) + ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3
*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^3}\,dx = \int \frac{\cot^{\frac{3}{2}}(c+dx)(B+A\cot(c+dx))}{(b+a\cot(c+dx))^3}\,dx$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\int \frac{-\frac{1}{2}b(Ab-aB)+2a(Ab-aB)\cot(c+dx)-\frac{1}{2}\left(4a^2A+Ab^2-\right.}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2}}{2a\left(a^2+b^2\right)}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\left(9a^2Ab+Ab^3-5a^3B+3ab^2B\right)\sqrt{\cot(c+}}{4a\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\left(9a^2Ab+Ab^3-5a^3B+3ab^2B\right)\sqrt{\cot(c+}}{4a\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\left(9a^2Ab+Ab^3-5a^3B+3ab^2B\right)\sqrt{\cot(c+}}{4a\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$= \frac{b(Ab-aB)\sqrt{\cot(c+dx)}}{2a\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} - \frac{\left(9a^2Ab+Ab^3-5a^3B+3ab^2B\right)\sqrt{\cot(c+}}{4a\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$= \frac{\left(15a^4Ab-18a^2Ab^3-Ab^5-3a^5B+26a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{4a^{3/2}\sqrt{b}\left(a^2+b^2\right)^3d} +$$

$$= \frac{\left(15a^4Ab-18a^2Ab^3-Ab^5-3a^5B+26a^3b^2B-3ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right)}{4a^{3/2}\sqrt{b}\left(a^2+b^2\right)^3d} +$$

$$= \frac{\left(a^3(A-B)-3ab^2(A-B)+3a^2b(A+B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+\right.}}{\sqrt{2}\left(a^2+b^2\right)^3d}$$

Mathematica [A] time = 6.34164, size = 558, normalized size = 1.04

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{3(Ab-aB)\left(\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{\tan(c+dx)}}{a(a+b\tan(c+dx))}\right)}{8\left(a^2+b^2\right)} - \frac{\left(3a^2b(A+B)+a^3(A-B)-3ab^2(A-B)-b^3(A+B)\right)\left(\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\right.\right.}{4\left(a^2+b^2\right)^3}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^3),
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((a^3*(A - B) - 3*a*b^2*(A - B)
+ 3*a^2*b*(A + B) - b^3*(A + B))*(Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d
*x]]] - Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(4*(a^2 + b^2)^3)
- (Sqrt[b]*(a^2*A - A*b^2 + 2*a*b*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sq
rt[a]])/(2*a^(3/2)*(a^2 + b^2)^2) - (Sqrt[b]*(a^3*A - 3*a*A*b^2 + 3*a^2*b*B
 - b^3*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(Sqrt[a]*(a^2 + b^2
)^3) - ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*(Sq
rt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Sqrt[2]*Log[1 +
Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(8*(a^2 + b^2)^3) - ((A*b - a*
B)*Sqrt[Tan[c + d*x]])/(4*(a^2 + b^2)*(a + b*Tan[c + d*x])^2) - (b*(a^2*A -
 A*b^2 + 2*a*b*B)*Sqrt[Tan[c + d*x]])/(2*a*(a^2 + b^2)^2*(a + b*Tan[c + d*x
])) - (3*(A*b - a*B)*(ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]/(a^(3/2)
*Sqrt[b]) + Sqrt[Tan[c + d*x]]/(a*(a + b*Tan[c + d*x]))))/(8*(a^2 + b^2))))
/d
```

Maple [C] time = 1.905, size = 102181, normalized size = 191.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^3\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^3*sqrt(cot(d*x + c))),
 x)
```

3.603 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=530

$$-\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2d\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}+\frac{\left(5a^2Ab+a^3(-B)+7ab^2B-3Ab^3\right)\sqrt{\cot(c+dx)}}{4bd\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3\right.}{}$$

```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B)
 - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^4*A*b - 26*a^2*A*b^3 + 3*A*b
^5 + a^5*B + 18*a^3*b^2*B - 15*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[c + d*x]])
/Sqrt[b]])/(4*Sqrt[a]*b^(3/2)*(a^2 + b^2)^3*d) - ((A*b - a*B)*Sqrt[Cot[c +
d*x]])/(2*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) + ((5*a^2*A*b - 3*A*b^3 - a
^3*B + 7*a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*b*(a^2 + b^2)^2*d*(b + a*Cot[c + d
*x])) + ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Lo
g[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*
d) - ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1
 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d)
```

Rubi [A] time = 1.42535, antiderivative size = 530, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3608, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$-\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2d\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}+\frac{\left(5a^2Ab+a^3(-B)+7ab^2B-3Ab^3\right)\sqrt{\cot(c+dx)}}{4bd\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}+\frac{\left(3a^2b(A+B)+a^3(A-B)-3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3),x]
```


```
[Out] ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 -
 Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^2*b*(A - B)
 - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[Cot
[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - ((3*a^4*A*b - 26*a^2*A*b^3 + 3*A*b
^5 + a^5*B + 18*a^3*b^2*B - 15*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot[c + d*x]])
/Sqrt[b]])/(4*Sqrt[a]*b^(3/2)*(a^2 + b^2)^3*d) - ((A*b - a*B)*Sqrt[Cot[c +
```

```
d*x]])/(2*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) + ((5*a^2*A*b - 3*A*b^3 - a
^3*B + 7*a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*b*(a^2 + b^2)^2*d*(b + a*Cot[c + d
*x])) + ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Lo
g[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*
d) - ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1
 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
```

```
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx = \int \frac{\sqrt{\cot(c+dx)}(B+A\cot(c+dx))}{(b+a\cot(c+dx))^3}\,dx$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{\int \frac{-\frac{1}{2}a(Ab-aB)+2a(aA+bB)\cot(c+dx)+\frac{3}{2}a(Ab-aB)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2}}{2a\left(a^2+b^2\right)}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{\left(5a^2Ab-3Ab^3-a^3B+7ab^2B\right)\sqrt{\cot(c}}{4b\left(a^2+b^2\right)^2 d(b+a\cot(c+dx))}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{\left(5a^2Ab-3Ab^3-a^3B+7ab^2B\right)\sqrt{\cot(c}}{4b\left(a^2+b^2\right)^2 d(b+a\cot(c+dx))}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{\left(5a^2Ab-3Ab^3-a^3B+7ab^2B\right)\sqrt{\cot(c}}{4b\left(a^2+b^2\right)^2 d(b+a\cot(c+dx))}$$

$$= -\frac{(Ab-aB)\sqrt{\cot(c+dx)}}{2\left(a^2+b^2\right)d(b+a\cot(c+dx))^2} + \frac{\left(5a^2Ab-3Ab^3-a^3B+7ab^2B\right)\sqrt{\cot(c}}{4b\left(a^2+b^2\right)^2 d(b+a\cot(c+dx))}$$

$$= -\frac{\left(3a^4Ab-26a^2Ab^3+3Ab^5+a^5B+18a^3b^2B-15ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right.}{4\sqrt{a}b^{3/2}\left(a^2+b^2\right)^3 d}$$

$$= -\frac{\left(3a^4Ab-26a^2Ab^3+3Ab^5+a^5B+18a^3b^2B-15ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+dx)}}{\sqrt{b}}\right.}{4\sqrt{a}b^{3/2}\left(a^2+b^2\right)^3 d}$$

$$= \frac{\left(3a^2b(A-B)-b^3(A-B)-a^3(A+B)+3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c}\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [A] time = 6.39349, size = 568, normalized size = 1.07

$$2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{3(Ab-aB)\left(\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}+\frac{\sqrt{\tan(c+dx)}}{a+b\tan(c+dx)}\right)}{8b\left(a^2+b^2\right)} - \frac{\left(3a^2b(A-B)+a^3(-(A+B))+3ab^2(A+B)-b^3(A-B)\right)\left(\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\right.\right.}{4\left(a^2+b^2\right)^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^3),
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((3*a^2*b*(A - B) - b^3*(A - B)
- a^3*(A + B) + 3*a*b^2*(A + B))*(Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d
*x]]] - Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(4*(a^2 + b^2)^3)
- (Sqrt[b]*(3*a^2*A*b - A*b^3 - a^3*B + 3*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Tan
[c + d*x]])/Sqrt[a]])/(Sqrt[a]*(a^2 + b^2)^3) - ((2*A*b^3 - a*(a^2 + 3*b^2)
*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/(2*Sqrt[a]*b^(3/2)*(a^2 +
 b^2)^2) + ((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))
*(Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - Sqrt[2]*Log[
1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))/(8*(a^2 + b^2)^3) + (a*(A*
b - a*B)*Sqrt[Tan[c + d*x]])/(4*b*(a^2 + b^2)*(a + b*Tan[c + d*x])^2) - ((2
*A*b^3 - a*(a^2 + 3*b^2)*B)*Sqrt[Tan[c + d*x]])/(2*b*(a^2 + b^2)^2*(a + b*T
an[c + d*x])) + (3*(A*b - a*B)*(ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]
]/(Sqrt[a]*Sqrt[b]) + Sqrt[Tan[c + d*x]]/(a + b*Tan[c + d*x])))/(8*b*(a^2 +
 b^2))))/d
```

Maple [C] time = 1.521, size = 102237, normalized size = 192.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^3\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^3*cot(d*x + c)^(3/2)),
 x)
```

3.604 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=534

$$\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2bd\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}-\frac{a\left(a^2Ab+3a^3B+11ab^2B-7Ab^3\right)\sqrt{\cot(c+dx)}}{4b^2d\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}+\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3\right.}{}$$

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((a^3*(A - B)
- 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (Sqrt[a]*(a^4*A*b + 18*a^2*A*b^
3 - 15*A*b^5 + 3*a^5*B + 6*a^3*b^2*B + 35*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot
[c + d*x]])/Sqrt[b]])/(4*b^(5/2)*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Sqrt[Cot
[c + d*x]])/(2*b*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) - (a*(a^2*A*b - 7*A*
b^3 + 3*a^3*B + 11*a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*b^2*(a^2 + b^2)^2*d*(b +
 a*Cot[c + d*x])) + ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2
*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a
^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A
 + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2
+ b^2)^3*d)
```

Rubi [A] time = 1.37878, antiderivative size = 534, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2bd\left(a^2+b^2\right)(a\cot(c+dx)+b)^2}-\frac{a\left(a^2Ab+3a^3B+11ab^2B-7Ab^3\right)\sqrt{\cot(c+dx)}}{4b^2d\left(a^2+b^2\right)^2(a\cot(c+dx)+b)}+\frac{\left(3a^2b(A-B)+a^3(-(A+B))+3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^3),x]
```

```
[Out] -(((a^3*(A - B) - 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((a^3*(A - B)
- 3*a*b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (Sqrt[a]*(a^4*A*b + 18*a^2*A*b^
3 - 15*A*b^5 + 3*a^5*B + 6*a^3*b^2*B + 35*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[Cot
```

```
[c + d*x]])/Sqrt[b]])/(4*b^(5/2)*(a^2 + b^2)^3*d) + (a*(A*b - a*B)*Sqrt[Cot
[c + d*x]])/(2*b*(a^2 + b^2)*d*(b + a*Cot[c + d*x])^2) - (a*(a^2*A*b - 7*A*
b^3 + 3*a^3*B + 11*a*b^2*B)*Sqrt[Cot[c + d*x]])/(4*b^2*(a^2 + b^2)^2*d*(b +
 a*Cot[c + d*x])) + ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2
*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a
^2 + b^2)^3*d) - ((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A
 + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2
+ b^2)^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx=\int \frac{B+A\cot(c+dx)}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^3}\,dx$$

$$=\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2b\left(a^2+b^2\right)d(b+a\cot(c+dx))^2}-\frac{\int \frac{\frac{1}{2}\left(-aAb-3a^2B-4b^2B\right)-2b(Ab-aB)\cot(c+dx)+\frac{3}{2}a(Ab}{\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2}}{2b\left(a^2+b^2\right)}$$

$$=\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2b\left(a^2+b^2\right)d(b+a\cot(c+dx))^2}-\frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\cot(c}}{4b^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$=\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2b\left(a^2+b^2\right)d(b+a\cot(c+dx))^2}-\frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\cot(c}}{4b^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$=\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2b\left(a^2+b^2\right)d(b+a\cot(c+dx))^2}-\frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\cot(c}}{4b^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$=\frac{a(Ab-aB)\sqrt{\cot(c+dx)}}{2b\left(a^2+b^2\right)d(b+a\cot(c+dx))^2}-\frac{a\left(a^2Ab-7Ab^3+3a^3B+11ab^2B\right)\sqrt{\cot(c}}{4b^2\left(a^2+b^2\right)^2d(b+a\cot(c+dx))}$$

$$=-\frac{\sqrt{a}\left(a^4Ab+18a^2Ab^3-15Ab^5+3a^5B+6a^3b^2B+35ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+d}}{\sqrt{b}}\right.}{4b^{5/2}\left(a^2+b^2\right)^3d}$$

$$=-\frac{\sqrt{a}\left(a^4Ab+18a^2Ab^3-15Ab^5+3a^5B+6a^3b^2B+35ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\cot(c+d}}{\sqrt{b}}\right.}{4b^{5/2}\left(a^2+b^2\right)^3d}$$

$$=-\frac{\left(a^3(A-B)-3ab^2(A-B)+3a^2b(A+B)-b^3(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c}\right.}{\sqrt{2}\left(a^2+b^2\right)^3d}$$

Mathematica [A] time = 6.44473, size = 592, normalized size = 1.11

$$\frac{2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\sqrt{a}\left(a^2Ab-2a^3B-4ab^2B+3Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{2b^{5/2}\left(a^2+b^2\right)^2}+\frac{\sqrt{a}\left(a^2Ab^3+3a^3b^2B+a^5B+6ab^4B-3Ab^5\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{5/2}\left(a^2+b^2\right)^3}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^3),
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((a^3*(A - B) - 3*a*b^2*(A - B) +
 3*a^2*b*(A + B) - b^3*(A + B))*(Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*
x]]] - Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(4*(a^2 + b^2)^3) +
 (Sqrt[a]*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a]])/(2*b^(5/2)*(a^2 + b^2)^2) + (Sqrt[a]*(a^2*A*b^3 - 3*
A*b^5 + a^5*B + 3*a^3*b^2*B + 6*a*b^4*B)*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a]])/(b^(5/2)*(a^2 + b^2)^3) + ((3*a^2*b*(A - B) - b^3*(A - B) - a^3
*(A + B) + 3*a*b^2*(A + B))*(Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + T
an[c + d*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]))
/(8*(a^2 + b^2)^3) - (a^2*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(4*b^2*(a^2 + b^2
)*(a + b*Tan[c + d*x])^2) + (a*(a^2*A*b + 3*A*b^3 - 2*a^3*B - 4*a*b^2*B)*Sq
rt[Tan[c + d*x]])/(2*b^2*(a^2 + b^2)^2*(a + b*Tan[c + d*x])) - (3*(A*b - a*
B)*((Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[b] + (a*Sqr
t[Tan[c + d*x]])/(a + b*Tan[c + d*x])))/(8*b^2*(a^2 + b^2))))/d
```

Maple [C] time = 1.564, size = 102109, normalized size = 191.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^3\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^3*cot(d*x + c)^(5/2)),
 x)
```

3.605 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx$

Optimal. Leaf size=600

$$\frac{a\left(a^2Ab-5a^3B-13ab^2B+9Ab^3\right)}{4b^2d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}(a\cot(c+dx)+b)}+\frac{a(Ab-aB)}{2bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a\cot(c+dx)+b)^2}-\frac{3a^3Ab-31a^2b^2B}{4b^3d\left(a^2+\right.}$$

```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((3*a^2*b*(A -
 B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (a^(3/2)*(3*a^4*A*b + 6*a^2*A*b
^3 + 35*A*b^5 - 15*a^5*B - 46*a^3*b^2*B - 63*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[
Cot[c + d*x]])/Sqrt[b]])/(4*b^(7/2)*(a^2 + b^2)^3*d) - (3*a^3*A*b + 11*a*A*
b^3 - 15*a^4*B - 31*a^2*b^2*B - 8*b^4*B)/(4*b^3*(a^2 + b^2)^2*d*Sqrt[Cot[c
+ d*x]]) + (a*(A*b - a*B))/(2*b*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(b + a*Cot
[c + d*x])^2) + (a*(a^2*A*b + 9*A*b^3 - 5*a^3*B - 13*a*b^2*B))/(4*b^2*(a^2
+ b^2)^2*d*Sqrt[Cot[c + d*x]]*(b + a*Cot[c + d*x])) - ((a^3*(A - B) - 3*a*b
^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*
x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*
(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
 + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d)
```

Rubi [A] time = 1.82465, antiderivative size = 600, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 14, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.424, Rules used = {3581, 3609, 3649, 3653, 3534, 1168, 1162, 617, 204, 1165, 628, 3634, 63, 205}

$$\frac{a\left(a^2Ab-5a^3B-13ab^2B+9Ab^3\right)}{4b^2d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}(a\cot(c+dx)+b)}+\frac{a(Ab-aB)}{2bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a\cot(c+dx)+b)^2}-\frac{3a^3Ab-31a^2b^2B}{4b^3d\left(a^2+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^3),x]
```

```
[Out] -(((3*a^2*b*(A - B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1
 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d)) + ((3*a^2*b*(A -
 B) - b^3*(A - B) - a^3*(A + B) + 3*a*b^2*(A + B))*ArcTan[1 + Sqrt[2]*Sqrt[
Cot[c + d*x]]])/(Sqrt[2]*(a^2 + b^2)^3*d) - (a^(3/2)*(3*a^4*A*b + 6*a^2*A*b
```

```
^3 + 35*A*b^5 - 15*a^5*B - 46*a^3*b^2*B - 63*a*b^4*B)*ArcTan[(Sqrt[a]*Sqrt[
Cot[c + d*x]])/Sqrt[b]])/(4*b^(7/2)*(a^2 + b^2)^3*d) - (3*a^3*A*b + 11*a*A*
b^3 - 15*a^4*B - 31*a^2*b^2*B - 8*b^4*B)/(4*b^3*(a^2 + b^2)^2*d*Sqrt[Cot[c
+ d*x]]) + (a*(A*b - a*B))/(2*b*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(b + a*Cot
[c + d*x])^2) + (a*(a^2*A*b + 9*A*b^3 - 5*a^3*B - 13*a*b^2*B))/(4*b^2*(a^2
+ b^2)^2*d*Sqrt[Cot[c + d*x]]*(b + a*Cot[c + d*x])) - ((a^3*(A - B) - 3*a*b
^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*
x]] + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d) + ((a^3*(A - B) - 3*a*b^2*
(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]]
 + Cot[c + d*x]])/(2*Sqrt[2]*(a^2 + b^2)^3*d)
```

Rule 3581

```
Int[(cot[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_.) + (b_.)*tan[(e_.) + (f_.)*(
x_)])^(m_.)*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist
[g^(m + n), Int[(g*Cot[e + f*x])^(p - m - n)*(b + a*Cot[e + f*x])^m*(d + c*
Cot[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] &&  !IntegerQ
[p] && IntegerQ[m] && IntegerQ[n]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
```

```
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3653

```
Int[(((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.)
+ (f_.)*(x_)] + (C_.)*tan[(e_.) + (f_.)*(x_)]^2))/((a_.) + (b_.)*tan[(e_.)
+ (f_.)*(x_)]), x_Symbol] :> Dist[1/(a^2 + b^2), Int[(c + d*Tan[e + f*x])^n
*Simp[b*B + a*(A - C) + (a*B - b*(A - C))*Tan[e + f*x], x], x], x] + Dist[(
A*b^2 - a*b*B + a^2*C)/(a^2 + b^2), Int[((c + d*Tan[e + f*x])^n*(1 + Tan[e
+ f*x]^2))/(a + b*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C
, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] &&
 !GtQ[n, 0] &&  !LeQ[n, -1]
```

Rule 3534

```
Int[((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_
)]], x_Symbol] :> Dist[2/f, Subst[Int[(b*c + d*x^2)/(b^2 + x^4), x], x, Sqr
t[b*Tan[e + f*x]]], x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[c^2 - d^2, 0] &&
 NeQ[c^2 + d^2, 0]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^3}\,dx = \int \frac{B+A\cot(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(b+a\cot(c+dx))^3}\,dx$$

$$= \frac{a(Ab-aB)}{2b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2} - \frac{\int \frac{\frac{1}{2}\left(aAb-5a^2B-4b^2B\right)-2b(Ab-aB)}{\cot^{\frac{3}{2}}(c+dx)(b}}{2b\left(a\right.}$$

$$= \frac{a(Ab-aB)}{2b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b+a\cot(c+dx))^2} + \frac{a\left(a^2Ab+9Ab^3-5a\right.}{4b^2\left(a^2+b^2\right)^2 d\sqrt{\cot(c+d}}$$

$$= -\frac{3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B}{4b^3\left(a^2+b^2\right)^2 d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB}{2b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b}$$

$$= -\frac{3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B}{4b^3\left(a^2+b^2\right)^2 d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB}{2b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b}$$

$$= -\frac{3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B}{4b^3\left(a^2+b^2\right)^2 d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB}{2b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b}$$

$$= -\frac{3a^3Ab+11aAb^3-15a^4B-31a^2b^2B-8b^4B}{4b^3\left(a^2+b^2\right)^2 d\sqrt{\cot(c+dx)}} + \frac{a(Ab-aB}{2b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(b}$$

$$= -\frac{a^{3/2}\left(3a^4Ab+6a^2Ab^3+35Ab^5-15a^5B-46a^3b^2B-63ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\mathrm{co}}}{\sqrt{}}\right.}{4b^{7/2}\left(a^2+b^2\right)^3 d}$$

$$= -\frac{a^{3/2}\left(3a^4Ab+6a^2Ab^3+35Ab^5-15a^5B-46a^3b^2B-63ab^4B\right)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{\mathrm{co}}}{\sqrt{}}\right.}{4b^{7/2}\left(a^2+b^2\right)^3 d}$$

$$= -\frac{\left(3a^2b(A-B)-b^3(A-B)-a^3(A+B)+3ab^2(A+B)\right)\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(}\right.}{\sqrt{2}\left(a^2+b^2\right)^3 d}$$

Mathematica [A] time = 6.45795, size = 621, normalized size = 1.03

$$2\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{a^{3/2}\left(2a^2Ab-3a^3B-5ab^2B+4Ab^3\right)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{2b^{7/2}\left(a^2+b^2\right)^2}+\frac{a^{3/2}\left(3a^2Ab^3+a^4Ab-9a^3b^2B-3a^5B-10ab^4B+6Ab^5\right)\tan^{-1}\left(\right.}{b^{7/2}\left(a^2+b^2\right)^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^3),
x]
```

```
[Out] (2*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((3*a^2*b*(A - B) - b^3*(A - B) -
 a^3*(A + B) + 3*a*b^2*(A + B))*(Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*
x]]] - Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]))/(4*(a^2 + b^2)^3) -
 (a^(3/2)*(2*a^2*A*b + 4*A*b^3 - 3*a^3*B - 5*a*b^2*B)*ArcTan[(Sqrt[b]*Sqrt[
Tan[c + d*x]])/Sqrt[a]])/(2*b^(7/2)*(a^2 + b^2)^2) + (a^(3/2)*(a^4*A*b + 3*
a^2*A*b^3 + 6*A*b^5 - 3*a^5*B - 9*a^3*b^2*B - 10*a*b^4*B)*ArcTan[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a]])/(b^(7/2)*(a^2 + b^2)^3) - ((a^3*(A - B) - 3*a*
b^2*(A - B) + 3*a^2*b*(A + B) - b^3*(A + B))*(Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[
Tan[c + d*x]] + Tan[c + d*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]
+ Tan[c + d*x]]))/(8*(a^2 + b^2)^3) + (B*Sqrt[Tan[c + d*x]])/b^3 + (a^3*(A*
b - a*B)*Sqrt[Tan[c + d*x]])/(4*b^3*(a^2 + b^2)*(a + b*Tan[c + d*x])^2) - (
a^2*(2*a^2*A*b + 4*A*b^3 - 3*a^3*B - 5*a*b^2*B)*Sqrt[Tan[c + d*x]])/(2*b^3*
(a^2 + b^2)^2*(a + b*Tan[c + d*x])) + (3*(A*b - a*B)*((a^(3/2)*ArcTan[(Sqrt
[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]])/Sqrt[b] + (a^2*Sqrt[Tan[c + d*x]])/(a + b
*Tan[c + d*x])))/(8*b^3*(a^2 + b^2))))/d
```

Maple [C] time = 2.065, size = 104911, normalized size = 174.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+b*tan(d*x+c))^3,x)
```

```
[Out] result too large to display
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+b*tan(d*x+c))^3,x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+b*tan(d*x+c))^3,x, algorithm
="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(7/2)/(a+b*tan(d*x+c))**3,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(dx+c\right)+A}{\left(b\tan\left(dx+c\right)+a\right)^{3}\cot\left(dx+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(7/2)/(a+b*tan(d*x+c))^3,x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^3*cot(d*x + c)^(7/2)),
 x)
```

3.606 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=156

$$-\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d}+\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}}{}$$

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (2*B*Cot[c + d*x]^(3/2))/(3*d) +
(B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) - (B*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.105383, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d}+\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (2*B*Cot[c + d*x]^(3/2))/(3*d) +
(B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) - (B*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \cot^{\frac{5}{2}}(c+dx)\,dx$$

$$= -\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d} - B\int \sqrt{\cot(c+dx)}\,dx$$

$$= -\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{B\,\mathrm{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \cot(c+dx)\right)}{d}$$

$$= -\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{(2B)\,\mathrm{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d}$$

$$= -\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d} - \frac{B\,\mathrm{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} + \frac{B\,\mathrm{Subst}\left(\int \frac{1+}{1+}\right.}{}$$

$$= -\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{2d} + \frac{B\,\mathrm{Subst}\left(\right.}{}$$

$$= -\frac{2B\cot^{\frac{3}{2}}(c+dx)}{3d} + \frac{B\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(c+dx)\right)}{2\sqrt{2}d} - \frac{B\log\left(1\right.}{}$$

$$= -\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{2B\,\mathrm{co}}{}$$

Mathematica [C] time = 0.0770606, size = 38, normalized size = 0.24

$$\frac{2B\cot^{\frac{3}{2}}(c+dx)\left(\mathrm{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\cot^2(c+dx)\right)-1\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
),x]
```

```
[Out] (2*B*Cot[c + d*x]^(3/2)*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Cot[c + d*x]^
2]))/(3*d)
```

Maple [C] time = 0.25, size = 1275, normalized size = 8.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/6*B/d*2^(1/2)*(cos(d*x+c)-1)^2*(3*I*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)-3*I*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*((cos(d*x+c)-1)
/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)+3*I*EllipticPi((-(cos(d*x+c)-
1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)-3*(-(cos(d*x+c)-1-sin(d*x+c))/sin(
d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/
sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)-3*I*EllipticPi((-(cos(d*x+c)-1
-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((cos(d*x+c)-1)/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2)*sin(d*x+c)-3*EllipticPi((-(cos(d*x+c)-1-sin(d*
x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)+6*(-(cos(d*x+c)-1-sin(d*x+c))/s
in(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-
1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2
),1/2*2^(1/2))*cos(d*x+c)*sin(d*x+c)-3*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(
d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+
1/2*I,1/2*2^(1/2))*sin(d*x+c)-3*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1
/2*2^(1/2))*sin(d*x+c)+6*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((co
```

```
s(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*
EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))*sin(d*
x+c)-2*2^(1/2)*cos(d*x+c)^2)*(cos(d*x+c)+1)^2*(cos(d*x+c)/sin(d*x+c))^(5/2)
/cos(d*x+c)^3/sin(d*x+c)^3
```

Maxima [A] time = 1.49383, size = 171, normalized size = 1.1

$$\frac{3\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)-\sqrt{2}\log\left(\frac{\sqrt{2}}{\sqrt{\tan(dx+c)}}+\frac{1}{\tan(dx+c)}+1\right)}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/12*(3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2
*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*lo
g(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)/s
qrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))*B - 8*B/tan(d*x + c)^(3/2))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan{(dx+c)} + Ba)\cot{(dx+c)}^{\frac{5}{2}}}{b\tan{(dx+c)} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*cot(d*x + c)^(5/2)/(b*tan(d*x + c) + a),
 x)
```

3.607 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=154

$$-\frac{2B\sqrt{\cot(c+dx)}}{d}-\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}}{}$$

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (2*B*Sqrt[Cot[c + d*x]])/d - (B*L
og[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1
 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.103312, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{2B\sqrt{\cot(c+dx)}}{d}-\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (2*B*Sqrt[Cot[c + d*x]])/d - (B*L
og[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1
 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \cot^{\frac{3}{2}}(c+dx)\,dx$$

$$= -\frac{2B\sqrt{\cot(c+dx)}}{d} - B\int \frac{1}{\sqrt{\cot(c+dx)}}\,dx$$

$$= -\frac{2B\sqrt{\cot(c+dx)}}{d} + \frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \cot(c+dx)\right)}{d}$$

$$= -\frac{2B\sqrt{\cot(c+dx)}}{d} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d}$$

$$= -\frac{2B\sqrt{\cot(c+dx)}}{d} + \frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} + \frac{B\,\text{Subst}\left(\int \frac{1-}{1-}\right.}{}$$

$$= -\frac{2B\sqrt{\cot(c+dx)}}{d} + \frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{2d} + \frac{B\,\text{Subst}\left(\right.}{}$$

$$= -\frac{2B\sqrt{\cot(c+dx)}}{d} - \frac{B\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(c+dx)\right)}{2\sqrt{2}d} + \frac{B\log\left(1\right.}{}$$

$$= -\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{2B\sqrt{c}}{}$$

Mathematica [A] time = 0.156989, size = 138, normalized size = 0.9

$$-\frac{B\left(8\sqrt{\cot(c+dx)}+\sqrt{2}\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)-\sqrt{2}\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)+2\sqrt{2}\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
),x]
```

```
[Out] -(B*(2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]] - 2*Sqrt[2]*ArcTan[1
+ Sqrt[2]*Sqrt[Cot[c + d*x]]] + 8*Sqrt[Cot[c + d*x]] + Sqrt[2]*Log[1 - Sqrt
[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Cot[c
 + d*x]] + Cot[c + d*x]]))/(4*d)
```

Maple [C] time = 0.243, size = 969, normalized size = 6.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2*B/d*2^(1/2)*(I*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x
+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Ellip
ticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*
cos(d*x+c)-I*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+s
in(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((
-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x
+c)+I*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+
c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d
*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c)
)/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-((cos(d*x+c)-1+sin(d*x+c))/sin(d
*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),
1/2-1/2*I,1/2*2^(1/2))*cos(d*x+c)-(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(
1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c
))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I
,1/2*2^(1/2))*cos(d*x+c)-((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos
(d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*
EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1
/2))-(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c
))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*
x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*2^(1/2)*cos(d
*x+c))*(cos(d*x+c)/sin(d*x+c))^(3/2)*sin(d*x+c)/cos(d*x+c)^2
```

Maxima [A] time = 1.4975, size = 171, normalized size = 1.11

$$\frac{2\sqrt{2}B\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}B\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}B\log\left(\frac{\sqrt{2}}{\sqrt{\tan(dx+c)}}+\frac{1}{\tan(dx+c)}+\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*B*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*s
qrt(2)*B*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*B*
log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*B*log(-sqrt(
2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 8*B/sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan(dx+c)+Ba)\cot(dx+c)^{\frac{3}{2}}}{b\tan(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a),
 x)
```

3.608 $\int \frac{\sqrt{\cot(c+dx)}(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx$

Optimal. Leaf size=138

$$-\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+\right.}{\sqrt{2}d}$$

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
] + Cot[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] +
Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.0966662, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {21, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+\right.}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]),x]
```


```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
] + Cot[c + d*x]])/(2*Sqrt[2]*d) + (B*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] +
Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
```

```
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(aB+bB\tan(c+dx))}{a+b\tan(c+dx)}\,dx = B\int \sqrt{\cot(c+dx)}\,dx$$
$$= -\frac{B\,\text{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \cot(c+dx)\right)}{d}$$
$$= -\frac{(2B)\,\text{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d}$$
$$= \frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} - \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+d}\right.}{d}$$
$$= -\frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{2d} - \frac{B\,\text{Subst}\left(\int \frac{1}{1+\sqrt{2}x+x^2}\,dx, x, \right.}{2d}$$
$$= -\frac{B\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(c+dx)\right)}{2\sqrt{2}d} + \frac{B\log\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right.}{2\sqrt{2}d}$$
$$= \frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{B\log\left(\right.}{}$$

Mathematica [C] time = 0.0214403, size = 36, normalized size = 0.26

$$-\frac{2B\cot^{\frac{3}{2}}(c+dx)\text{Hypergeometric2F1}\left(\frac{3}{4},1,\frac{7}{4},-\cot^2(c+dx)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
),x]
```

```
[Out] (-2*B*Cot[c + d*x]^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -Cot[c + d*x]^2])/(
3*d)
```

Maple [C] time = 0.21, size = 324, normalized size = 2.4

$$-\frac{B\sqrt{2}\,(\cos(dx+c)-1)\,(\cos(dx+c)+1)^2}{2\,d\,(\sin(dx+c))^2\cos(dx+c)}\sqrt{\frac{\cos(dx+c)}{\sin(dx+c)}}\sqrt{-\frac{\cos(dx+c)-1-\sin(dx+c)}{\sin(dx+c)}}\sqrt{\frac{\cos(dx+c)-1+\sin(dx+c)}{\sin(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2*B/d*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(cos(d*x+c)-1)*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*(I*EllipticPi((-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*EllipticPi((-(cos(d*x+c)-1-s
in(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*EllipticF((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2*2^(1/2))+EllipticPi((-(cos(d*x+c)-1-
sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))+EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)))/sin(d*x+c)^2/cos
(d*x+c)*(cos(d*x+c)+1)^2
```

Maxima [A] time = 1.46595, size = 153, normalized size = 1.11

$$-\frac{\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)-\sqrt{2}\log\left(\frac{\sqrt{2}}{\sqrt{\tan(dx+c)}}+\frac{1}{\tan(dx+c)}+1\right)\cdots}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sq
rt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*log(s
qrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)/sqrt
(tan(d*x + c)) + 1/tan(d*x + c) + 1))*B/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\sqrt{\cot\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(sqrt(cot(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(Bb\tan\left(dx+c\right)+Ba\right)\sqrt{\cot\left(dx+c\right)}}{b\tan\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a),
 x)
```

3.609 $\int \frac{aB+bB\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=138

$$\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d}$$

```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
] + Cot[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] +
Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.0922854, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25, Rules used = {21, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])),x]
```


```
[Out] (B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) - (B*ArcTan[1 + Sqrt
[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]
] + Cot[c + d*x]])/(2*Sqrt[2]*d) - (B*Log[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] +
Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
```

```
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{aB + bB\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))}\,dx = B\int \frac{1}{\sqrt{\cot(c+dx)}}\,dx$$
$$= -\frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \cot(c+dx)\right)}{d}$$
$$= -\frac{(2B)\,\text{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d}$$
$$= -\frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} - \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d}$$
$$= -\frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{2d} - \frac{B\,\text{Subst}\left(\int \frac{1}{1+\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(}\right.}{2d}$$
$$= \frac{B\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(c+dx)\right)}{2\sqrt{2}d} - \frac{B\log\left(1+\sqrt{2}\sqrt{\cot(c+dx)}+\cot(\right.}{2\sqrt{2}d}$$
$$= \frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} - \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{B\log\left(1-\right.}{}$$

Mathematica [A] time = 0.0318371, size = 110, normalized size = 0.8

$$\frac{B\left(\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)-\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)+2\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)-\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])
),x]
```

```
[Out] (B*(2*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]] - 2*ArcTan[1 + Sqrt[2]*Sqrt[Co
t[c + d*x]]] + Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]] - Log[1 +
 Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]]))/(2*Sqrt[2]*d)
```

Maple [C] time = 0.261, size = 284, normalized size = 2.1

$$-\frac{B\sqrt{2}\left(\cos\left(dx+c\right)+1\right)^{2}\left(\cos\left(dx+c\right)-1\right)}{2\,d\left(\sin\left(dx+c\right)\right)^{3}}\sqrt{\frac{\cos\left(dx+c\right)-1}{\sin\left(dx+c\right)}}\sqrt{\frac{\cos\left(dx+c\right)-1+\sin\left(dx+c\right)}{\sin\left(dx+c\right)}}\sqrt{-\frac{\cos\left(dx+c\right)-1-\sin}{\sin\left(dx+c\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] -1/2*B/d*2^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c
))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*(cos(d*x
+c)+1)^2*(cos(d*x+c)-1)*(I*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c
))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/si
n(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))-EllipticPi((-(cos(d*x+c)-1-sin(d*x+c
))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))-EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2)))/sin(d*x+c)^3/(cos(d*x+c)/
sin(d*x+c))^(1/2)
```

Maxima [A] time = 1.49622, size = 157, normalized size = 1.14

$$-\frac{2\,\sqrt{2}B\arctan\left(\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\,\sqrt{2}B\arctan\left(-\frac{1}{2}\,\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+\sqrt{2}B\log\left(\frac{\sqrt{2}}{\sqrt{\tan(dx+c)}}+\frac{1}{\tan(dx+c)}\right.}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*B*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*
sqrt(2)*B*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + sqrt(2)*B
*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - sqrt(2)*B*log(-sqrt
(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{1}{\sqrt{\cot{(c+dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(1/sqrt(cot(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan{(dx+c)}+Ba}{(b\tan{(dx+c)}+a)\sqrt{\cot{(dx+c)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)*sqrt(cot(d*x + c))
), x)
```

3.610 $\int \frac{aB+bB\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=154

$$\frac{2B}{d\sqrt{\cot(c+dx)}}+\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}\left(1\right.}{}$$

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*B)/(d*Sqrt[Cot[c + d*x]]) + (B
*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) - (B*Log
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.102262, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2B}{d\sqrt{\cot(c+dx)}}+\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])),x]
```



```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*B)/(d*Sqrt[Cot[c + d*x]]) + (B
*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) - (B*Log
[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{aB+bB\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))}\,dx &= B\int \frac{1}{\cot^{\frac{3}{2}}(c+dx)}\,dx \\
&= \frac{2B}{d\sqrt{\cot(c+dx)}} - B\int \sqrt{\cot(c+dx)}\,dx \\
&= \frac{2B}{d\sqrt{\cot(c+dx)}} + \frac{B\,\text{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \cot(c+dx)\right)}{d} \\
&= \frac{2B}{d\sqrt{\cot(c+dx)}} + \frac{(2B)\,\text{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} \\
&= \frac{2B}{d\sqrt{\cot(c+dx)}} - \frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} + \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,dx,\right.}{d} \\
&= \frac{2B}{d\sqrt{\cot(c+dx)}} + \frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{2d} + \frac{B\,\text{Subst}\left(\int \frac{}{1+\sqrt{}}\right.}{} \\
&= \frac{2B}{d\sqrt{\cot(c+dx)}} + \frac{B\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(c+dx)\right)}{2\sqrt{2}d} - \frac{B\log\left(1+\sqrt{2}\right.}{} \\
&= -\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{2B}{d\sqrt{\cot(c}}
\end{aligned}$$

Mathematica [C] time = 0.0322037, size = 34, normalized size = 0.22

$$\frac{2B\text{Hypergeometric2F1}\left(-\frac{1}{4},1,\frac{3}{4},-\cot^2(c+dx)\right)}{d\sqrt{\cot(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])
),x]
```

```
[Out] (2*B*Hypergeometric2F1[-1/4, 1, 3/4, -Cot[c + d*x]^2])/(d*Sqrt[Cot[c + d*x]
])
```

Maple [C] time = 0.256, size = 658, normalized size = 4.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/2*B/d*2^(1/2)*(I*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x
+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*Ellipt
icPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*s
in(d*x+c)-I*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/si
n(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-
(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+
c)+((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))
^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+
c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(d*x+c)+(-(cos
(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+
c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(
d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(d*x+c)-2*(-(cos(d*x+c)
-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/
2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*EllipticF((-(cos(d*x+c)-1-sin(d*x+c))/
sin(d*x+c))^(1/2),1/2*2^(1/2))*sin(d*x+c)+2*2^(1/2)*cos(d*x+c)-2*2^(1/2))*(
cos(d*x+c)-1)*cos(d*x+c)*(cos(d*x+c)+1)^2/(cos(d*x+c)/sin(d*x+c))^(3/2)/sin
(d*x+c)^5
```

Maxima [A] time = 1.4845, size = 170, normalized size = 1.1

$$\frac{\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)-\sqrt{2}\log\left(\frac{\sqrt{2}}{\sqrt{\tan(dx+c)}}+\frac{1}{\tan(dx+c)}+1\right)+\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/4*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 2*sq
rt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) - sqrt(2)*log(s
qrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)/sqrt
(tan(d*x + c)) + 1/tan(d*x + c) + 1))*B + 8*B*sqrt(tan(d*x + c)))/d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int\frac{1}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] B*Integral(cot(c + d*x)**(-3/2), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{Bb\tan(dx+c)+Ba}{(b\tan(dx+c)+a)\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)*cot(d*x + c)^(3/2)
), x)
```

3.611 $\int \frac{aB+bB\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx$

Optimal. Leaf size=156

$$\frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)}-\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}\left(\right.}{}$$

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*B)/(3*d*Cot[c + d*x]^(3/2)) -
(B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + (B*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rubi [A] time = 0.101635, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {21, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)}-\frac{B\log\left(\cot(c+dx)-\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}+\frac{B\log\left(\cot(c+dx)+\sqrt{2}\sqrt{\cot(c+dx)}+1\right)}{2\sqrt{2}d}-\frac{B\tan^{-1}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])),x]
```

```
[Out] -((B*ArcTan[1 - Sqrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d)) + (B*ArcTan[1 + S
qrt[2]*Sqrt[Cot[c + d*x]]])/(Sqrt[2]*d) + (2*B)/(3*d*Cot[c + d*x]^(3/2)) -
(B*Log[1 - Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d) + (B*L
og[1 + Sqrt[2]*Sqrt[Cot[c + d*x]] + Cot[c + d*x]])/(2*Sqrt[2]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))}\,dx = B\int \frac{1}{\cot^{\frac{5}{2}}(c+dx)}\,dx$$

$$= \frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)} - B\int \frac{1}{\sqrt{\cot(c+dx)}}\,dx$$

$$= \frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{B\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \cot(c+dx)\right)}{d}$$

$$= \frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d}$$

$$= \frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{B\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\cot(c+dx)}\right)}{d} + \frac{B\,\text{Subst}\left(\int \frac{1+x^2}{1+x^4}\,d\right)}{d}$$

$$= \frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{B\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\cot(c+dx)}\right)}{2d} + \frac{B\,\text{Subst}\left(\int \frac{}{1+}\right)}{}$$

$$= \frac{2B}{3d\cot^{\frac{3}{2}}(c+dx)} - \frac{B\log\left(1-\sqrt{2}\sqrt{\cot(c+dx)}+\cot(c+dx)\right)}{2\sqrt{2}d} + \frac{B\log\left(1+\sqrt{2}\right)}{}$$

$$= -\frac{B\tan^{-1}\left(1-\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{B\tan^{-1}\left(1+\sqrt{2}\sqrt{\cot(c+dx)}\right)}{\sqrt{2}d} + \frac{2B}{3d\cot^{\frac{3}{2}}(}$$

Mathematica [C] time = 0.0320397, size = 36, normalized size = 0.23

$$\frac{2B\text{Hypergeometric2F1}\left(-\frac{3}{4},1,\frac{1}{4},-\cot^2(c+dx)\right)}{3d\cot^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])
),x]
```

```
[Out] (2*B*Hypergeometric2F1[-3/4, 1, 1/4, -Cot[c + d*x]^2])/(3*d*Cot[c + d*x]^(3
/2))
```

Maple [C] time = 0.263, size = 546, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] 1/6*B/d*2^(1/2)*(cos(d*x+c)-1)*(3*I*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))
^(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x
+c))^(1/2)*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*cos(d*x+c)-3*I*EllipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d
*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(d*x+c)*((cos(d*x+c)-1)/sin(d*x+c))^
(1/2)*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+
c))/sin(d*x+c))^(1/2)-3*((cos(d*x+c)-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(
d*x+c)-1)/sin(d*x+c))^(1/2)*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*E
llipticPi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2-1/2*I,1/2*2^(1/
2))*cos(d*x+c)-3*(-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)
-1+sin(d*x+c))/sin(d*x+c))^(1/2)*((cos(d*x+c)-1)/sin(d*x+c))^(1/2)*Elliptic
Pi((-(cos(d*x+c)-1-sin(d*x+c))/sin(d*x+c))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos
(d*x+c)+2*2^(1/2)*cos(d*x+c)-2*2^(1/2))*cos(d*x+c)*(cos(d*x+c)+1)^2/sin(d*x
+c)^5/(cos(d*x+c)/sin(d*x+c))^(5/2)
```

Maxima [A] time = 1.51639, size = 173, normalized size = 1.11

$$\frac{6\sqrt{2}B\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+6\sqrt{2}B\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2}{\sqrt{\tan(dx+c)}}\right)\right)+3\sqrt{2}B\log\left(\frac{\sqrt{2}}{\sqrt{\tan(dx+c)}}+\frac{1}{\tan(dx+c)}+\right.}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorit
hm="maxima")
```

```
[Out] 1/12*(6*sqrt(2)*B*arctan(1/2*sqrt(2)*(sqrt(2) + 2/sqrt(tan(d*x + c)))) + 6*
sqrt(2)*B*arctan(-1/2*sqrt(2)*(sqrt(2) - 2/sqrt(tan(d*x + c)))) + 3*sqrt(2)
*B*log(sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) - 3*sqrt(2)*B*log(-
sqrt(2)/sqrt(tan(d*x + c)) + 1/tan(d*x + c) + 1) + 8*B*tan(d*x + c)^(3/2))/
d
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+b*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan\left(dx+c\right)+Ba}{\left(b\tan\left(dx+c\right)+a\right)\cot\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c)),x, algorit
hm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)*cot(d*x + c)^(5/2)
), x)
```

3.612 $\int \cot^{\frac{9}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=354

$$\frac{2\left(35a^2A-7abB+4Ab^2\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105a^2d}+\frac{2\left(35a^2Ab+105a^3B+14ab^2B-8Ab^3\right)\sqrt{\cot(c+dx)}\sqrt{a+}}{105a^3d}$$

```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) - (Sqrt[I*a +
 b]*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
 d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(35*a^2*A*b - 8*A*b^3
 + 105*a^3*B + 14*a*b^2*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(10
5*a^3*d) + (2*(35*a^2*A + 4*A*b^2 - 7*a*b*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*
Tan[c + d*x]])/(105*a^2*d) - (2*(A*b + 7*a*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b
*Tan[c + d*x]])/(35*a*d) - (2*A*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]]
)/(7*d)
```

Rubi [A] time = 1.48774, antiderivative size = 354, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3608, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(35a^2A-7abB+4Ab^2\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105a^2d}+\frac{2\left(35a^2Ab+105a^3B+14ab^2B-8Ab^3\right)\sqrt{\cot(c+dx)}\sqrt{a+}}{105a^3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) - (Sqrt[I*a +
 b]*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
 d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(35*a^2*A*b - 8*A*b^3
 + 105*a^3*B + 14*a*b^2*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(10
5*a^3*d) + (2*(35*a^2*A + 4*A*b^2 - 7*a*b*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*
Tan[c + d*x]])/(105*a^2*d) - (2*(A*b + 7*a*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b
*Tan[c + d*x]])/(35*a*d) - (2*A*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]]
)/(7*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan}{\tan^{\frac{9}{2}}(c+dx)}$$

$$= -\frac{2A\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{7d} - \frac{1}{7}\left(2\sqrt{\cot(c+dx)}\sqrt{\right.$$

$$= -\frac{2(Ab+7aB)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{35ad} - \frac{2A\cot^{\frac{7}{2}}(c}{}$$

$$= \frac{2\left(35a^2A+4Ab^2-7abB\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105a^2d}$$

$$= \frac{2\left(35a^2Ab-8Ab^3+105a^3B+14ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a+b}}{105a^3d}$$

$$= \frac{2\left(35a^2Ab-8Ab^3+105a^3B+14ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a+b}}{105a^3d}$$

$$= \frac{2\left(35a^2Ab-8Ab^3+105a^3B+14ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a+b}}{105a^3d}$$

$$= \frac{2\left(35a^2Ab-8Ab^3+105a^3B+14ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a+b}}{105a^3d}$$

$$= -\frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan}}{d}$$

Mathematica [A] time = 4.00942, size = 291, normalized size = 0.82

$$\frac{\cot^{\frac{7}{2}}(c+dx)\left(2\sqrt{a+b\tan(c+dx)}\left(a\left(35a^2A-7abB+4Ab^2\right)\tan^2(c+dx)+\left(35a^2Ab+105a^3B+14ab^2B-8Ab^3\right)\tan^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Cot[c + d*x]^(7/2)*(105*(-1)^(3/4)*a^3*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((
-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Tan[
c + d*x]^(7/2) - 105*(-1)^(1/4)*a^3*Sqrt[a - I*b]*(I*A + B)*ArcTanh[((-1)^(
```

```
1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Tan[c + d*
x]^(7/2) + 2*Sqrt[a + b*Tan[c + d*x]]*(-15*a^3*A - 3*a^2*(A*b + 7*a*B)*Tan[
c + d*x] + a*(35*a^2*A + 4*A*b^2 - 7*a*b*B)*Tan[c + d*x]^2 + (35*a^2*A*b -
8*A*b^3 + 105*a^3*B + 14*a*b^2*B)*Tan[c + d*x]^3)))/(105*a^3*d)
```

Maple [C] time = 2.038, size = 43931, normalized size = 124.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(9/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(9/2),
 x)
```

3.613 $\int \cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=290

$$\frac{2\left(15a^2A-5abB+2Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^2d}-\frac{2(5aB+Ab)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15ad}+\frac{\sqrt{-b+ia}}{}$$

```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (Sqrt[I*a + b]
*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(15*a^2*A + 2*A*b^2 - 5*
a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*a^2*d) - (2*(A*b +
5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*a*d) - (2*A*Cot[c +
 d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(5*d)
```

Rubi [A] time = 1.18744, antiderivative size = 290, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3608, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A-5abB+2Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^2d}-\frac{2(5aB+Ab)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15ad}+\frac{\sqrt{-b+ia}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (Sqrt[I*a + b]
*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(15*a^2*A + 2*A*b^2 - 5*
a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*a^2*d) - (2*(A*b +
5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*a*d) - (2*A*Cot[c +
 d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(5*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
```

```
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\,\mathrm{t}}{\tan^{\frac{7}{2}}(c+dx)}$$

$$= -\frac{2A\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{5d} - \frac{1}{5}\left(2\sqrt{\cot(c+dx)}\sqrt{\right.$$

$$= -\frac{2(Ab+5aB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15ad} - \frac{2A\cot^{\frac{5}{2}}(c}{}$$

$$= \frac{2\left(15a^2A+2Ab^2-5abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^2d}$$

$$= \frac{2\left(15a^2A+2Ab^2-5abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^2d}$$

$$= \frac{2\left(15a^2A+2Ab^2-5abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^2d}$$

$$= \frac{2\left(15a^2A+2Ab^2-5abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^2d}$$

$$= \frac{\sqrt{ia-b}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(}}{d}$$

Mathematica [A] time = 3.98638, size = 251, normalized size = 0.87

$$-\frac{\cot^{\frac{5}{2}}(c+dx)\left(2\sqrt{a+b\tan(c+dx)}\left(\left(-15a^2A+5abB-2Ab^2\right)\tan^2(c+dx)+3a^2A+a(5aB+Ab)\tan(c+dx)\right)+15\sqrt[4]{\cdot}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] -(Cot[c + d*x]^(5/2)*(15*(-1)^(1/4)*a^2*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((
-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Tan[
c + d*x]^(5/2) + 15*(-1)^(1/4)*a^2*Sqrt[a - I*b]*(A - I*B)*ArcTanh[((-1)^(1
/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Tan[c + d*x
]^(5/2) + 2*Sqrt[a + b*Tan[c + d*x]]*(3*a^2*A + a*(A*b + 5*a*B)*Tan[c + d*x
] + (-15*a^2*A - 2*A*b^2 + 5*a*b*B)*Tan[c + d*x]^2)))/(15*a^2*d)
```

Maple [C] time = 1.63, size = 42569, normalized size = 146.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(7/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(7/2),
 x)
```

3.614 $\int \cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=239

$$\frac{\sqrt{-b+ia}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+Ab)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3ad}$$

```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (Sqrt[I*a + b]
*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(A*b + 3*a*B)*Sqrt[Cot[c
 + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3*a*d) - (2*A*Cot[c + d*x]^(3/2)*Sqrt[a
 + b*Tan[c + d*x]])/(3*d)
```

Rubi [A] time = 0.886644, antiderivative size = 239, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3608, 3649, 3616, 3615, 93, 203, 206}

$$\frac{\sqrt{-b+ia}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+Ab)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (Sqrt[I*a + b]
*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(A*b + 3*a*B)*Sqrt[Cot[c
 + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3*a*d) - (2*A*Cot[c + d*x]^(3/2)*Sqrt[a
 + b*Tan[c + d*x]])/(3*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+b\tan(c+dx)}(A+B}{\tan^{\frac{5}{2}}(c+dx)}$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{3d} - \frac{1}{3}\left(2\sqrt{\cot(c+dx)}\right.$$

$$= -\frac{2(Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3ad} - \frac{2A\cot^{\frac{3}{2}}}{}$$

$$= -\frac{2(Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3ad} - \frac{2A\cot^{\frac{3}{2}}}{}$$

$$= -\frac{2(Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3ad} - \frac{2A\cot^{\frac{3}{2}}}{}$$

$$= -\frac{2(Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3ad} - \frac{2A\cot^{\frac{3}{2}}}{}$$

$$= \frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan}}{d}$$

Mathematica [A] time = 1.56611, size = 216, normalized size = 0.9

$$\frac{\cot^{\frac{3}{2}}(c+dx)\left(-2\sqrt{a+b\tan(c+dx)}((3aB+Ab)\tan(c+dx)+aA)-3(-1)^{3/4}a\sqrt{-a-ib}(A+iB)\tan^{\frac{3}{2}}(c+dx)\tanh^{-1}\left(\right.\right.}{3ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Cot[c + d*x]^(3/2)*(-3*(-1)^(3/4)*a*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)
^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Tan[c +
 d*x]^(3/2) + 3*(-1)^(1/4)*a*Sqrt[a - I*b]*(I*A + B)*ArcTanh[((-1)^(1/4)*Sq
rt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Tan[c + d*x]^(3/2
) - 2*Sqrt[a + b*Tan[c + d*x]]*(a*A + (A*b + 3*a*B)*Tan[c + d*x])))/(3*a*d)
```

Maple [C] time = 1.144, size = 21562, normalized size = 90.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(5/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(5/2),
 x)
```

3.615 $\int \cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=194

$$-\frac{\sqrt{-b+ia}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b+ia}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan}{d}$$

```
[Out] -((Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (Sqrt[I*a +
 b]*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
 d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*A*Sqrt[Cot[c + d*x]]*
Sqrt[a + b*Tan[c + d*x]])/d
```

Rubi [A] time = 0.663634, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {4241, 3608, 3616, 3615, 93, 203, 206}

$$-\frac{\sqrt{-b+ia}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b+ia}(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```

```
[Out] -((Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (Sqrt[I*a +
 b]*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
 d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*A*Sqrt[Cot[c + d*x]]*
Sqrt[a + b*Tan[c + d*x]])/d
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
```

```
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\,\mathrm{t}}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \left(2\sqrt{\cot(c+dx)}\sqrt{\mathrm{ta}}\right.$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{1}{2}\left((ia-b)(A+iB)\right.$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left((ia-b)(A+iB)\sqrt{\mathrm{c}}\right.}{}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left((ia-b)(A+iB)\sqrt{\mathrm{c}}\right.}{}$$

$$= -\frac{\sqrt{ia-b}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\mathrm{tan}}}{d}$$

Mathematica [A] time = 0.688871, size = 188, normalized size = 0.97

$$\frac{\sqrt{\cot(c+dx)}\left(\sqrt[4]{-1}\sqrt{-a-ib}(A+iB)\sqrt{\tan(c+dx)}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)+\sqrt[4]{-1}\sqrt{a-ib}(A-iB)\sqrt{\tan(c+dx)}\,\mathrm{tan}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((-1)^(1/4)*Sqrt[-a - I*b]*(A + I*B)*ArcTanh[((-1)^(1/4
)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Tan[c +
 d*x]] + (-1)^(1/4)*Sqrt[a - I*b]*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*
b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Tan[c + d*x]] - 2*A*S
qrt[a + b*Tan[c + d*x]]))/d
```

Maple [C] time = 0.872, size = 21142, normalized size = 109.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(3/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(3/2),
 x)
```

3.616 $\int \sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=229

$$-\frac{\sqrt{-b+ia}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{\sqrt{b+ia}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (2*Sqrt[b]*
B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c
 + d*x]]*Sqrt[Tan[c + d*x]])/d - (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a
 + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt
[Tan[c + d*x]])/d
```

Rubi [A] time = 0.734432, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3614, 3616, 3615, 93, 203, 206, 3634, 63, 217}

$$-\frac{\sqrt{-b+ia}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{\sqrt{b+ia}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (2*Sqrt[b]*
B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c
 + d*x]]*Sqrt[Tan[c + d*x]])/d - (Sqrt[I*a + b]*(I*A + B)*ArcTanh[(Sqrt[I*a
 + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt
[Tan[c + d*x]])/d
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3614

```
Int[(Sqrt[(a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]]*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/Sqrt[(c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol] :> In
t[Simp[a*A - b*B + (A*b + a*B)*Tan[e + f*x], x]/(Sqrt[a + b*Tan[e + f*x]]*S
qrt[c + d*Tan[e + f*x]]), x] + Dist[b*B, Int[(1 + Tan[e + f*x]^2)/(Sqrt[a +
 b*Tan[e + f*x]]*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
 f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0
]
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+b\tan(c+dx)}(A+B}{\sqrt{\tan(c+dx}}$$

$$= \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{aA-bB+(Ab+aB)\tan}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan}}$$

$$= \frac{1}{2}\left((a-ib)(A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{}{\sqrt{\tan(c}}$$

$$= \frac{\left((a-ib)(A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{}{(1-}\right.}{2d}$$

$$= \frac{\left((a-ib)(A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{}{1-(}\right.}{d}$$

$$= -\frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{t}}{d}$$

Mathematica [A] time = 0.763458, size = 256, normalized size = 1.12

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left((-1)^{3/4}\sqrt{-a-ib}(A+iB)\sqrt{a+b\tan(c+dx)}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)-\sqrt[4]{-1}\sqrt{a-ib}(B+}{d\sqrt{a+b\tan(c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]),
x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*((-1)^(3/4)*Sqrt[-a - I*b]*(A + I*B)
*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c +
d*x]]]*Sqrt[a + b*Tan[c + d*x]] - (-1)^(1/4)*Sqrt[a - I*b]*(I*A + B)*ArcTan
h[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*S
qrt[a + b*Tan[c + d*x]] + 2*Sqrt[a]*Sqrt[b]*B*ArcSinh[(Sqrt[b]*Sqrt[Tan[c +
 d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a]))/(d*Sqrt[a + b*Tan[c + d*x]]
)
```

Maple [C] time = 0.621, size = 8336, normalized size = 36.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*sqrt(cot(d*x + c)),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}\sqrt{\cot(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))*sqrt(cot(c + d*x)),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx + c) + A)\sqrt{b\tan(dx + c) + a}\sqrt{\cot(dx + c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)*sqrt(cot(d*x + c)),
 x)
```

3.617 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=261

$$\frac{\sqrt{-b+ia}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(aB+2Ab)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\right.}{\sqrt{b}d}$$

```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((2*A*b + a*B)
*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c
+ d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[b]*d) - (Sqrt[I*a + b]*(A - I*B)*ArcTanh[
(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d
*x]]*Sqrt[Tan[c + d*x]])/d + (B*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Cot[c + d
*x]])
```

Rubi [A] time = 1.51116, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3610, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\sqrt{-b+ia}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(aB+2Ab)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\right.}{\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```

```
[Out] (Sqrt[I*a - b]*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((2*A*b + a*B)
*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c
+ d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[b]*d) - (Sqrt[I*a + b]*(A - I*B)*ArcTanh[
(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d
*x]]*Sqrt[Tan[c + d*x]])/d + (B*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[Cot[c + d
*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

```
]
```

Rule 3610

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(B*(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n)/(f*(m + n)), x] + Dist
[1/(m + n), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n - 1)*S
imp[a*A*c*(m + n) - B*(b*c*m + a*d*n) + (A*b*c + a*B*c + a*A*d - b*B*d)*(m
+ n)*Tan[e + f*x] + (A*b*d*(m + n) + B*(a*d*m + b*c*n))*Tan[e + f*x]^2, x],
 x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a
^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[0, m, 1] && LtQ[0, n, 1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}(A+$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{-\frac{aB}{2}+(aA-b}{\sqrt{}}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{-\frac{aB}{2}+(aA}{\sqrt{}}\right.}{d}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int\left(\frac{2Ab+}{2\sqrt{x}\sqrt{a}}\right.\right.}{d}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{Ab+aB-(}{\sqrt{x}\sqrt{a+b}}\right.}{d}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int\left(\frac{aA-bB+}{2(i-x)}\right.\right.}{d}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left((a-ib)(A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{S}}{2d}$$

$$= \frac{(2Ab+aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{b}d} + \frac{B\sqrt{a}}{d}$$

$$= \frac{\sqrt{ia-b}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{d} +$$

Mathematica [A] time = 3.26747, size = 295, normalized size = 1.13

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\sqrt[4]{-1}\sqrt{-a-ib}(A+iB)\sqrt{a+b\tan(c+dx)}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)-\sqrt[4]{-1}\sqrt{a-ib}(A\right.}{d\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]
],x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((-1)^(1/4)*Sqrt[-a - I*b]*(A + I*
B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
```

```
+ d*x]]]*Sqrt[a + b*Tan[c + d*x]]) - (-1)^(1/4)*Sqrt[a - I*b]*(A - I*B)*Arc
Tanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]
]*Sqrt[a + b*Tan[c + d*x]] + B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x]) + ((
2*A*b + a*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*(a + b*Tan[c + d
*x]))/(Sqrt[a]*Sqrt[b]*Sqrt[1 + (b*Tan[c + d*x])/a])))/(d*Sqrt[a + b*Tan[c
+ d*x]])
```

Maple [C] time = 0.998, size = 23606, normalized size = 90.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)/sqrt(cot(d*x + c)),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{a + b\tan(c + dx)}}{\sqrt{\cot(c + dx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))/sqrt(cot(c + d*x)),
x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.618 $\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=324

$$\frac{\left(a^2(-B)+4aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4b^{3/2}d}+\frac{\sqrt{-b+ia}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+}}{d}$$

```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((4*a*A*b - a^
2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]
]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(4*b^(3/2)*d) + (Sqrt[I*a + b]*(I
*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]
]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((4*A*b - a*B)*Sqrt[a + b*Tan[
c + d*x]])/(4*b*d*Sqrt[Cot[c + d*x]]) + (B*(a + b*Tan[c + d*x])^(3/2))/(2*b
*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 1.99145, antiderivative size = 324, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(a^2(-B)+4aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4b^{3/2}d}+\frac{\sqrt{-b+ia}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),x]
```


```
[Out] (Sqrt[I*a - b]*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((4*a*A*b - a^
2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]
]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(4*b^(3/2)*d) + (Sqrt[I*a + b]*(I
*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]
]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((4*A*b - a*B)*Sqrt[a + b*Tan[
c + d*x]])/(4*b*d*Sqrt[Cot[c + d*x]]) + (B*(a + b*Tan[c + d*x])^(3/2))/(2*b
*d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
```

```
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{a+b\tan(c+dx)}(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}(A+I$$

$$= \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{a+b\tan(c+dx)}}{}}{2b}$$

$$= \frac{(4Ab-aB)\sqrt{a+b\tan(c+dx)}}{4bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+\right.}}{}$$

$$= \frac{(4Ab-aB)\sqrt{a+b\tan(c+dx)}}{4bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+\right.}}{}$$

$$= \frac{(4Ab-aB)\sqrt{a+b\tan(c+dx)}}{4bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+\right.}}{}$$

$$= \frac{(4Ab-aB)\sqrt{a+b\tan(c+dx)}}{4bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c+\right.}}{}$$

$$= \frac{(4Ab-aB)\sqrt{a+b\tan(c+dx)}}{4bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c+\right.}}{}$$

$$= \frac{(4Ab-aB)\sqrt{a+b\tan(c+dx)}}{4bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{3/2}}{2bd\sqrt{\cot(c+dx)}} - \frac{\left((ia+b)(A\right.}{}$$

$$= \frac{\left(4aAb-a^2B-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{4b^{3/2}d}$$

$$= \frac{\sqrt{ia-b}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{d} + \cdots$$

Mathematica [A] time = 4.73364, size = 356, normalized size = 1.1

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\left(a^2B-4aAb+8b^2B\right)(a+b\tan(c+dx))\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)+\sqrt{a}\sqrt{b}\sqrt{\frac{b\tan(c+dx)}{a}+1}\left(\cdots\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + b*Tan[c + d*x]]*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2
),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((-4*a*A*b + a^2*B + 8*b^2*B)*ArcS
inh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*(a + b*Tan[c + d*x])) + Sqrt[a]*S
qrt[b]*Sqrt[1 + (b*Tan[c + d*x])/a]*(-4*(-1)^(3/4)*Sqrt[-a - I*b]*b*(A + I*
B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[a + b*Tan[c + d*x]] + 4*(-1)^(1/4)*Sqrt[a - I*b]*b*(I*A + B)*
ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]]*Sqrt[a + b*Tan[c + d*x]] + Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])*(4*
A*b + a*B + 2*b*B*Tan[c + d*x]))))/(4*Sqrt[a]*b^(3/2)*d*Sqrt[a + b*Tan[c +
d*x]]*Sqrt[1 + (b*Tan[c + d*x])/a])
```

Maple [C] time = 1.514, size = 28218, normalized size = 87.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{b\tan(dx+c)+a}}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(b*tan(d*x + c) + a)/cot(d*x + c)^(3/2),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan{(c + dx)})\sqrt{a + b\tan{(c + dx)}}}{\cot^{\frac{3}{2}}{(c + dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(a + b*tan(c + d*x))/cot(c + d*x)**(3/2),
 x)
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(1/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.619 $\int \cot^{\frac{11}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=422

$$\frac{2\left(21a^2A-24abB-Ab^2\right)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105ad}+\frac{2\left(126a^2Ab+105a^3B-9ab^2B+4Ab^3\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b}}{315a^2d}$$

```
[Out] ((I*a - b)^(3/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(
3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(315*a^4*A - 63*a^2*
A*b^2 + 8*A*b^4 - 420*a^3*b*B - 18*a*b^3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*T
an[c + d*x]])/(315*a^3*d) + (2*(126*a^2*A*b + 4*A*b^3 + 105*a^3*B - 9*a*b^2
*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(315*a^2*d) + (2*(21*a^2*A
 - A*b^2 - 24*a*b*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(105*a*d)
 - (2*(10*A*b + 9*a*B)*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]])/(63*d)
- (2*a*A*Cot[c + d*x]^(9/2)*Sqrt[a + b*Tan[c + d*x]])/(9*d)
```

Rubi [A] time = 2.02452, antiderivative size = 422, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(21a^2A-24abB-Ab^2\right)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105ad}+\frac{2\left(126a^2Ab+105a^3B-9ab^2B+4Ab^3\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b}}{315a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(11/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((I*a - b)^(3/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(
3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(315*a^4*A - 63*a^2*
A*b^2 + 8*A*b^4 - 420*a^3*b*B - 18*a*b^3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*T
an[c + d*x]])/(315*a^3*d) + (2*(126*a^2*A*b + 4*A*b^3 + 105*a^3*B - 9*a*b^2
*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(315*a^2*d) + (2*(21*a^2*A
 - A*b^2 - 24*a*b*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(105*a*d)
 - (2*(10*A*b + 9*a*B)*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]])/(63*d)
```

```
- (2*a*A*Cot[c + d*x]^(9/2)*Sqrt[a + b*Tan[c + d*x]])/(9*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] && !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
```

```
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{11}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{3/2}(A}{\tan^{\frac{11}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{9}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{9d} + \frac{1}{9}\left(2\sqrt{\cot(c+\right.$$

$$= -\frac{2(10Ab+9aB)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{63d} - \frac{2a}{}$$

$$= \frac{2\left(21a^2A - Ab^2 - 24abB\right)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+}}{105ad}$$

$$= \frac{2\left(126a^2Ab + 4Ab^3 + 105a^3B - 9ab^2B\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{}}{315a^2d}$$

$$= -\frac{2\left(315a^4A - 63a^2Ab^2 + 8Ab^4 - 420a^3bB - 18ab^3B\right)\sqrt{}}{315a^3d}$$

$$= -\frac{2\left(315a^4A - 63a^2Ab^2 + 8Ab^4 - 420a^3bB - 18ab^3B\right)\sqrt{}}{315a^3d}$$

$$= -\frac{2\left(315a^4A - 63a^2Ab^2 + 8Ab^4 - 420a^3bB - 18ab^3B\right)\sqrt{}}{315a^3d}$$

$$= -\frac{2\left(315a^4A - 63a^2Ab^2 + 8Ab^4 - 420a^3bB - 18ab^3B\right)\sqrt{}}{315a^3d}$$

$$= -\frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{\sqrt{ia-b}\,d}$$

Mathematica [A] time = 6.59843, size = 495, normalized size = 1.17

$$\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{bB\sqrt{a+b\tan(c+dx)}}{4d\tan^{\frac{9}{2}}(c+dx)}+\frac{1}{4}\left(-\frac{(8aA-9bB)\sqrt{a+b\tan(c+dx)}}{9d\tan^{\frac{9}{2}}(c+dx)}+\frac{2\left(-\frac{4a(9aB+10Ab)\sqrt{a+b\tan(c+}}{7d\tan^{\frac{7}{2}}(c+dx)}\right.}{}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(11/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x
]),x]
```

```
[Out] Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-(b*B*Sqrt[a + b*Tan[c + d*x]])/(4*d
*Tan[c + d*x]^(9/2)) + (-((8*a*A - 9*b*B)*Sqrt[a + b*Tan[c + d*x]])/(9*d*Ta
n[c + d*x]^(9/2)) + (2*((-4*a*(10*A*b + 9*a*B)*Sqrt[a + b*Tan[c + d*x]])/(7
*d*Tan[c + d*x]^(7/2)) - (2*((-6*a*(21*a^2*A - A*b^2 - 24*a*b*B)*Sqrt[a + b
*Tan[c + d*x]])/(5*d*Tan[c + d*x]^(5/2)) - (2*((a*(126*a^2*A*b + 4*A*b^3 +
105*a^3*B - 9*a*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(d*Tan[c + d*x]^(3/2)) - (
2*((945*a^4*((-1)^(1/4)*(-a - I*b)^(3/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt
[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - (-1)^(1/4)*(a -
I*b)^(3/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/
Sqrt[a + b*Tan[c + d*x]]]))/(4*d) + (3*a*(315*a^4*A - 63*a^2*A*b^2 + 8*A*b^
4 - 420*a^3*b*B - 18*a*b^3*B)*Sqrt[a + b*Tan[c + d*x]])/(2*d*Sqrt[Tan[c + d
*x]])))/(3*a)))/(5*a)))/(7*a)))/(9*a))/4)
```

Maple [C] time = 2.586, size = 74462, normalized size = 176.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{11}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algo
rithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(11/
2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algo
rithm="fricas")

[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(11/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)

[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algo
rithm="giac")

[Out] Timed out
```

3.620 $\int \cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=351

$$\frac{2\left(35a^2A-42abB-3Ab^2\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105ad}+\frac{2\left(140a^2Ab+105a^3B-21ab^2B+6Ab^3\right)\sqrt{\cot(c+dx)}\sqrt{}}{105a^2d}$$

```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) - ((I*a + b
)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(140*a^2*A*b + 6*
A*b^3 + 105*a^3*B - 21*a*b^2*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]
)/(105*a^2*d) + (2*(35*a^2*A - 3*A*b^2 - 42*a*b*B)*Cot[c + d*x]^(3/2)*Sqrt[
a + b*Tan[c + d*x]])/(105*a*d) - (2*(8*A*b + 7*a*B)*Cot[c + d*x]^(5/2)*Sqrt
[a + b*Tan[c + d*x]])/(35*d) - (2*a*A*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c +
 d*x]])/(7*d)
```

Rubi [A] time = 1.64417, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(35a^2A-42abB-3Ab^2\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105ad}+\frac{2\left(140a^2Ab+105a^3B-21ab^2B+6Ab^3\right)\sqrt{\cot(c+dx)}\sqrt{}}{105a^2d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) - ((I*a + b
)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(140*a^2*A*b + 6*
A*b^3 + 105*a^3*B - 21*a*b^2*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]
)/(105*a^2*d) + (2*(35*a^2*A - 3*A*b^2 - 42*a*b*B)*Cot[c + d*x]^(3/2)*Sqrt[
a + b*Tan[c + d*x]])/(105*a*d) - (2*(8*A*b + 7*a*B)*Cot[c + d*x]^(5/2)*Sqrt
[a + b*Tan[c + d*x]])/(35*d) - (2*a*A*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c +
 d*x]])/(7*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{3/2}(A\ldots}{\tan^{\frac{9}{2}}(c+d\ldots}$$

$$= -\frac{2aA\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{7d} + \frac{1}{7}\left(2\sqrt{\cot(c+d\ldots}\right.$$

$$= -\frac{2(8Ab+7aB)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{35d} - \frac{2aA\,\mathrm{c}\ldots}{}$$

$$= \frac{2\left(35a^2A-3Ab^2-42abB\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+d\ldots}}{105ad}$$

$$= \frac{2\left(140a^2Ab+6Ab^3+105a^3B-21ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a\ldots}}{105a^2d}$$

$$= \frac{2\left(140a^2Ab+6Ab^3+105a^3B-21ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a\ldots}}{105a^2d}$$

$$= \frac{2\left(140a^2Ab+6Ab^3+105a^3B-21ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a\ldots}}{105a^2d}$$

$$= \frac{2\left(140a^2Ab+6Ab^3+105a^3B-21ab^2B\right)\sqrt{\cot(c+dx)}\sqrt{a\ldots}}{105a^2d}$$

$$= -\frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\ldots}{d}$$

Mathematica [A] time = 5.03103, size = 346, normalized size = 0.99

$$-\frac{\cot^{\frac{7}{2}}(c+dx)\left(a\tan(c+dx)\left(-2\left(140a^2Ab+105a^3B-21ab^2B+6Ab^3\right)\tan^2(c+dx)\sqrt{a+b\tan(c+dx)}-2a\left(35a^2A-\ldots\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] -(Cot[c + d*x]^(7/2)*(35*a^3*b*B*Sqrt[a + b*Tan[c + d*x]] + 5*a^3*(6*a*A -
7*b*B)*Sqrt[a + b*Tan[c + d*x]] + a*Tan[c + d*x]*(105*(-1)^(3/4)*a^2*((-a -
 I*b)^(3/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]]
```

```
)/Sqrt[a + b*Tan[c + d*x]]] + (a - I*b)^(3/2)*(A - I*B)*ArcTanh[((-1)^(1/4)
*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])*Tan[c + d*x]^
(5/2) + 6*a^2*(8*A*b + 7*a*B)*Sqrt[a + b*Tan[c + d*x]] - 2*a*(35*a^2*A - 3*
A*b^2 - 42*a*b*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]] - 2*(140*a^2*A*b +
6*A*b^3 + 105*a^3*B - 21*a*b^2*B)*Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]))
)/(105*a^3*d)
```

Maple [C] time = 2.154, size = 49857, normalized size = 142.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(9/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.621 $\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=299

$$\frac{2\left(15a^2A-20abB-3Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15ad}-\frac{2(5aB+6Ab)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15d}+\frac{(a+ib}{}$$

```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) +
((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(15*a^2*
A - 3*A*b^2 - 20*a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*a*
d) - (2*(6*A*b + 5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*d)
 - (2*a*A*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(5*d)
```

Rubi [A] time = 1.30531, antiderivative size = 299, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A-20abB-3Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15ad}-\frac{2(5aB+6Ab)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15d}+\frac{(a+ib}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) +
((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(15*a^2*
A - 3*A*b^2 - 20*a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*a*
d) - (2*(6*A*b + 5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*d)
 - (2*a*A*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(5*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
```

```
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{3/2}(A\ \ldots}{\tan^{\frac{7}{2}}(c+d\ \ldots}$$

$$= -\frac{2aA\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{5d} + \frac{1}{5}\left(2\sqrt{\cot(c+d\ \ldots}\right.$$

$$= -\frac{2(6Ab+5aB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15d} - \frac{2aA\,\mathrm{co}\ \ldots}{}$$

$$= \frac{2\left(15a^2A-3Ab^2-20abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+d\ \ldots}}{15ad}$$

$$= \frac{2\left(15a^2A-3Ab^2-20abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+d\ \ldots}}{15ad}$$

$$= \frac{2\left(15a^2A-3Ab^2-20abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+d\ \ldots}}{15ad}$$

$$= \frac{2\left(15a^2A-3Ab^2-20abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+d\ \ldots}}{15ad}$$

$$= \frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\mathrm{ta}\ \ldots}}{\sqrt{ia-b}\,d}$$

Mathematica [A] time = 2.28585, size = 286, normalized size = 0.96

$$-\frac{\cot^{\frac{5}{2}}(c+dx)\left(-4\left(15a^2A-20abB-3Ab^2\right)\tan^2(c+dx)\sqrt{a+b\tan(c+dx)}+4a(5aB+6Ab)\tan(c+dx)\sqrt{a+b\tan(c\ \ldots}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] -(Cot[c + d*x]^(5/2)*(-30*(-1)^(1/4)*a*((-a - I*b)^(3/2)*(A + I*B)*ArcTanh[
((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] -
(a - I*b)^(3/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*
x]])/Sqrt[a + b*Tan[c + d*x]]])*Tan[c + d*x]^(5/2) + 15*a*b*B*Sqrt[a + b*Ta
n[c + d*x]] + 3*a*(4*a*A - 5*b*B)*Sqrt[a + b*Tan[c + d*x]] + 4*a*(6*A*b + 5
*a*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]] - 4*(15*a^2*A - 3*A*b^2 - 20*a*
```

```
b*B)*Tan[c + d*x]^2*Sqrt[a + b*Tan[c + d*x]]))/(30*a*d)
```

Maple [C] time = 1.624, size = 48329, normalized size = 161.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(7/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.622 $\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=236

$$\frac{(-b+ia)^{3/2}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+4Ab)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+d}}{3d}$$

```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((I*a + b)^(
3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(4*A*b + 3*a*B)*Sqrt
[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3*d) - (2*a*A*Cot[c + d*x]^(3/2)*
Sqrt[a + b*Tan[c + d*x]])/(3*d)
```

Rubi [A] time = 1.09749, antiderivative size = 236, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{(-b+ia)^{3/2}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2(3aB+4Ab)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+d}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```

```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((I*a + b)^(
3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(4*A*b + 3*a*B)*Sqrt
[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3*d) - (2*a*A*Cot[c + d*x]^(3/2)*
Sqrt[a + b*Tan[c + d*x]])/(3*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{3/2}(A}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{3d} + \frac{1}{3}\left(2\sqrt{\cot(c+\right.$$

$$= -\frac{2(4Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= -\frac{2(4Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= -\frac{2(4Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= -\frac{2(4Ab+3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3d} - \frac{2aA}{}$$

$$= \frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{d}$$

Mathematica [A] time = 0.985477, size = 244, normalized size = 1.03

$$\frac{\sqrt{\cot(c+dx)}\left(-2(3aB+4Ab)\sqrt{a+b\tan(c+dx)}+3\sqrt[4]{-1}\sqrt{\tan(c+dx)}\left(i(-a-ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+d}}{\sqrt{a+b\tan(c+dx)}}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*(3*(-1)^(1/4)*(I*(-a - I*b)^(3/2)*(A + I*B)*ArcTanh[((-
1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + (a
- I*b)^(3/2)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]])*Sqrt[Tan[c + d*x]] - 2*(4*A*b + 3*a*B)*Sqrt[a
+ b*Tan[c + d*x]] - 3*b*B*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]] + (-2*a*A +
 3*b*B)*Cot[c + d*x]*Sqrt[a + b*Tan[c + d*x]]))/(3*d)
```

Maple [C] time = 1.155, size = 24544, normalized size = 104.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.623 $\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=269

$$-\frac{(a+ib)^2(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(b+ia)^{3/2}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

```
[Out] -(((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d))
 + (2*b^(3/2)*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(3/2)*(I*A + B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a*A*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Ta
n[c + d*x]])/d
```

Rubi [A] time = 1.863, antiderivative size = 269, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3605, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{(a+ib)^2(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(b+ia)^{3/2}(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
 b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d))
 + (2*b^(3/2)*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(3/2)*(I*A + B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*a*A*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Ta
n[c + d*x]])/d
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{3/2}(A}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \left(2\sqrt{\cot(c+dx}\right.$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\left(2\sqrt{\cot(c+dx}\right.}{}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\left(2\sqrt{\cot(c+dx}\right.}{}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\left(\sqrt{\cot(c+dx)}\right.}{}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} + \frac{\left(\sqrt{\cot(c+dx)}\right.}{}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{\left((a-ib)^2(A-\right.}{}$$

$$= \frac{2b^{3/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{d}$$

$$= -\frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{\sqrt{ia-b}d}$$

Mathematica [C] time = 31.956, size = 114092, normalized size = 424.13

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] Result too large to show
```

Maple [C] time = 1.145, size = 41906, normalized size = 155.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.624 $\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=264

$$-\frac{(-b+ia)^{3/2}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b}(3aB+2Ab)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\,\mathrm{t}}{d}$$

```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (Sqrt[b]*
(2*A*b + 3*a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(3/2)*(A - I*B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*B*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[
Cot[c + d*x]])
```

Rubi [A] time = 1.83747, antiderivative size = 264, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3607, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{(-b+ia)^{3/2}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{\sqrt{b}(3aB+2Ab)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\,\mathrm{t}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (Sqrt[b]*
(2*A*b + 3*a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(3/2)*(A - I*B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*B*Sqrt[a + b*Tan[c + d*x]])/(d*Sqrt[
Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{3/2}(A}{\sqrt{\tan(c+}}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)S}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)S}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)S}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)S}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} + \frac{\left((a+ib)^2(iA-B)\sqrt{\cot(c+dx}\right.}{}$$

$$= \frac{\sqrt{b}(2Ab+3aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{t}}{d}$$

$$= -\frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx}}{d}$$

Mathematica [A] time = 1.17978, size = 263, normalized size = 1.

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-(-1)^{3/4}(-a-ib)^{3/2}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)-\sqrt[4]{-1}(a-ib)^{3/2}(B+iA)\tanh^{-1}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-((-1)^(3/4)*(-a - I*b)^(3/2)*(A +
I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[
```

```
c + d*x]]]) - (-1)^(1/4)*(a - I*b)^(3/2)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt
[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + b*B*Sqrt[Tan[c +
d*x]]*Sqrt[a + b*Tan[c + d*x]] + (Sqrt[a]*Sqrt[b]*(2*A*b + 3*a*B)*ArcSinh[(
Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/Sqrt[a +
 b*Tan[c + d*x]]))/d
```

Maple [C] time = 1.099, size = 27748, normalized size = 105.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.625 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=328

$$\frac{\left(3a^2B+12aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4\sqrt{b}d}+\frac{(a+ib)^2(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d\sqrt{-b+ia}}$$

```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) +
((12*a*A*b + 3*a^2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(4*Sqrt[b]*d) +
((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*B*Sqrt[a
 + b*Tan[c + d*x]])/(2*d*Cot[c + d*x]^(3/2)) + ((4*A*b + 5*a*B)*Sqrt[a + b*
Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 2.39289, antiderivative size = 328, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(3a^2B+12aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4\sqrt{b}d}+\frac{(a+ib)^2(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}}{d\sqrt{-b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```


```
[Out] ((a + I*b)^2*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) +
((12*a*A*b + 3*a^2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(4*Sqrt[b]*d) +
((I*a + b)^(3/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*B*Sqrt[a
 + b*Tan[c + d*x]])/(2*d*Cot[c + d*x]^(3/2)) + ((4*A*b + 5*a*B)*Sqrt[a + b*
Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}($$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{1}{2}\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c}}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{(4Ab+5aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c}\right.}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{(4Ab+5aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c}\right.}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{(4Ab+5aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c}\right.}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{(4Ab+5aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c}\right.}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{(4Ab+5aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c}\right.}{}$$

$$= \frac{bB\sqrt{a+b\tan(c+dx)}}{2d\cot^{\frac{3}{2}}(c+dx)} + \frac{(4Ab+5aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{\left((a-ib\right.}{}$$

$$= \frac{\left(12aAb+3a^2B-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c}}{4\sqrt{b}d}$$

$$= \frac{(a+ib)^2(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-bd}}$$

Mathematica [A] time = 3.08431, size = 310, normalized size = 0.95

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\sqrt{a}\left(3a^2B+12aAb-8b^2B\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{b}\sqrt{a+b\tan(c+dx)}} + (5aB+4Ab)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*
x]],x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(4*(-1)^(1/4)*(-a - I*b)^(3/2)*(A +
I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[
c + d*x]]] - 4*(-1)^(1/4)*(a - I*b)^(3/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqr
t[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + (4*A*b + 5*a*B)*
Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + 2*b*B*Tan[c + d*x]^(3/2)*Sqrt
[a + b*Tan[c + d*x]] + (Sqrt[a]*(12*a*A*b + 3*a^2*B - 8*b^2*B)*ArcSinh[(Sqr
t[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sq
rt[a + b*Tan[c + d*x]])))/(4*d)
```

Maple [C] time = 1.454, size = 30720, normalized size = 93.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)/sqrt(cot(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.626 $\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=383

$$\frac{\left(a^2(-B)+6aAb-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}}+\frac{\left(6a^2Ab+a^3(-B)-24ab^2B-16Ab^3\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}(}{8b^{3/2}d}$$

```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((6*a^2*A*b
- 16*A*b^3 - a^3*B - 24*a*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(8*b^(3/2)*d) +
 ((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((6*a*A*b
- a^2*B - 8*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(8*b*d*Sqrt[Cot[c + d*x]]) + (
(6*A*b - a*B)*(a + b*Tan[c + d*x])^(3/2))/(12*b*d*Sqrt[Cot[c + d*x]]) + (B*
(a + b*Tan[c + d*x])^(5/2))/(3*b*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 2.53248, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(a^2(-B)+6aAb-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}}+\frac{\left(6a^2Ab+a^3(-B)-24ab^2B-16Ab^3\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}(}{8b^{3/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),x]
```


```
[Out] ((I*a - b)^(3/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((6*a^2*A*b
- 16*A*b^3 - a^3*B - 24*a*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(8*b^(3/2)*d) +
 ((I*a + b)^(3/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((6*a*A*b
- a^2*B - 8*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(8*b*d*Sqrt[Cot[c + d*x]]) + (
(6*A*b - a*B)*(a + b*Tan[c + d*x])^(3/2))/(12*b*d*Sqrt[Cot[c + d*x]]) + (B*
(a + b*Tan[c + d*x])^(5/2))/(3*b*d*Sqrt[Cot[c + d*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) && !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] && !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{3/2}(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}(A$$

$$= \frac{B(a+b\tan(c+dx))^{5/2}}{3bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+d}{}}{3}$$

$$= \frac{(6Ab-aB)(a+b\tan(c+dx))^{3/2}}{12bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{5/2}}{3bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot}\right.}{}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}} + \frac{(6Ab-aB)(a+b\tan(c}{12bd\sqrt{\cot(c+dx}}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}} + \frac{(6Ab-aB)(a+b\tan(c}{12bd\sqrt{\cot(c+dx}}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}} + \frac{(6Ab-aB)(a+b\tan(c}{12bd\sqrt{\cot(c+dx}}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}} + \frac{(6Ab-aB)(a+b\tan(c}{12bd\sqrt{\cot(c+dx}}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}} + \frac{(6Ab-aB)(a+b\tan(c}{12bd\sqrt{\cot(c+dx}}$$

$$= \frac{\left(6aAb-a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8bd\sqrt{\cot(c+dx)}} + \frac{(6Ab-aB)(a+b\tan(c}{12bd\sqrt{\cot(c+dx}}$$

$$= \frac{\left(6a^2Ab-16Ab^3-a^3B-24ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+a}}{8b^{3/2}d}$$

$$= \frac{(ia-b)^{3/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{d}$$

Mathematica [A] time = 5.61411, size = 367, normalized size = 0.96

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-3\left(a^2B-6aAb+8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} - \frac{3\sqrt{a}\left(-6a^2Ab+a^3B+24ab^2B+16Ab^3\right)\sqrt{\frac{b}{}}}{\sqrt{b}\sqrt{a+b\tan}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(3/2)*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(24*(-1)^(3/4)*(-a - I*b)^(3/2)*b*(A
 + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*T
an[c + d*x]]] + 24*(-1)^(1/4)*(a - I*b)^(3/2)*b*(I*A + B)*ArcTanh[((-1)^(1/
4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 3*(-6*a*A*
b + a^2*B + 8*b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + 2*(6*A*b
 - a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2) + 8*B*Sqrt[Tan[c + d*
x]]*(a + b*Tan[c + d*x])^(5/2) - (3*Sqrt[a]*(-6*a^2*A*b + 16*A*b^3 + a^3*B
+ 24*a*b^2*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan
[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]])))/(24*b*d)
```

Maple [C] time = 2.793, size = 34370, normalized size = 89.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{3}{2}}}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(3/2)/cot(d*x + c)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(3/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.627 $\int \cot^{\frac{13}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=500

$$\frac{2\left(99a^2A-209abB-113Ab^2\right)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{693d}+\frac{2\left(495a^2Ab+231a^3B-275ab^2B-5Ab^3\right)\cot^{\frac{5}{2}}(c+dx}{1155ad}$$

```
[Out] -((((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) - ((I*a + b
)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(8085*a^4*A*b - 4
95*a^2*A*b^3 + 40*A*b^5 + 3465*a^5*B - 5313*a^3*b^2*B - 110*a*b^4*B)*Sqrt[C
ot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3465*a^3*d) - (2*(1155*a^4*A - 1485
*a^2*A*b^2 - 20*A*b^4 - 2541*a^3*b*B + 55*a*b^3*B)*Cot[c + d*x]^(3/2)*Sqrt[
a + b*Tan[c + d*x]])/(3465*a^2*d) + (2*(495*a^2*A*b - 5*A*b^3 + 231*a^3*B -
 275*a*b^2*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(1155*a*d) + (2*
(99*a^2*A - 113*A*b^2 - 209*a*b*B)*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*
x]])/(693*d) - (2*a*(14*A*b + 11*a*B)*Cot[c + d*x]^(9/2)*Sqrt[a + b*Tan[c +
 d*x]])/(99*d) - (2*a*A*Cot[c + d*x]^(11/2)*(a + b*Tan[c + d*x])^(3/2))/(11
*d)
```

Rubi [A] time = 2.47043, antiderivative size = 500, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4241, 3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(99a^2A-209abB-113Ab^2\right)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{693d}+\frac{2\left(495a^2Ab+231a^3B-275ab^2B-5Ab^3\right)\cot^{\frac{5}{2}}(c+dx}{1155ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(13/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) - ((I*a + b
)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(8085*a^4*A*b - 4
95*a^2*A*b^3 + 40*A*b^5 + 3465*a^5*B - 5313*a^3*b^2*B - 110*a*b^4*B)*Sqrt[C
ot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3465*a^3*d) - (2*(1155*a^4*A - 1485
```

```
*a^2*A*b^2 - 20*A*b^4 - 2541*a^3*b*B + 55*a*b^3*B)*Cot[c + d*x]^(3/2)*Sqrt[
a + b*Tan[c + d*x]])/(3465*a^2*d) + (2*(495*a^2*A*b - 5*A*b^3 + 231*a^3*B -
 275*a*b^2*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(1155*a*d) + (2*
(99*a^2*A - 113*A*b^2 - 209*a*b*B)*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*
x]])/(693*d) - (2*a*(14*A*b + 11*a*B)*Cot[c + d*x]^(9/2)*Sqrt[a + b*Tan[c +
 d*x]])/(99*d) - (2*a*A*Cot[c + d*x]^(11/2)*(a + b*Tan[c + d*x])^(3/2))/(11
*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
```

```
(f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
```

```
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{13}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(\ldots}{\tan^{\frac{13}{2}}(c+\ldots}$$

$$= -\frac{2aA\cot^{\frac{11}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}{11d} + \frac{1}{11}\left(2\sqrt{\cot\ldots}\right.$$

$$= -\frac{2a(14Ab+11aB)\cot^{\frac{9}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{99d} - \ldots$$

$$= \frac{2\left(99a^2A-113Ab^2-209abB\right)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan\ldots}}{693d}$$

$$= \frac{2\left(495a^2Ab-5Ab^3+231a^3B-275ab^2B\right)\cot^{\frac{5}{2}}(c+dx)\ldots}{1155ad}$$

$$= -\frac{2\left(1155a^4A-1485a^2Ab^2-20Ab^4-2541a^3bB+55ab\ldots\right.}{3465a^2d}$$

$$= -\frac{2\left(8085a^4Ab-495a^2Ab^3+40Ab^5+3465a^5B-5313\ldots\right.}{3465a\ldots}$$

$$= -\frac{2\left(8085a^4Ab-495a^2Ab^3+40Ab^5+3465a^5B-5313\ldots\right.}{3465a\ldots}$$

$$= -\frac{2\left(8085a^4Ab-495a^2Ab^3+40Ab^5+3465a^5B-5313\ldots\right.}{3465a\ldots}$$

$$= -\frac{2\left(8085a^4Ab-495a^2Ab^3+40Ab^5+3465a^5B-5313\ldots\right.}{3465a\ldots}$$

$$= -\frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx\ldots}}{d}$$

Mathematica [A] time = 6.98571, size = 653, normalized size = 1.31

$$\left(\vphantom{\int} \right. \quad \left(\vphantom{\int} \right. \quad \left(\vphantom{\int} \right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(13/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x
]),x]
```

```
[Out] Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-(b*B*(a + b*Tan[c + d*x])^(3/2))/(4
*d*Tan[c + d*x]^(11/2)) + (-(b*(8*A*b + 5*a*B)*Sqrt[a + b*Tan[c + d*x]])/(1
0*d*Tan[c + d*x]^(11/2)) + (-((80*a^2*A - 88*A*b^2 - 165*a*b*B)*Sqrt[a + b*
Tan[c + d*x]])/(22*d*Tan[c + d*x]^(11/2)) - (2*((5*a*(184*a*A*b + 88*a^2*B
- 99*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(18*d*Tan[c + d*x]^(9/2)) - (2*((10*a
^2*(99*a^2*A - 113*A*b^2 - 209*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(7*d*Tan[c
+ d*x]^(7/2)) - (2*((-3*a^2*(495*a^2*A*b - 5*A*b^3 + 231*a^3*B - 275*a*b^2*
B)*Sqrt[a + b*Tan[c + d*x]])/(d*Tan[c + d*x]^(5/2)) - (2*((-5*a^2*(1155*a^4
*A - 1485*a^2*A*b^2 - 20*A*b^4 - 2541*a^3*b*B + 55*a*b^3*B)*Sqrt[a + b*Tan[
c + d*x]])/(2*d*Tan[c + d*x]^(3/2)) - (2*((51975*a^5*((-1)^(3/4)*(-a - I*b)
^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqr
t[a + b*Tan[c + d*x]]] - (-1)^(3/4)*(a - I*b)^(5/2)*(A - I*B)*ArcTanh[((-1)
^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]))/(8*d)
+ (15*a^2*(8085*a^4*A*b - 495*a^2*A*b^3 + 40*A*b^5 + 3465*a^5*B - 5313*a^3*
b^2*B - 110*a*b^4*B)*Sqrt[a + b*Tan[c + d*x]])/(4*d*Sqrt[Tan[c + d*x]])))/(
3*a)))/(5*a)))/(7*a)))/(9*a)))/(11*a))/5)/4)
```

Maple [C] time = 3.986, size = 103896, normalized size = 207.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(13/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{13}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(13/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algo
rithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(13/
2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(13/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algo
rithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(13/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(13/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algo
rithm="giac")
```

```
[Out] Timed out
```

3.628 $\int \cot^{\frac{11}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=418

$$\frac{2\left(21a^2A-45abB-25Ab^2\right)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105d}+\frac{2\left(231a^2Ab+105a^3B-135ab^2B-5Ab^3\right)\cot^{\frac{3}{2}}(c+dx)}{315ad}$$

```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(
5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(315*a^4*A - 483*a^2
*A*b^2 - 10*A*b^4 - 735*a^3*b*B + 45*a*b^3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b
*Tan[c + d*x]])/(315*a^2*d) + (2*(231*a^2*A*b - 5*A*b^3 + 105*a^3*B - 135*a
*b^2*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(315*a*d) + (2*(21*a^2
*A - 25*A*b^2 - 45*a*b*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(105
*d) - (2*a*(4*A*b + 3*a*B)*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]])/(21
*d) - (2*a*A*Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^(3/2))/(9*d)
```

Rubi [A] time = 2.03452, antiderivative size = 418, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4241, 3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(21a^2A-45abB-25Ab^2\right)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105d}+\frac{2\left(231a^2Ab+105a^3B-135ab^2B-5Ab^3\right)\cot^{\frac{3}{2}}(c+dx)}{315ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(11/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(
5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - (2*(315*a^4*A - 483*a^2
*A*b^2 - 10*A*b^4 - 735*a^3*b*B + 45*a*b^3*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b
*Tan[c + d*x]])/(315*a^2*d) + (2*(231*a^2*A*b - 5*A*b^3 + 105*a^3*B - 135*a
*b^2*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(315*a*d) + (2*(21*a^2
*A - 25*A*b^2 - 45*a*b*B)*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(105
*d) - (2*a*(4*A*b + 3*a*B)*Cot[c + d*x]^(7/2)*Sqrt[a + b*Tan[c + d*x]])/(21
```

```
*d) - (2*a*A*Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^(3/2))/(9*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
```

```
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{11}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(A}{\tan^{\frac{11}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}{9d} + \frac{1}{9}\left(2\sqrt{\cot(c+\right.$$

$$= -\frac{2a(4Ab+3aB)\cot^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{21d} - \frac{2aA}{}$$

$$= \frac{2\left(21a^2A-25Ab^2-45abB\right)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+}}{105d}$$

$$= \frac{2\left(231a^2Ab-5Ab^3+105a^3B-135ab^2B\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{}}{315ad}$$

$$= -\frac{2\left(315a^4A-483a^2Ab^2-10Ab^4-735a^3bB+45ab^3B\right)}{315a^2d}$$

$$= -\frac{2\left(315a^4A-483a^2Ab^2-10Ab^4-735a^3bB+45ab^3B\right)}{315a^2d}$$

$$= -\frac{2\left(315a^4A-483a^2Ab^2-10Ab^4-735a^3bB+45ab^3B\right)}{315a^2d}$$

$$= -\frac{2\left(315a^4A-483a^2Ab^2-10Ab^4-735a^3bB+45ab^3B\right)}{315a^2d}$$

$$= \frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{}}{d}$$

Mathematica [A] time = 6.74684, size = 564, normalized size = 1.35

$$\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{bB(a+b\tan(c+dx))^{3/2}}{3d\tan^{\frac{9}{2}}(c+dx)}+\frac{1}{3}\left(-\frac{3b(aB+2Ab)\sqrt{a+b\tan(c+dx)}}{8d\tan^{\frac{9}{2}}(c+dx)}+\frac{1}{4}\left(-\frac{\left(16a^2A-33abB\right.}{6}\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(11/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x
]),x]
```

```
[Out] Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-(b*B*(a + b*Tan[c + d*x])^(3/2))/(3
*d*Tan[c + d*x]^(9/2)) + ((-3*b*(2*A*b + a*B)*Sqrt[a + b*Tan[c + d*x]])/(8*
d*Tan[c + d*x]^(9/2)) + (-((16*a^2*A - 18*A*b^2 - 33*a*b*B)*Sqrt[a + b*Tan[
c + d*x]])/(6*d*Tan[c + d*x]^(9/2)) - (2*((6*a*(38*a*A*b + 18*a^2*B - 21*b^
2*B)*Sqrt[a + b*Tan[c + d*x]])/(7*d*Tan[c + d*x]^(7/2)) - (2*((18*a^2*(21*a
^2*A - 25*A*b^2 - 45*a*b*B)*Sqrt[a + b*Tan[c + d*x]])/(5*d*Tan[c + d*x]^(5/
2)) - (2*((-3*a^2*(231*a^2*A*b - 5*A*b^3 + 105*a^3*B - 135*a*b^2*B)*Sqrt[a
+ b*Tan[c + d*x]])/(d*Tan[c + d*x]^(3/2)) - (2*((2835*a^4*((-1)^(1/4)*(-a -
 I*b)^(5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]] + (-1)^(1/4)*(a - I*b)^(5/2)*(A - I*B)*ArcTanh[
((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]))/(
4*d) - (9*a^2*(315*a^4*A - 483*a^2*A*b^2 - 10*A*b^4 - 735*a^3*b*B + 45*a*b^
3*B)*Sqrt[a + b*Tan[c + d*x]])/(2*d*Sqrt[Tan[c + d*x]])))/(3*a)))/(5*a)))/(
7*a)))/(9*a))/4)/3)
```

Maple [C] time = 3.115, size = 101204, normalized size = 242.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{11}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algo
rithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(11/
2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algo
rithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(11/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(11/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algo
rithm="giac")
```

```
[Out] Timed out
```

3.629 $\int \cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=349

$$\frac{2\left(35a^2A-77abB-45Ab^2\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105d}+\frac{2\left(245a^2Ab+105a^3B-161ab^2B-15Ab^3\right)\sqrt{\cot(c+dx)}}{105ad}$$

```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((I*a + b)^(
5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(245*a^2*A*b - 15*A*
b^3 + 105*a^3*B - 161*a*b^2*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
/(105*a*d) + (2*(35*a^2*A - 45*A*b^2 - 77*a*b*B)*Cot[c + d*x]^(3/2)*Sqrt[a
+ b*Tan[c + d*x]])/(105*d) - (2*a*(10*A*b + 7*a*B)*Cot[c + d*x]^(5/2)*Sqrt[
a + b*Tan[c + d*x]])/(35*d) - (2*a*A*Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x]
)^(3/2))/(7*d)
```

Rubi [A] time = 1.65267, antiderivative size = 349, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4241, 3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(35a^2A-77abB-45Ab^2\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{105d}+\frac{2\left(245a^2Ab+105a^3B-161ab^2B-15Ab^3\right)\sqrt{\cot(c+dx)}}{105ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((I*a + b)^(
5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
+ d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(245*a^2*A*b - 15*A*
b^3 + 105*a^3*B - 161*a*b^2*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
/(105*a*d) + (2*(35*a^2*A - 45*A*b^2 - 77*a*b*B)*Cot[c + d*x]^(3/2)*Sqrt[a
+ b*Tan[c + d*x]])/(105*d) - (2*a*(10*A*b + 7*a*B)*Cot[c + d*x]^(5/2)*Sqrt[
a + b*Tan[c + d*x]])/(35*d) - (2*a*A*Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x]
)^(3/2))/(7*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
```

```
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{9}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(A}{\tan^{\frac{9}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}{7d} + \frac{1}{7}\left(2\sqrt{\cot(c\right.$$

$$= -\frac{2a(10Ab+7aB)\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{35d} - \frac{2a}{}$$

$$= \frac{2\left(35a^2A-45Ab^2-77abB\right)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c}}{105d}$$

$$= \frac{2\left(245a^2Ab-15Ab^3+105a^3B-161ab^2B\right)\sqrt{\cot(c+dx)}}{105ad}$$

$$= \frac{2\left(245a^2Ab-15Ab^3+105a^3B-161ab^2B\right)\sqrt{\cot(c+dx)}}{105ad}$$

$$= \frac{2\left(245a^2Ab-15Ab^3+105a^3B-161ab^2B\right)\sqrt{\cot(c+dx)}}{105ad}$$

$$= \frac{2\left(245a^2Ab-15Ab^3+105a^3B-161ab^2B\right)\sqrt{\cot(c+dx)}}{105ad}$$

$$= \frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{d}$$

Mathematica [A] time = 5.17812, size = 386, normalized size = 1.11

$$-\frac{\cot^{\frac{7}{2}}(c+dx)\left(6a\left(28a^2B+60aAb-35b^2B\right)\tan(c+dx)\sqrt{a+b\tan(c+dx)}+5a\left(24a^2A-49abB-28Ab^2\right)\sqrt{a+b\,\mathrm{ta}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(9/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] -(Cot[c + d*x]^(7/2)*(35*a*b*(4*A*b + a*B)*Sqrt[a + b*Tan[c + d*x]] + 5*a*(
24*a^2*A - 28*A*b^2 - 49*a*b*B)*Sqrt[a + b*Tan[c + d*x]] + 6*a*(60*a*A*b +
28*a^2*B - 35*b^2*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]] + 210*a*b*B*(a +
```

```
 b*Tan[c + d*x])^(3/2) - 4*Tan[c + d*x]^2*(105*(-1)^(1/4)*a*(I*(-a - I*b)^(
5/2)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]] - (a - I*b)^(5/2)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a
 - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])*Tan[c + d*x]^(3/2) +
 2*a*(35*a^2*A - 45*A*b^2 - 77*a*b*B)*Sqrt[a + b*Tan[c + d*x]] + 2*(245*a^2
*A*b - 15*A*b^3 + 105*a^3*B - 161*a*b^2*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c +
d*x]])))/(420*a*d)
```

Maple [C] time = 2.56, size = 67683, normalized size = 193.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(9/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(9/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(9/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.630 $\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=287

$$\frac{2\left(15a^2A-35abB-23Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15d}-\frac{2a(5aB+8Ab)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15d}-\frac{(-b+$$

```
[Out] -((((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + ((I*a + b
)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(15*a^2*A - 23*A*
b^2 - 35*a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*d) - (2*a*
(8*A*b + 5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*d) - (2*a*
A*Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(3/2))/(5*d)
```

Rubi [A] time = 1.30528, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4241, 3605, 3645, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A-35abB-23Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15d}-\frac{2a(5aB+8Ab)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15d}-\frac{(-b+$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] -((((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + ((I*a + b
)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan
[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (2*(15*a^2*A - 23*A*
b^2 - 35*a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*d) - (2*a*
(8*A*b + 5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*d) - (2*a*
A*Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(3/2))/(5*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \cot^{\frac{7}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(A}{\tan^{\frac{7}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}{5d} + \frac{1}{5}\left(2\sqrt{\cot(c\right.$$

$$= -\frac{2a(8Ab+5aB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15d} - \frac{2aA}{}$$

$$= \frac{2\left(15a^2A-23Ab^2-35abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c}}{15d}$$

$$= \frac{2\left(15a^2A-23Ab^2-35abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c}}{15d}$$

$$= \frac{2\left(15a^2A-23Ab^2-35abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c}}{15d}$$

$$= \frac{2\left(15a^2A-23Ab^2-35abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c}}{15d}$$

$$= -\frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx}}{d}$$

Mathematica [A] time = 3.31861, size = 321, normalized size = 1.12

$$\frac{\cot^{\frac{5}{2}}(c+dx)\left(-3\left(8a^2A-15abB-10Ab^2\right)\sqrt{a+b\tan(c+dx)}-4\tan(c+dx)\left(-2\left(15a^2A-35abB-23Ab^2\right)\tan(c+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[c + d*x]^(7/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] (Cot[c + d*x]^(5/2)*(15*b*(-2*A*b + a*B)*Sqrt[a + b*Tan[c + d*x]] - 3*(8*a^
2*A - 10*A*b^2 - 15*a*b*B)*Sqrt[a + b*Tan[c + d*x]] - 60*b*B*(a + b*Tan[c +
 d*x])^(3/2) - 4*Tan[c + d*x]*(15*(-1)^(1/4)*((-a - I*b)^(5/2)*(A + I*B)*Ar
cTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]] + (a - I*b)^(5/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[
c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])*Tan[c + d*x]^(3/2) + (22*a*A*b + 10*a
```

```
^2*B - 15*b^2*B)*Sqrt[a + b*Tan[c + d*x]] - 2*(15*a^2*A - 23*A*b^2 - 35*a*b
*B)*Tan[c + d*x]*Sqrt[a + b*Tan[c + d*x]])))/(60*d)
```

Maple [C] time = 2.023, size = 65903, normalized size = 229.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c) + A)(b\tan(dx+c) + a)^{\frac{5}{2}}\cot(dx+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(7/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.631 $\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=300

$$-\frac{(-b+ia)^{5/2}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2a(aB+2Ab)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+}}{d}$$

```
[Out] -((((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (2*b^(5/2
)*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot
[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt
[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*
Sqrt[Tan[c + d*x]])/d - (2*a*(2*A*b + a*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Ta
n[c + d*x]])/d - (2*a*A*Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2))/(3*d
)
```

Rubi [A] time = 2.28855, antiderivative size = 300, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3605, 3645, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$-\frac{(-b+ia)^{5/2}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}-\frac{2a(aB+2Ab)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] -((((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + (2*b^(5/2
)*B*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot
[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt
[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*
Sqrt[Tan[c + d*x]])/d - (2*a*(2*A*b + a*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Ta
n[c + d*x]])/d - (2*a*A*Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2))/(3*d
)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
```

```
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(A}{\tan^{\frac{5}{2}}(c+}$$

$$= -\frac{2aA\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}{3d} + \frac{1}{3}\left(2\sqrt{\cot(c\right.$$

$$= -\frac{2a(2Ab+aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA}{}$$

$$= -\frac{2a(2Ab+aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{d} - \frac{2aA}{}$$

$$= \frac{2b^{5/2}B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx}}{d}$$

$$= -\frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx}}{d}$$

Mathematica [C] time = 40.15, size = 130606, normalized size = 435.35

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] Result too large to show
```

Maple [C] time = 2.002, size = 46754, normalized size = 155.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.632 $\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=301

$$\frac{b^{3/2}(5aB+2Ab)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(-b+ia)^{5/2}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan}{d}$$

```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b^(3/2)*(2*
A*b + 5*a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(5/2)*(A - I*B)*ArcT
anh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c
 + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*(2*a*A + b*B)*Sqrt[a + b*Tan[c + d*x]])
/(d*Sqrt[Cot[c + d*x]]) - (2*a*A*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3
/2))/d
```

Rubi [A] time = 2.44632, antiderivative size = 301, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3605, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{b^{3/2}(5aB+2Ab)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d}+\frac{(-b+ia)^{5/2}(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b^(3/2)*(2*
A*b + 5*a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]
*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d - ((I*a + b)^(5/2)*(A - I*B)*ArcT
anh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c
 + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*(2*a*A + b*B)*Sqrt[a + b*Tan[c + d*x]])
/(d*Sqrt[Cot[c + d*x]]) - (2*a*A*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3
/2))/d
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
```

```
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(A}{\tan^{\frac{3}{2}}(c+}$$

$$= -\frac{2aA\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}{d} + \left(2\sqrt{\cot(c+\right.$$

$$= \frac{b(2aA+bB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{b(2aA+bB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{b(2aA+bB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{b(2aA+bB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{b(2aA+bB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{b(2aA+bB)\sqrt{a+b\tan(c+dx)}}{d\sqrt{\cot(c+dx)}} - \frac{2aA\sqrt{\cot(c+dx)}(a+}{d}$$

$$= \frac{b^{3/2}(2Ab+5aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{t}}{d}$$

$$= \frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{d}$$

Mathematica [C] time = 40.6348, size = 196709, normalized size = 653.52

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
),x]
```

```
[Out] Result too large to show
```

Maple [C] time = 2.99, size = 57755, normalized size = 191.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.633 $\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=320

$$\frac{\sqrt{b}\left(15a^2B+20aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4d}+\frac{(-b+ia)^{5/2}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{c}}{d}$$

```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (Sqrt[b]*(20
*a*A*b + 15*a^2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(4*d) + ((I*a + b)^
(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
 + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*(4*A*b + 7*a*B)*Sqr
t[a + b*Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*x]]) + (b*B*(a + b*Tan[c + d*x])
^(3/2))/(2*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 2.17532, antiderivative size = 320, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\sqrt{b}\left(15a^2B+20aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{4d}+\frac{(-b+ia)^{5/2}(-B+iA)\sqrt{\tan(c+dx)}\sqrt{c}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (Sqrt[b]*(20
*a*A*b + 15*a^2*B - 8*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(4*d) + ((I*a + b)^
(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
 + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + (b*(4*A*b + 7*a*B)*Sqr
t[a + b*Tan[c + d*x]])/(4*d*Sqrt[Cot[c + d*x]]) + (b*B*(a + b*Tan[c + d*x])
^(3/2))/(2*d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
```

```
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^{5/2}(A}{\sqrt{\tan(c+}}$$

$$= \frac{bB(a+b\tan(c+dx))^{3/2}}{2d\sqrt{\cot(c+dx)}} + \frac{1}{2}\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+d}\right.$$

$$= \frac{b(4Ab+7aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+d}{2d\sqrt{\cot(c+dx}}$$

$$= \frac{b(4Ab+7aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+d}{2d\sqrt{\cot(c+dx}}$$

$$= \frac{b(4Ab+7aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+d}{2d\sqrt{\cot(c+dx}}$$

$$= \frac{b(4Ab+7aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+d}{2d\sqrt{\cot(c+dx}}$$

$$= \frac{b(4Ab+7aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+d}{2d\sqrt{\cot(c+dx}}$$

$$= \frac{b(4Ab+7aB)\sqrt{a+b\tan(c+dx)}}{4d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+d}{2d\sqrt{\cot(c+dx}}$$

$$= \frac{\sqrt{b}\left(20aAb+15a^2B-8b^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{c}}{4d}$$

$$= \frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}}{d}$$

Mathematica [A] time = 3.32832, size = 311, normalized size = 0.97

$$\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\sqrt{a}\sqrt{b}\left(15a^2B+20aAb-8b^2B\right)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{\sqrt{a+b\tan(c+dx)}} + b(7aB+4Ab)\sqrt{\tan(c+dx)}\sqrt{a+b\,\mathrm{ta}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]
```

```
),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(4*(-1)^(3/4)*(-a - I*b)^(5/2)*(A +
I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[
c + d*x]]] - 4*(-1)^(1/4)*(a - I*b)^(5/2)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqr
t[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + b*(4*A*b + 7*a*B
)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + 2*b*B*Sqrt[Tan[c + d*x]]*(a
 + b*Tan[c + d*x])^(3/2) + (Sqrt[a]*Sqrt[b]*(20*a*A*b + 15*a^2*B - 8*b^2*B)
*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a]
)/Sqrt[a + b*Tan[c + d*x]]))/(4*d)
```

Maple [C] time = 1.924, size = 32501, normalized size = 101.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)*sqrt(cot(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c)),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.634 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=376

$$\frac{\left(5a^2B+14aAb-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}}+\frac{\left(30a^2Ab+5a^3B-40ab^2B-16Ab^3\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\right.}{8\sqrt{b}d}$$

```
[Out] -(((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + ((30*a^2*
A*b - 16*A*b^3 + 5*a^3*B - 40*a*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(8*Sqrt[b
]*d) + ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((14
*a*A*b + 5*a^2*B - 8*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(8*d*Sqrt[Cot[c + d*x
]]) + (b*B*(a + b*Tan[c + d*x])^(3/2))/(3*d*Cot[c + d*x]^(3/2)) + ((2*A*b +
 3*a*B)*(a + b*Tan[c + d*x])^(3/2))/(4*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 2.96984, antiderivative size = 376, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{\left(5a^2B+14aAb-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}}+\frac{\left(30a^2Ab+5a^3B-40ab^2B-16Ab^3\right)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\right.}{8\sqrt{b}d}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```


```
[Out] -(((I*a - b)^(5/2)*(A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + ((30*a^2*
A*b - 16*A*b^3 + 5*a^3*B - 40*a*b^2*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])
/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(8*Sqrt[b
]*d) + ((I*a + b)^(5/2)*(A - I*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]]
)/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d + ((14
*a*A*b + 5*a^2*B - 8*b^2*B)*Sqrt[a + b*Tan[c + d*x]])/(8*d*Sqrt[Cot[c + d*x
]]) + (b*B*(a + b*Tan[c + d*x])^(3/2))/(3*d*Cot[c + d*x]^(3/2)) + ((2*A*b +
 3*a*B)*(a + b*Tan[c + d*x])^(3/2))/(4*d*Sqrt[Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
```

```
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}(A$$

$$= \frac{bB(a+b\tan(c+dx))^{3/2}}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{1}{3}\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(}$$

$$= \frac{bB(a+b\tan(c+dx))^{3/2}}{3d\cot^{\frac{3}{2}}(c+dx)} + \frac{(2Ab+3aB)(a+b\tan(c+dx))^{3/2}}{4d\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{c\right.}}{}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+dx))}{3d\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+dx))}{3d\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+dx))}{3d\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+dx))}{3d\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+dx))}{3d\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{\left(14aAb+5a^2B-8b^2B\right)\sqrt{a+b\tan(c+dx)}}{8d\sqrt{\cot(c+dx)}} + \frac{bB(a+b\tan(c+dx))}{3d\cot^{\frac{3}{2}}(c+dx)}$$

$$= \frac{\left(30a^2Ab-16Ab^3+5a^3B-40ab^2B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c}}{8\sqrt{b}d}$$

$$= -\frac{(ia-b)^{5/2}(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+d}}{d}$$

Mathematica [A] time = 4.95521, size = 365, normalized size = 0.97

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(3\left(5a^2B+14aAb-8b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}+\frac{3\sqrt{a}\left(30a^2Ab+5a^3B-40ab^2B-16Ab^3\right)\sqrt{\frac{b}{}}}{\sqrt{b}\sqrt{a+b\tan}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*
x]],x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-24*(-1)^(1/4)*(-a - I*b)^(5/2)*(A
+ I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Ta
n[c + d*x]]] - 24*(-1)^(1/4)*(a - I*b)^(5/2)*(A - I*B)*ArcTanh[((-1)^(1/4)*
Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] + 3*(14*a*A*b +
 5*a^2*B - 8*b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]] + 6*(2*A*b
+ 3*a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(3/2) + 8*b*B*Tan[c + d*x]
^(3/2)*(a + b*Tan[c + d*x])^(3/2) + (3*Sqrt[a]*(30*a^2*A*b - 16*A*b^3 + 5*a
^3*B - 40*a*b^2*B)*ArcSinh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (
b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c + d*x]])))/(24*d)
```

Maple [C] time = 2.418, size = 36039, normalized size = 95.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)/sqrt(cot(d*x + c)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.635 $\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=457

$$\frac{(-5a^2B+40aAb-48b^2B)(a+b\tan(c+dx))^{3/2}}{96bd\sqrt{\cot(c+dx)}}+\frac{(40a^2Ab-5a^3B-112ab^2B-64Ab^3)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}}+\frac{(40a^3Ab}{}$$

```
[Out] -(((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + ((40*a^3*
A*b - 320*a*A*b^3 - 5*a^4*B - 240*a^2*b^2*B + 128*b^4*B)*ArcTanh[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c
+ d*x]])/(64*b^(3/2)*d) - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[
c + d*x]])/d + ((40*a^2*A*b - 64*A*b^3 - 5*a^3*B - 112*a*b^2*B)*Sqrt[a + b*
Tan[c + d*x]])/(64*b*d*Sqrt[Cot[c + d*x]]) + ((40*a*A*b - 5*a^2*B - 48*b^2*
B)*(a + b*Tan[c + d*x])^(3/2))/(96*b*d*Sqrt[Cot[c + d*x]]) + ((8*A*b - a*B)
*(a + b*Tan[c + d*x])^(5/2))/(24*b*d*Sqrt[Cot[c + d*x]]) + (B*(a + b*Tan[c
+ d*x])^(7/2))/(4*b*d*Sqrt[Cot[c + d*x]])
```

Rubi [A] time = 3.01098, antiderivative size = 457, normalized size of antiderivative = 1., number of steps used = 17, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3607, 3647, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{(-5a^2B+40aAb-48b^2B)(a+b\tan(c+dx))^{3/2}}{96bd\sqrt{\cot(c+dx)}}+\frac{(40a^2Ab-5a^3B-112ab^2B-64Ab^3)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}}+\frac{(40a^3Ab}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),x]
```


```
[Out] -(((I*a - b)^(5/2)*(I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt
[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d) + ((40*a^3*
A*b - 320*a*A*b^3 - 5*a^4*B - 240*a^2*b^2*B + 128*b^4*B)*ArcTanh[(Sqrt[b]*S
qrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c
+ d*x]])/(64*b^(3/2)*d) - ((I*a + b)^(5/2)*(I*A + B)*ArcTanh[(Sqrt[I*a + b]
*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[
c + d*x]])/d + ((40*a^2*A*b - 64*A*b^3 - 5*a^3*B - 112*a*b^2*B)*Sqrt[a + b*
Tan[c + d*x]])/(64*b*d*Sqrt[Cot[c + d*x]]) + ((40*a*A*b - 5*a^2*B - 48*b^2*
B)*(a + b*Tan[c + d*x])^(3/2))/(96*b*d*Sqrt[Cot[c + d*x]]) + ((8*A*b - a*B)
```

```
*(a + b*Tan[c + d*x])^(5/2))/(24*b*d*Sqrt[Cot[c + d*x]]) + (B*(a + b*Tan[c
+ d*x])^(7/2))/(4*b*d*Sqrt[Cot[c + d*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3647

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.
) + (f_.)*(x_)]^2), x_Symbol] :> Simp[(C*(a + b*Tan[e + f*x])^m*(c + d*Tan[
e + f*x])^(n + 1))/(d*f*(m + n + 1)), x] + Dist[1/(d*(m + n + 1)), Int[(a +
 b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^n*Simp[a*A*d*(m + n + 1) - C*
(b*c*m + a*d*(n + 1)) + d*(A*b + a*B - b*C)*(m + n + 1)*Tan[e + f*x] - (C*m
*(b*c - a*d) - b*B*d*(m + n + 1))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b
, c, d, e, f, A, B, C, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&
NeQ[c^2 + d^2, 0] && GtQ[m, 0] &&  !(IGtQ[n, 0] && ( !IntegerQ[m] || (EqQ[c
, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
```

d^2, 0]

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^{5/2}(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}(A$$

$$= \frac{B(a+b\tan(c+dx))^{7/2}}{4bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+d}{}}{4}$$

$$= \frac{(8Ab-aB)(a+b\tan(c+dx))^{5/2}}{24bd\sqrt{\cot(c+dx)}} + \frac{B(a+b\tan(c+dx))^{7/2}}{4bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot}\right.}{}$$

$$= \frac{\left(40aAb-5a^2B-48b^2B\right)(a+b\tan(c+dx))^{3/2}}{96bd\sqrt{\cot(c+dx)}} + \frac{(8Ab-aB)(a+b\,\mathrm{t}}{24bd\sqrt{\cot(}}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}} + \frac{\left(40aAb\right.}{}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}} + \frac{\left(40aAb\right.}{}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}} + \frac{\left(40aAb\right.}{}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}} + \frac{\left(40aAb\right.}{}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}} + \frac{\left(40aAb\right.}{}$$

$$= \frac{\left(40a^2Ab-64Ab^3-5a^3B-112ab^2B\right)\sqrt{a+b\tan(c+dx)}}{64bd\sqrt{\cot(c+dx)}} + \frac{\left(40aAb\right.}{}$$

$$= \frac{\left(40a^3Ab-320aAb^3-5a^4B-240a^2b^2B+128b^4B\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(}}{\sqrt{a+b\tan}}\right.}{64b^{3/2}d}$$

$$= -\frac{(ia-b)^{5/2}(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+d}}{d}$$

Mathematica [A] time = 5.32911, size = 431, normalized size = 0.94

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-2\left(5a^2B-40aAb+48b^2B\right)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}-3\left(-40a^2Ab+5a^3B+112\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*Tan[c + d*x])^(5/2)*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-192*(-1)^(3/4)*(-a - I*b)^(5/2)*b*
(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b
*Tan[c + d*x]]] + 192*(-1)^(1/4)*(a - I*b)^(5/2)*b*(I*A + B)*ArcTanh[((-1)^
(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]] - 3*(-40*
a^2*A*b + 64*A*b^3 + 5*a^3*B + 112*a*b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*T
an[c + d*x]] - 2*(-40*a*A*b + 5*a^2*B + 48*b^2*B)*Sqrt[Tan[c + d*x]]*(a + b
*Tan[c + d*x])^(3/2) + 8*(8*A*b - a*B)*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*
x])^(5/2) + 48*B*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^(7/2) - (3*Sqrt[a]
*(-40*a^3*A*b + 320*a*A*b^3 + 5*a^4*B + 240*a^2*b^2*B - 128*b^4*B)*ArcSinh[
(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b
]*Sqrt[a + b*Tan[c + d*x]])))/(192*b*d)
```

Maple [C] time = 3.753, size = 39339, normalized size = 86.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^{\frac{5}{2}}}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^(5/2)/cot(d*x + c)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^(5/2)*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algor
ithm="giac")
```

```
[Out] Timed out
```

3.636 $\int \frac{\cot^{\frac{7}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=296

$$\frac{2\left(15a^2A+10abB-8Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^3d}+\frac{2(4Ab-5aB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15a^2d}+\frac{(-B+}{}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) - ((I*A + B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d) + (2*(15*a^2*A - 8*A*b^2
+ 10*a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*a^3*d) + (2*(4
*A*b - 5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*a^2*d) - (2*
A*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(5*a*d)
```

Rubi [A] time = 1.15661, antiderivative size = 296, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2\left(15a^2A+10abB-8Ab^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^3d}+\frac{2(4Ab-5aB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15a^2d}+\frac{(-B+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(7/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) - ((I*A + B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d) + (2*(15*a^2*A - 8*A*b^2
+ 10*a*b*B)*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(15*a^3*d) + (2*(4
*A*b - 5*a*B)*Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]])/(15*a^2*d) - (2*
A*Cot[c + d*x]^(5/2)*Sqrt[a + b*Tan[c + d*x]])/(5*a*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

```
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
```

```
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{7}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{7}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{2A\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{5ad} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}(4Ab\cdots}{}}{5a\cdots}$$

$$= \frac{2(4Ab-5aB)\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{15a^2d} - \frac{2A\cot^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c\cdots}}{5ad}$$

$$= \frac{2\left(15a^2A-8Ab^2+10abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^3d} + \frac{2(4Ab-5aB)\,\mathrm{c}\cdots}{}$$

$$= \frac{2\left(15a^2A-8Ab^2+10abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^3d} + \frac{2(4Ab-5aB)\,\mathrm{c}\cdots}{}$$

$$= \frac{2\left(15a^2A-8Ab^2+10abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^3d} + \frac{2(4Ab-5aB)\,\mathrm{c}\cdots}{}$$

$$= \frac{2\left(15a^2A-8Ab^2+10abB\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{15a^3d} + \frac{2(4Ab-5aB)\,\mathrm{c}\cdots}{}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}\,d} - \frac{(iA+B)\tanh^{-1}\cdots}{}$$

Mathematica [A] time = 5.91789, size = 244, normalized size = 0.82

$$\frac{\sqrt{\cot(c+dx)}\left(-\frac{2\sqrt{a+b\tan(c+dx)}\left(3a^2A\cot^2(c+dx)-15a^2A+a(5aB-4Ab)\cot(c+dx)-10abB+8Ab^2\right)}{a^3} + \frac{15\sqrt[4]{-1}(A+iB)\sqrt{\tan(c+dx)}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\mathrm{ta}\cdots}}{\sqrt{a+b\tan(c\cdots}}\right)}{\sqrt{-a-ib}}\cdots\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(7/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]
],x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((15*(-1)^(1/4)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a -
 I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Tan[c + d*x]])/Sqr
t[-a - I*b] - (15*(-1)^(1/4)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sq
rt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Tan[c + d*x]])/Sqrt[a - I*
```

```
b] - (2*(-15*a^2*A + 8*A*b^2 - 10*a*b*B + a*(-4*A*b + 5*a*B)*Cot[c + d*x] +
 3*a^2*A*Cot[c + d*x]^2)*Sqrt[a + b*Tan[c + d*x]])/a^3))/(15*d)
```

Maple [C] time = 1.385, size = 28811, normalized size = 97.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{7}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(7/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{7}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(7/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(7/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

3.637 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=243

$$\frac{2(2Ab-3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3a^2d}-\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(A-i}{}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) - ((A - I*B
)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt
[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d) + (2*(2*A*b - 3*a*B)*S
qrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3*a^2*d) - (2*A*Cot[c + d*x]^(
3/2)*Sqrt[a + b*Tan[c + d*x]])/(3*a*d)
```

Rubi [A] time = 0.862046, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2(2Ab-3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3a^2d}-\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(A-i}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) - ((A - I*B
)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt
[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d) + (2*(2*A*b - 3*a*B)*S
qrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])/(3*a^2*d) - (2*A*Cot[c + d*x]^(
3/2)*Sqrt[a + b*Tan[c + d*x]])/(3*a*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}{3ad} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}(2A}{}}{3a}$$

$$= \frac{2(2Ab-3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan}}{3ad}$$

$$= \frac{2(2Ab-3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan}}{3ad}$$

$$= \frac{2(2Ab-3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan}}{3ad}$$

$$= \frac{2(2Ab-3aB)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{3a^2d} - \frac{2A\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan}}{3ad}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}\,d} - \frac{(A-iB)\tan}{}$$

Mathematica [A] time = 2.28816, size = 213, normalized size = 0.88

$$\frac{\sqrt{\cot(c+dx)}\left(-\frac{2\sqrt{a+b\tan(c+dx)}(aA\cot(c+dx)+3aB-2Ab)}{a^2}+\frac{3(-1)^{3/4}(A+iB)\sqrt{\tan(c+dx)}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}+\frac{3\sqrt[4]{-1}(B+iA)\sqrt{\tan(c+dx)}\cdots}{\cdots}\right.}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]
],x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((3*(-1)^(3/4)*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a -
I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Tan[c + d*x]])/Sqrt
[-a - I*b] + (3*(-1)^(1/4)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt
[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Tan[c + d*x]])/Sqrt[a - I*b]
 - (2*(-2*A*b + 3*a*B + a*A*Cot[c + d*x])*Sqrt[a + b*Tan[c + d*x]])/a^2))/(
3*d)
```

Maple [C] time = 0.957, size = 14642, normalized size = 60.3

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

3.638 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=199

$$-\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) + ((I*A + B
)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt
[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[Cot[c + d*
x]]*Sqrt[a + b*Tan[c + d*x]])/(a*d)
```

Rubi [A] time = 0.630331, antiderivative size = 199, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {4241, 3609, 3616, 3615, 93, 203, 206}

$$-\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) + ((I*A + B
)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt
[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d) - (2*A*Sqrt[Cot[c + d*
x]]*Sqrt[a + b*Tan[c + d*x]])/(a*d)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{ad} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{-\frac{a}{2}\cdots}{\sqrt{\tan(\cdots}}}{a}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{ad} - \frac{1}{2}\left((iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\cdots\right.$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{ad} - \frac{\left((iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\cdots}{\cdots}$$

$$= -\frac{2A\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}{ad} - \frac{\left((iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\cdots}{\cdots}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}d} + \frac{(iA+B)\tanh\cdots}{\cdots}$$

Mathematica [A] time = 1.40517, size = 193, normalized size = 0.97

$$-\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\sqrt[4]{-1}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}-\frac{\sqrt[4]{-1}(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}+\frac{2A\sqrt{a+b\tan(c+dx)}}{a\sqrt{\tan(c+dx)}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]
],x]
```

```
[Out] -((Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((-1)^(1/4)*(A + I*B)*ArcTanh[((-
1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt
[-a - I*b] - ((-1)^(1/4)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (2*A*Sqrt[a + b*Ta
n[c + d*x]])/(a*Sqrt[Tan[c + d*x]])))/d)
```

Maple [C] time = 0.749, size = 14212, normalized size = 71.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/sqrt(b*tan(d*x + c) + a),
 x)
```

3.639 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=163

$$\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c}}{\sqrt{a+b\tan(c+}}\right.}{d\sqrt{b+ia}}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) + ((A - I*B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.480017, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {4241, 3616, 3615, 93, 203, 206}

$$\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{(A-iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c}}{\sqrt{a+b\tan(c+}}\right.}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]],x]
```

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) + ((A - I*B)*A
rcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Co
t[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
```

```
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{1}{2}\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{(1-ix)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+d\right.}{2d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{1-(ia+b)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right.}{d}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}\,d} + \frac{(A-iB)\tanh}{}$$

Mathematica [A] time = 0.36196, size = 157, normalized size = 0.96

$$\frac{\sqrt[4]{-1}\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{(B-iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/Sqrt[a + b*Tan[c + d*x]
],x]
```

```
[Out] ((-1)^(1/4)*((((-I)*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((I*A + B)*ArcTanh[((-1)
^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a
- I*b])*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/d
```

Maple [C] time = 0.604, size = 3483, normalized size = 21.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x)
```

[Out] -1/d/a/(I*a+(a^2+b^2)^(1/2)-b)/(I*a-(a^2+b^2)^(1/2)+b)*2^(1/2)*(cos(d*x+c)/sin(d*x+c))^(1/2)*(1/cos(d*x+c)*(a*cos(d*x+c)+b*sin(d*x+c)))^(1/2)*(-I*B*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b+I*B*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b+2*I*A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b*(a^2+b^2)^(1/2)-I*A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3+I*B*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*(a^2+b^2)^(1/2)-2*I*A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2-2*I*A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b*(a^2+b^2)^(1/2)+2*I*A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2+I*A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3-I*B*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*(a^2+b^2)^(1/2)-A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*(a^2+b^2)^(1/2)+A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b-A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*(a^2+b^2)^(1/2)+A*EllipticPi((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b+2*A*EllipticF((-(-(a^2

```
+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2
)^(1/2)))^(1/2),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a
^2*(a^2+b^2)^(1/2)+4*A*EllipticF((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c
)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((-b+(
a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^2*(a^2+b^2)^(1/2)-4*A*EllipticF((
-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(
a^2+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(
1/2))*a^2*b-4*A*EllipticF((-(-(a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos
(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((-b+(a^2+b^2
)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^3-2*B*EllipticPi((-(-(a^2+b^2)^(1/2)*sin
(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2)
,(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1
/2))/(a^2+b^2)^(1/2))^(1/2))*a*b*(a^2+b^2)^(1/2)+B*EllipticPi((-(-(a^2+b^2)
^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/
2)))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a
^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3+2*B*EllipticPi((-(-(a^2+b^2)^(1/
2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))
^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b
^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2-2*B*EllipticPi((-(-(a^2+b^2)^(1/2)
*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(
1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^
2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b*(a^2+b^2)^(1/2)+B*EllipticPi((-(-(a^2
+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2
)^(1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*(
(-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3+2*B*EllipticPi((-(-(a^2+b^
2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(
1/2)))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b
+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2)*(a*(cos(d*x+c)-1)/(-b+(a^2
+b^2)^(1/2))/sin(d*x+c))^(1/2)*(((a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*
cos(d*x+c)-a)/(a^2+b^2)^(1/2)/sin(d*x+c))^(1/2)*(-(-(a^2+b^2)^(1/2)*sin(d*x
+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/sin(d*x+c)/(-b+(a^2+b^2)^(1/2)))^(1/2)*sin
(d*x+c)^2/(cos(d*x+c)-1)/(a*cos(d*x+c)+b*sin(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/sqrt(b*tan(d*x + c) + a),
 x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))\sqrt{\cot(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(cot(c + d*x))/sqrt(a + b*tan(c + d*x)),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{\sqrt{b\tan(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/sqrt(b*tan(d*x + c) + a),
 x)
```

3.640 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=228

$$\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) + (2*B*ArcTanh
[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*
Sqrt[Tan[c + d*x]])/(Sqrt[b]*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.69991, antiderivative size = 228, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3614, 3616, 3615, 93, 203, 206, 3634, 63, 217}

$$\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{(B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]),x]
```

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) + (2*B*ArcTanh
[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*
Sqrt[Tan[c + d*x]])/(Sqrt[b]*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]
])/(Sqrt[I*a + b]*d)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3614

```
Int[(Sqrt[(a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)]]*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)]))/Sqrt[(c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol] :> In
t[Simp[a*A - b*B + (A*b + a*B)*Tan[e + f*x], x]/(Sqrt[a + b*Tan[e + f*x]]*S
qrt[c + d*Tan[e + f*x]]), x] + Dist[b*B, Int[(1 + Tan[e + f*x]^2)/(Sqrt[a +
 b*Tan[e + f*x]]*Sqrt[c + d*Tan[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
 f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0
]
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 3634

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((c_.) + (d_.)*tan[(e_.)
+ (f_.)*(x_)])^(n_.)*((A_) + (C_.)*tan[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
 Dist[A/f, Subst[Int[(a + b*x)^m*(c + d*x)^n, x], x, Tan[e + f*x]], x] /; F
reeQ[{a, b, c, d, e, f, A, C, m, n}, x] && EqQ[A, C]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{-B+A\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx + \left(B\sqrt{\mathrm{co}\right.$$

$$= \frac{1}{2}\left((-iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{1+i\tan(c+dx)}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{\left((-iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int \frac{1}{(1-ix)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+\right.}{2d}$$

$$= \frac{\left((-iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int \frac{1}{1-(ia+b)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right.}{d}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}d} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}}{\sqrt{a}}\right.}{}$$

Mathematica [A] time = 1.60344, size = 228, normalized size = 1.

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\sqrt[4]{-1}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}-\frac{\sqrt[4]{-1}(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}+\frac{2\sqrt{a}B\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh}{\sqrt{b}\sqrt{a+b\tan(c}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]
),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((-1)^(1/4)*(A + I*B)*ArcTanh[((-1)
^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-
a - I*b] - ((-1)^(1/4)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan
[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (2*Sqrt[a]*B*ArcSinh
[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[
b]*Sqrt[a + b*Tan[c + d*x]])))/d
```

Maple [C] time = 0.574, size = 6696, normalized size = 29.4

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{b\tan(dx+c)+a}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*sqrt(cot(d*x + c))
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A + B\tan{(c + dx)}}{\sqrt{a + b\tan{(c + dx)}}\sqrt{\cot{(c + dx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))/(sqrt(a + b*tan(c + d*x))*sqrt(cot(c + d*x)))
, x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan{(dx + c)} + A}{\sqrt{b\tan{(dx + c)} + a}\sqrt{\cot{(dx + c)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*sqrt(cot(d*x + c))
), x)
```

3.641 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$

Optimal. Leaf size=266

$$\frac{(2Ab-aB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d}-\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) + ((2*A*b -
 a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[C
ot[c + d*x]]*Sqrt[Tan[c + d*x]])/(b^(3/2)*d) - ((A - I*B)*ArcTanh[(Sqrt[I*a
 + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt
[Tan[c + d*x]])/(Sqrt[I*a + b]*d) + (B*Sqrt[a + b*Tan[c + d*x]])/(b*d*Sqrt[
Cot[c + d*x]])
```

Rubi [A] time = 1.46149, antiderivative size = 266, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3607, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{(2Ab-aB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{b^{3/2}d}-\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]),x]
```


```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) + ((2*A*b -
 a*B)*ArcTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[C
ot[c + d*x]]*Sqrt[Tan[c + d*x]])/(b^(3/2)*d) - ((A - I*B)*ArcTanh[(Sqrt[I*a
 + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt
[Tan[c + d*x]])/(Sqrt[I*a + b]*d) + (B*Sqrt[a + b*Tan[c + d*x]])/(b*d*Sqrt[
Cot[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

```
]
```

Rule 3607

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*B*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(m
+ n)), x] + Dist[1/(d*(m + n)), Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan
[e + f*x])^n*Simp[a^2*A*d*(m + n) - b*B*(b*c*(m - 1) + a*d*(n + 1)) + d*(m
+ n)*(2*a*A*b + B*(a^2 - b^2))*Tan[e + f*x] - (b*B*(b*c - a*d)*(m - 1) - b*
(A*b + a*B)*d*(m + n))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e,
f, A, B, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2,
 0] && GtQ[m, 1] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 1] &
& ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{-\frac{aB}{2}-bB\tan(c+dx)+\frac{1}{2}(2Ab-}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan}}}{b}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{-\frac{aB}{2}-bBx+\frac{1}{2}(2Ab-}{\sqrt{x}\sqrt{a+bx}(1+x}\right.}{bd}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{bd\sqrt{\cot(c+dx)}} + \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int\left(\frac{2Ab-aB}{2\sqrt{x}\sqrt{a+bx}} - \right.\right.}{bd}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{bd\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{Ab+bBx}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\right.}{bd}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{bd\sqrt{\cot(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int\left(\frac{iAb-bB}{2(i-x)\sqrt{x}\sqrt{a+bx}}\right.\right.}{bd}$$

$$= \frac{B\sqrt{a+b\tan(c+dx)}}{bd\sqrt{\cot(c+dx)}} - \frac{\left((iA-B)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}}\right.}{2d}$$

$$= \frac{(2Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{b^{3/2}d} + \frac{B\sqrt{a+b\tan}}{bd\sqrt{\cot(c}}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}\,d} + \frac{(2Ab-aB)\,\text{ta}}{}$$

Mathematica [A] time = 4.04006, size = 263, normalized size = 0.99

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\sqrt{b}B\sqrt{\tan(c+dx)}(a+b\tan(c+dx))-\sqrt{a}(aB-2Ab)\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a}}\right)}{b^{3/2}\sqrt{a+b\tan(c+dx)}} + \frac{(-1)^{3/4}(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{}}{\sqrt{a}}\right.}{\sqrt{-a-ib}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*Sqrt[a + b*Tan[c + d*x]]
),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((-1)^(3/4)*(A + I*B)*ArcTanh[((-1)
^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-
a - I*b] + ((-1)^(1/4)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan
[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (Sqrt[b]*B*Sqrt[Tan[
c + d*x]]*(a + b*Tan[c + d*x]) - Sqrt[a]*(-2*A*b + a*B)*ArcSinh[(Sqrt[b]*Sq
rt[Tan[c + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(b^(3/2)*Sqrt[a +
b*Tan[c + d*x]])))/d
```

Maple [C] time = 0.959, size = 21197, normalized size = 79.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(3/2)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{\sqrt{b\tan(dx+c)+a}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/(sqrt(b*tan(d*x + c) + a)*cot(d*x + c)^(3/2)
), x)
```

3.642 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=316

$$\frac{2b\left(5a^2Ab-3a^3B-6ab^2B+8Ab^3\right)}{3a^3d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{2(4Ab-3aB)\sqrt{\cot(c+dx)}}{3a^2d\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan}{d(-b+ia)^{3/2}}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d)) - ((I*A +
 B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) + (2*b*(5*a^2*A*b
+ 8*A*b^3 - 3*a^3*B - 6*a*b^2*B))/(3*a^3*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*S
qrt[a + b*Tan[c + d*x]]) + (2*(4*A*b - 3*a*B)*Sqrt[Cot[c + d*x]])/(3*a^2*d*
Sqrt[a + b*Tan[c + d*x]]) - (2*A*Cot[c + d*x]^(3/2))/(3*a*d*Sqrt[a + b*Tan[
c + d*x]])
```

Rubi [A] time = 1.3177, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2b\left(5a^2Ab-3a^3B-6ab^2B+8Ab^3\right)}{3a^3d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{2(4Ab-3aB)\sqrt{\cot(c+dx)}}{3a^2d\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan}{d(-b+ia)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d)) - ((I*A +
 B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) + (2*b*(5*a^2*A*b
+ 8*A*b^3 - 3*a^3*B - 6*a*b^2*B))/(3*a^3*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*S
qrt[a + b*Tan[c + d*x]]) + (2*(4*A*b - 3*a*B)*Sqrt[Cot[c + d*x]])/(3*a^2*d*
Sqrt[a + b*Tan[c + d*x]]) - (2*A*Cot[c + d*x]^(3/2))/(3*a*d*Sqrt[a + b*Tan[
c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
```

```
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad\sqrt{a+b\tan(c+dx)}} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}(4Ab-3aB)+\frac{3}{2}aA\tan}{\tan^{\frac{3}{2}}(c+dx)(}}{3a}$$

$$= \frac{2(4Ab-3aB)\sqrt{\cot(c+dx)}}{3a^2d\sqrt{a+b\tan(c+dx)}} - \frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad\sqrt{a+b\tan(c+dx)}} + \frac{\left(4\sqrt{\cot(c+dx)}\sqrt{\tan\right.}}{}$$

$$= \frac{2b\left(5a^2Ab+8Ab^3-3a^3B-6ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)\sqrt{\cot(c+dx}}{3a^2d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2b\left(5a^2Ab+8Ab^3-3a^3B-6ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)\sqrt{\cot(c+dx}}{3a^2d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2b\left(5a^2Ab+8Ab^3-3a^3B-6ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)\sqrt{\cot(c+dx}}{3a^2d\sqrt{a+b\tan(c+dx)}}$$

$$= \frac{2b\left(5a^2Ab+8Ab^3-3a^3B-6ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{2(4Ab-3aB)\sqrt{\cot(c+dx}}{3a^2d\sqrt{a+b\tan(c+dx)}}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{3/2}d} - \frac{(iA+B)\tan}{}$$

Mathematica [A] time = 3.95511, size = 301, normalized size = 0.95

$$\frac{\sqrt{\cot(c+dx)}\left(\frac{2b\left(5a^2Ab-3a^3B-6ab^2B+8Ab^3\right)\tan(c+dx)}{a^2\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} + \frac{3\sqrt[4]{-1}a\sqrt{\tan(c+dx)}\left(\frac{(b+ia)(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{(a+ib)(B+iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a}}{\sqrt{a+}}\right.}{\sqrt{a-ib}}\right.}{a^2+b^2}\right.}{3ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((3*(-1)^(1/4)*a*(((I*a + b)*(A + I*B)*ArcTanh[((-1)^(1
/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a -
 I*b] + ((a + I*b)*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c +
 d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b])*Sqrt[Tan[c + d*x]])/(a^2
+ b^2) + (8*A*b - 6*a*B)/(a*Sqrt[a + b*Tan[c + d*x]]) - (2*A*Cot[c + d*x])/
Sqrt[a + b*Tan[c + d*x]] + (2*b*(5*a^2*A*b + 8*A*b^3 - 3*a^3*B - 6*a*b^2*B)
*Tan[c + d*x])/(a^2*(a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]])))/(3*a*d)
```

Maple [C] time = 1.119, size = 19553, normalized size = 61.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/(b*tan(d*x + c) + a)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/(b*tan(d*x + c) + a)^(3/2
), x)
```

3.643 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=256

$$-\frac{2b\left(a^2A-abB+2Ab^2\right)}{a^2d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(A-iB)}{}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d) - ((A - I*B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) - (2*b*(a^2*A + 2*A*b
^2 - a*b*B))/(a^2*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]
) - (2*A*Sqrt[Cot[c + d*x]])/(a*d*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.970065, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2b\left(a^2A-abB+2Ab^2\right)}{a^2d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(A-iB)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d) - ((A - I*B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) - (2*b*(a^2*A + 2*A*b
^2 - a*b*B))/(a^2*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]
) - (2*A*Sqrt[Cot[c + d*x]])/(a*d*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$$

$$= -\frac{2A\sqrt{\cot(c+dx)}}{ad\sqrt{a+b\tan(c+dx)}} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}(2Ab-aB)+\frac{1}{2}aA\tan(}{\sqrt{\tan(c+dx)}(a+b}}{a}$$

$$= -\frac{2b\left(a^2A+2Ab^2-abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2A\sqrt{\cot(c+dx)}}{ad\sqrt{a+b\tan(c+dx)}} - \frac{(4}{}$$

$$= -\frac{2b\left(a^2A+2Ab^2-abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2A\sqrt{\cot(c+dx)}}{ad\sqrt{a+b\tan(c+dx)}} - \frac{(()}{}$$

$$= -\frac{2b\left(a^2A+2Ab^2-abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2A\sqrt{\cot(c+dx)}}{ad\sqrt{a+b\tan(c+dx)}} - \frac{(()}{}$$

$$= -\frac{2b\left(a^2A+2Ab^2-abB\right)}{a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{2A\sqrt{\cot(c+dx)}}{ad\sqrt{a+b\tan(c+dx)}} - \frac{(()}{}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{3/2}d} - \frac{(A-iB)\tanh}{}$$

Mathematica [A] time = 2.63963, size = 256, normalized size = 1.

$$-\frac{\sqrt{\cot(c+dx)}\left(\frac{2b\left(a^2A-abB+2Ab^2\right)\tan(c+dx)}{a\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}}+\frac{\sqrt[4]{-1}a\sqrt{\tan(c+dx)}\left(\frac{(a-ib)(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}}-\frac{(a+ib)(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{a^2+b^2}\right.}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3
/2),x]
```

```
[Out] -((Sqrt[Cot[c + d*x]]*(((-1)^(1/4)*a*(((a - I*b)*(A + I*B)*ArcTanh[((-1)^(1
/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a -
```

```
I*b] - ((a + I*b)*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c +
d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b])*Sqrt[Tan[c + d*x]])/(a^2
+ b^2) + (2*A)/Sqrt[a + b*Tan[c + d*x]] + (2*b*(a^2*A + 2*A*b^2 - a*b*B)*Ta
n[c + d*x])/(a*(a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]])))/(a*d))
```

Maple [C] time = 0.802, size = 18733, normalized size = 73.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^(3/2
), x)
```

3.644 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=215

$$\frac{2b(Ab-aB)}{ad\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(B+iA}{}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d) + ((I*A + B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) + (2*b*(A*b - a*B))/(
a*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.715714, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {4241, 3609, 3616, 3615, 93, 203, 206}

$$\frac{2b(Ab-aB)}{ad\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(B+iA}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2),x]
```


```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d) + ((I*A + B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) + (2*b*(A*b - a*B))/(
a*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right.}{a\left(a\right.}$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left((a+ib)(A-iB)\sqrt{\cot(c+dx}\right.}{}$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left((a+ib)(A-iB)\sqrt{\cot(c+dx}\right.}{}$$

$$= \frac{2b(Ab-aB)}{a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left((a+ib)(A-iB)\sqrt{\cot(c+dx}\right.}{}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{3/2}d} + \frac{(iA+B)\tanh^{-}}{}$$

Mathematica [A] time = 1.16728, size = 222, normalized size = 1.03

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{2b(Ab-aB)\sqrt{\tan(c+dx)}}{a\sqrt{a+b\tan(c+dx)}} + \frac{\sqrt[4]{-1}(a-ib)(B-iA)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{\sqrt[4]{-1}(b-ia)(A-iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{ta}}{\sqrt{a+b\tan(c}}\right.}{\sqrt{a-ib}}\right.}{d\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((-1)^(1/4)*(a - I*b)*((-I)*A + B)*
ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]])/Sqrt[-a - I*b] + ((-1)^(1/4)*((-I)*a + b)*(A - I*B)*ArcTanh[((-1)^(1
```

```
/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I
*b] + (2*b*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(a*Sqrt[a + b*Tan[c + d*x]])))/(
(a^2 + b^2)*d)
```

Maple [C] time = 0.773, size = 9704, normalized size = 45.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^(3/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

[Out] Timed out

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A + B\tan(c + dx))\sqrt{\cot(c + dx)}}{(a + b\tan(c + dx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*sqrt(cot(c + d*x))/(a + b*tan(c + d*x))**(3/2
), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx + c) + A)\sqrt{\cot(dx + c)}}{(b\tan(dx + c) + a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^(3/2
), x)
```

3.645 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{2(Ab-aB)}{d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(A-iB}{}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d)) + ((A - I
*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) - (2*(A*b - a*B))/
((a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 0.742442, antiderivative size = 210, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2, Rules used = {4241, 3608, 3616, 3615, 93, 203, 206}

$$-\frac{2(Ab-aB)}{d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}+\frac{(A-iB}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)),x]
```


```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d)) + ((A - I
*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(3/2)*d) - (2*(A*b - a*B))/
((a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] && !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
```

```
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$$

$$= -\frac{2(Ab-aB)}{(a^2+b^2)\,d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+d\right.}{}$$

$$= -\frac{2(Ab-aB)}{(a^2+b^2)\,d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left((ia+b)(A+iB)\sqrt{\cot(c+\right.}{}$$

$$= -\frac{2(Ab-aB)}{(a^2+b^2)\,d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left((ia+b)(A+iB)\sqrt{\cot(c+\right.}{}$$

$$= -\frac{2(Ab-aB)}{(a^2+b^2)\,d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left((ia+b)(A+iB)\sqrt{\cot(c+\right.}{}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{3/2}d} + \frac{(A-iB)\,\mathrm{ta}}{}$$

Mathematica [A] time = 2.03343, size = 259, normalized size = 1.23

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{2b(Ab-aB)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{a+b\tan(c+dx)}} + 2(aB-Ab)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)} + \frac{\sqrt[4]{-1}a(a-ib)(A+iB)\tanh^{-1}\left(\right.}{\sqrt{-a-ib}}\right.}{ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/
2)),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((-1)^(1/4)*a*(a - I*b)*(A + I*B)*A
rcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*
x]]])/Sqrt[-a - I*b] - ((-1)^(1/4)*a*(a + I*b)*(A - I*B)*ArcTanh[((-1)^(1/4
)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b
```

```
] + (2*b*(A*b - a*B)*Tan[c + d*x]^(3/2))/Sqrt[a + b*Tan[c + d*x]] + 2*(-(A*
b) + a*B)*Sqrt[Tan[c + d*x]]*Sqrt[a + b*Tan[c + d*x]]))/(a*(a^2 + b^2)*d)
```

Maple [C] time = 0.705, size = 9576, normalized size = 45.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x + c
))), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x + c
))), x)
```

3.646 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=279

$$\frac{2a(Ab-aB)}{bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(B+iA)}{}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d)) + (2*B*Ar
cTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d
*x]]*Sqrt[Tan[c + d*x]])/(b^(3/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sq
rt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c +
 d*x]])/((I*a + b)^(3/2)*d) + (2*a*(A*b - a*B))/(b*(a^2 + b^2)*d*Sqrt[Cot[c
 + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.90488, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4241, 3605, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{2a(Ab-aB)}{bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d(-b+ia)^{3/2}}-\frac{(B+iA)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)),x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(3/2)*d)) + (2*B*Ar
cTanh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d
*x]]*Sqrt[Tan[c + d*x]])/(b^(3/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sq
rt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c +
 d*x]])/((I*a + b)^(3/2)*d) + (2*a*(A*b - a*B))/(b*(a^2 + b^2)*d*Sqrt[Cot[c
 + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+d\right.}{}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+d\right.}{}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+d\right.}{}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right.}{}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{\left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right.}{}$$

$$= \frac{2a(Ab-aB)}{b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}} - \frac{\left((ia+b)(A+iB)\sqrt{\cot(c+\right.}{}$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{b^{3/2}d} + \frac{2a}{b\left(a^2+b^2\right)d\sqrt{\cot(}}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{3/2}d} + \frac{2B\tanh^{-1}\left(\right.}{}$$

Mathematica [C] time = 40.0231, size = 167374, normalized size = 599.91

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/
2)),x]
```

```
[Out] Result too large to show
```

Maple [C] time = 0.937, size = 21787, normalized size = 78.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(dx+c\right)+A}{\left(b\tan\left(dx+c\right)+a\right)^{\frac{3}{2}}\cot\left(dx+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(3/
2)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)^(3/
2)), x)
```

3.647 $\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=399

$$\frac{2b\left(30a^2Ab^3+8a^4Ab-17a^3b^2B-3a^5B-8ab^4B+16Ab^5\right)}{3a^4d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{2b\left(7a^2Ab-3a^3B-4ab^2B+8Ab^3\right)}{3a^3d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{2(2A\ldots}{a^2d(\ldots}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) + ((A - I*B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) + (2*b*(7*a^2*A*b + 8
*A*b^3 - 3*a^3*B - 4*a*b^2*B))/(3*a^3*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a +
 b*Tan[c + d*x])^(3/2)) + (2*(2*A*b - a*B)*Sqrt[Cot[c + d*x]])/(a^2*d*(a +
b*Tan[c + d*x])^(3/2)) - (2*A*Cot[c + d*x]^(3/2))/(3*a*d*(a + b*Tan[c + d*x
])^(3/2)) + (2*b*(8*a^4*A*b + 30*a^2*A*b^3 + 16*A*b^5 - 3*a^5*B - 17*a^3*b^
2*B - 8*a*b^4*B))/(3*a^4*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[
c + d*x]])
```

Rubi [A] time = 1.7451, antiderivative size = 399, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2b\left(30a^2Ab^3+8a^4Ab-17a^3b^2B-3a^5B-8ab^4B+16Ab^5\right)}{3a^4d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{2b\left(7a^2Ab-3a^3B-4ab^2B+8Ab^3\right)}{3a^3d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{2(2A\ldots}{a^2d(\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```



```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) + ((A - I*B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) + (2*b*(7*a^2*A*b + 8
*A*b^3 - 3*a^3*B - 4*a*b^2*B))/(3*a^3*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a +
 b*Tan[c + d*x])^(3/2)) + (2*(2*A*b - a*B)*Sqrt[Cot[c + d*x]])/(a^2*d*(a +
b*Tan[c + d*x])^(3/2)) - (2*A*Cot[c + d*x]^(3/2))/(3*a*d*(a + b*Tan[c + d*x
])^(3/2)) + (2*b*(8*a^4*A*b + 30*a^2*A*b^3 + 16*A*b^5 - 3*a^5*B - 17*a^3*b^
2*B - 8*a*b^4*B))/(3*a^4*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[
```

```
c + d*x]])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
```

```
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx$$

$$= -\frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad(a+b\tan(c+dx))^{3/2}} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{3}{2}(2Ab-aB)+\frac{3}{2}aA\,\mathrm{t}\cdots}{\tan^{\frac{3}{2}}(c+dx\cdots}}{3a}$$

$$= \frac{2(2Ab-aB)\sqrt{\cot(c+dx)}}{a^2d(a+b\tan(c+dx))^{3/2}} - \frac{2A\cot^{\frac{3}{2}}(c+dx)}{3ad(a+b\tan(c+dx))^{3/2}} + \frac{\left(4\sqrt{\cot(c+dx)}\sqrt{\mathrm{ta}\cdots\right.}{\cdots}$$

$$= \frac{2b\left(7a^2Ab+8Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)\sqrt{\cot(c+d\cdots}}{a^2d(a+b\tan(c+dx))^{3/\cdots}}$$

$$= \frac{2b\left(7a^2Ab+8Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)\sqrt{\cot(c+d\cdots}}{a^2d(a+b\tan(c+dx))^{3/\cdots}}$$

$$= \frac{2b\left(7a^2Ab+8Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)\sqrt{\cot(c+d\cdots}}{a^2d(a+b\tan(c+dx))^{3/\cdots}}$$

$$= \frac{2b\left(7a^2Ab+8Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)\sqrt{\cot(c+d\cdots}}{a^2d(a+b\tan(c+dx))^{3/\cdots}}$$

$$= \frac{2b\left(7a^2Ab+8Ab^3-3a^3B-4ab^2B\right)}{3a^3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2(2Ab-aB)\sqrt{\cot(c+d\cdots}}{a^2d(a+b\tan(c+dx))^{3/\cdots}}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{5/2}d} + \frac{(A-iB)\tanh\cdots}{\cdots}$$

<u>Mathematica</u> [A] time = 3.91508, size = 385, normalized size = 0.96

$$\frac{\sqrt{\cot(c+dx)}\left(\frac{6b\left(7a^2Ab-3a^3B-4ab^2B+8Ab^3\right)\tan(c+dx)}{a^2\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}} + \frac{\sqrt{\tan(c+dx)}\left(\frac{6b\left(30a^2Ab^3+8a^4Ab-17a^3b^2B-3a^5B-8ab^4B+16Ab^5\right)\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}+9(-1)^{3/4}a^4\left(\frac{(a-ib)^2(A\cdots}{\cdots}\right.\right.}{a^3\left(a^2+b^2\right)^2\cdots}\right.}{9ad\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(5/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((6*(6*A*b - 3*a*B))/(a*(a + b*Tan[c + d*x])^(3/2)) - (
6*A*Cot[c + d*x])/(a + b*Tan[c + d*x])^(3/2) + (6*b*(7*a^2*A*b + 8*A*b^3 -
3*a^3*B - 4*a*b^2*B)*Tan[c + d*x])/(a^2*(a^2 + b^2)*(a + b*Tan[c + d*x])^(3
/2)) + (Sqrt[Tan[c + d*x]]*(9*(-1)^(3/4)*a^4*(((a - I*b)^2*(A + I*B)*ArcTan
h[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])
/Sqrt[-a - I*b] + ((a + I*b)^2*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]) + (6*b*(8*a^4
*A*b + 30*a^2*A*b^3 + 16*A*b^5 - 3*a^5*B - 17*a^3*b^2*B - 8*a*b^4*B)*Sqrt[T
an[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]))/(a^3*(a^2 + b^2)^2)))/(9*a*d)
```

Maple [C] time = 3.816, size = 80979, normalized size = 203.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/(b*tan(d*x + c) + a)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{5}{2}}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(5/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(5/2)/(b*tan(d*x + c) + a)^(5/2
), x)
```

3.648 $\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=341

$$-\frac{2b\left(17a^2Ab^2+3a^4A-8a^3bB-2ab^3B+8Ab^4\right)}{3a^3d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{2b\left(3a^2A-abB+4Ab^2\right)}{3a^2d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{(-B+iA)\sqrt{\tan}}{}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) - ((I*A + B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) - (2*b*(3*a^2*A + 4*A
*b^2 - a*b*B))/(3*a^2*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])
^(3/2)) - (2*A*Sqrt[Cot[c + d*x]])/(a*d*(a + b*Tan[c + d*x])^(3/2)) - (2*b*
(3*a^4*A + 17*a^2*A*b^2 + 8*A*b^4 - 8*a^3*b*B - 2*a*b^3*B))/(3*a^3*(a^2 + b
^2)^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.33548, antiderivative size = 341, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2b\left(17a^2Ab^2+3a^4A-8a^3bB-2ab^3B+8Ab^4\right)}{3a^3d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{2b\left(3a^2A-abB+4Ab^2\right)}{3a^2d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{(-B+iA)\sqrt{\tan}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) - ((I*A + B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) - (2*b*(3*a^2*A + 4*A
*b^2 - a*b*B))/(3*a^2*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])
^(3/2)) - (2*A*Sqrt[Cot[c + d*x]])/(a*d*(a + b*Tan[c + d*x])^(3/2)) - (2*b*
(3*a^4*A + 17*a^2*A*b^2 + 8*A*b^4 - 8*a^3*b*B - 2*a*b^3*B))/(3*a^3*(a^2 + b
^2)^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
```

```
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\cot^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx$$

$$= -\frac{2A\sqrt{\cot(c+dx)}}{ad(a+b\tan(c+dx))^{3/2}} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\frac{1}{2}(4Ab-aB)+\frac{1}{2}aA\,\mathrm{ta}}{\sqrt{\tan(c+dx)}(}}{a}$$

$$= -\frac{2b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2A\sqrt{\cot(c+dx)}}{ad(a+b\tan(c+dx))^{3/}}$$

$$= -\frac{2b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2A\sqrt{\cot(c+dx)}}{ad(a+b\tan(c+dx))^{3/}}$$

$$= -\frac{2b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2A\sqrt{\cot(c+dx)}}{ad(a+b\tan(c+dx))^{3/}}$$

$$= -\frac{2b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2A\sqrt{\cot(c+dx)}}{ad(a+b\tan(c+dx))^{3/}}$$

$$= -\frac{2b\left(3a^2A+4Ab^2-abB\right)}{3a^2\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2A\sqrt{\cot(c+dx)}}{ad(a+b\tan(c+dx))^{3/}}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}(a+ib)^2d} - \frac{(iA+B)\tan}{}$$

Mathematica [A] time = 3.8793, size = 334, normalized size = 0.98

$$\frac{\sqrt{\cot(c+dx)}\left(-\frac{2b\left(3a^2A-abB+4Ab^2\right)\tan(c+dx)}{a\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}}+\frac{\sqrt{\tan(c+dx)}\left(-\frac{2b\left(17a^2Ab^2+3a^4A-8a^3bB-2ab^3B+8Ab^4\right)\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}-3\sqrt[4]{-1}a^3\left(\frac{(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{}}{\sqrt{a}}\right)}{\sqrt{-a-ib}}\right)\right)}{a^2\left(a^2+b^2\right)^2}\right)}{3ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cot[c + d*x]^(3/2)*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*((-6*A)/(a + b*Tan[c + d*x])^(3/2) - (2*b*(3*a^2*A + 4*
A*b^2 - a*b*B)*Tan[c + d*x])/(a*(a^2 + b^2)*(a + b*Tan[c + d*x])^(3/2)) + (
Sqrt[Tan[c + d*x]]*(-3*(-1)^(1/4)*a^3*(((a - I*b)^2*(A + I*B)*ArcTanh[((-1)
^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-
a - I*b] - ((a + I*b)^2*(A - I*B)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Ta
n[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]) - (2*b*(3*a^4*A + 17
*a^2*A*b^2 + 8*A*b^4 - 8*a^3*b*B - 2*a*b^3*B)*Sqrt[Tan[c + d*x]])/Sqrt[a +
b*Tan[c + d*x]]))/(a^2*(a^2 + b^2)^2)))/(3*a*d)
```

Maple [C] time = 2.572, size = 54573, normalized size = 160.

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\cot(dx+c)^{\frac{3}{2}}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*cot(d*x + c)^(3/2)/(b*tan(d*x + c) + a)^(5/2
), x)
```

3.649 $\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=287

$$\frac{2b(Ab-aB)}{3ad\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab-5a^3B+ab^2B+2Ab^3\right)}{3a^2d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\sqrt{\tan(c+\dots}}{}$$

```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d)) - ((A - I
*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) + (2*b*(A*b - a*B)
)/(3*a*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*b*
(8*a^2*A*b + 2*A*b^3 - 5*a^3*B + a*b^2*B))/(3*a^2*(a^2 + b^2)^2*d*Sqrt[Cot[
c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.07648, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3609, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2b(Ab-aB)}{3ad\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{2b\left(8a^2Ab-5a^3B+ab^2B+2Ab^3\right)}{3a^2d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(A+iB)\sqrt{\tan(c+\dots}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5/2),x]
```


```
[Out] -(((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d)) - ((A - I
*B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) + (2*b*(A*b - a*B)
)/(3*a*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*b*
(8*a^2*A*b + 2*A*b^3 - 5*a^3*B + a*b^2*B))/(3*a^2*(a^2 + b^2)^2*d*Sqrt[Cot[
c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

]

Rule 3609

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[(b*(A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1)
)/(f*(m + 1)*(b*c - a*d)*(a^2 + b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^
2 + b^2)), Int[(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[b*B
*(b*c*(m + 1) + a*d*(n + 1)) + A*(a*(b*c - a*d)*(m + 1) - b^2*d*(m + n + 2)
) - (A*b - a*B)*(b*c - a*d)*(m + 1)*Tan[e + f*x] - b*d*(A*b - a*B)*(m + n +
 2)*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, n}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &
& (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&  !(ILtQ[n, -1] && ( !IntegerQ[m]
|| (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
```

```
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{A+B\tan(c+dx)}{\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c+\cdots\right.}{\cdots}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(8a^2Ab+2Ab^3\cdots\right.}{3a^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+\cdots}}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(8a^2Ab+2Ab^3\cdots\right.}{3a^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+\cdots}}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(8a^2Ab+2Ab^3\cdots\right.}{3a^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+\cdots}}$$

$$= \frac{2b(Ab-aB)}{3a\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(8a^2Ab+2Ab^3\cdots\right.}{3a^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+\cdots}}$$

$$= -\frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{5/2}d} - \frac{(A-iB)\tan\cdots}{\cdots}$$

Mathematica [A] time = 3.48594, size = 293, normalized size = 1.02

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{2b\left(a^2+b^2\right)(Ab-aB)\sqrt{\tan(c+dx)}}{a(a+b\tan(c+dx))^{3/2}} + \frac{2b\left(8a^2Ab-5a^3B+ab^2B+2Ab^3\right)\sqrt{\tan(c+dx)}}{a^2\sqrt{a+b\tan(c+dx)}} - 3\sqrt[4]{-1}\left(\frac{i(a-ib)^2(A+iB)\tanh^{-1}\left(\sqrt[4]{-\cdots}\right.}{\sqrt{-a-ib}\cdots}\right.\right.}{3d\left(a^2+b^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(A + B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(5
/2),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(-3*(-1)^(1/4)*((I*(a - I*b)^2*(A +
I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[
c + d*x]]])/Sqrt[-a - I*b] + ((a + I*b)^2*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqr
t[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]) +
(2*b*(a^2 + b^2)*(A*b - a*B)*Sqrt[Tan[c + d*x]])/(a*(a + b*Tan[c + d*x])^(3
```

```
/2)) + (2*b*(8*a^2*A*b + 2*A*b^3 - 5*a^3*B + a*b^2*B)*Sqrt[Tan[c + d*x]])/(
a^2*Sqrt[a + b*Tan[c + d*x]])))/(3*(a^2 + b^2)^2*d)
```

Maple [C] time = 2.378, size = 40999, normalized size = 142.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^(5/2
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(A+B*tan(d*x+c))/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^(5/2
), x)
```

3.650 $\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=284

$$-\frac{2(Ab-aB)}{3d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}-\frac{2\left(5a^2Ab-2a^3B+4ab^2B-Ab^3\right)}{3ad\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\sqrt{\tan(c}{}$$

```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d)) + ((I*A +
 B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) - (2*(A*b - a*B))/
(3*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) - (2*(5*a^2
*A*b - A*b^3 - 2*a^3*B + 4*a*b^2*B))/(3*a*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x]
]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.12521, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3608, 3649, 3616, 3615, 93, 203, 206}

$$-\frac{2(Ab-aB)}{3d\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}-\frac{2\left(5a^2Ab-2a^3B+4ab^2B-Ab^3\right)}{3ad\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}-\frac{(-B+iA)\sqrt{\tan(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(5/2)),x]
```


```
[Out] -(((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d
*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d)) + ((I*A +
 B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) - (2*(A*b - a*B))/
(3*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) - (2*(5*a^2
*A*b - A*b^3 - 2*a^3*B + 4*a*b^2*B))/(3*a*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x]
]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
```

]

Rule 3608

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((A*b - a*B)*(a + b*Tan[e + f*x])^(m + 1)*(c + d*Tan[e + f*x])^n)/(f*(m
+ 1)*(a^2 + b^2)), x] + Dist[1/(b*(m + 1)*(a^2 + b^2)), Int[(a + b*Tan[e +
f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n - 1)*Simp[b*B*(b*c*(m + 1) + a*d*n) +
 A*b*(a*c*(m + 1) - b*d*n) - b*(A*(b*c - a*d) - B*(a*c + b*d))*(m + 1)*Tan[
e + f*x] - b*d*(A*b - a*B)*(m + n + 1)*Tan[e + f*x]^2, x], x], x] /; FreeQ[
{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && N
eQ[c^2 + d^2, 0] && LtQ[m, -1] && LtQ[0, n, 1] && (IntegerQ[m] || IntegersQ
[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
```

```
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c\right.}{}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3\right.}{3a\left(a^2+b^2\right)^2d\sqrt{\cot(c-}}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3\right.}{3a\left(a^2+b^2\right)^2d\sqrt{\cot(c-}}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3\right.}{3a\left(a^2+b^2\right)^2d\sqrt{\cot(c-}}$$

$$= -\frac{2(Ab-aB)}{3\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} - \frac{2\left(5a^2Ab-Ab^3\right.}{3a\left(a^2+b^2\right)^2d\sqrt{\cot(c-}}$$

$$= \frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}(a+ib)^2d} + \frac{(iA+B)\tan}{}$$

Mathematica [A] time = 4.24602, size = 340, normalized size = 1.2

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{6b\left(a^2(-B)+2aAb+b^2B\right)\tan^{\frac{3}{2}}(c+dx)}{\left(a^2+b^2\right)\sqrt{a+b\tan(c+dx)}} + \frac{3\left(2\left(a^2B-2aAb-b^2B\right)\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}+\frac{\sqrt[4]{-1}a(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{}}{}\right.}{\sqrt{-a-ib}}\right.}{a^2+b^2}\right.}{3ad\left(a^2+b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(5/
2)),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*((2*b*(A*b - a*B)*Tan[c + d*x]^(3/2)
)/(a + b*Tan[c + d*x])^(3/2) + (6*b*(2*a*A*b - a^2*B + b^2*B)*Tan[c + d*x]^
```

```
(3/2))/((a^2 + b^2)*Sqrt[a + b*Tan[c + d*x]]) + (3*(((-1)^(1/4)*a*(a - I*b)
^2*(A + I*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a
+ b*Tan[c + d*x]]])/Sqrt[-a - I*b] - ((-1)^(1/4)*a*(a + I*b)^2*(A - I*B)*Ar
cTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]
]])/Sqrt[a - I*b] + 2*(-2*a*A*b + a^2*B - b^2*B)*Sqrt[Tan[c + d*x]]*Sqrt[a
+ b*Tan[c + d*x]]))/(a^2 + b^2)))/(3*a*(a^2 + b^2)*d)
```

Maple [C] time = 2.156, size = 40367, normalized size = 142.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*sqrt(cot(d*x + c
))), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*sqrt(cot(d*x + c
))), x)
```

3.651 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=284

$$\frac{2a(Ab-aB)}{3bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{2\left(2a^2Ab+a^3B+7ab^2B-4Ab^3\right)}{3bd\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\sqrt{\tan(c+}}{}$$

```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) + ((A - I*B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) + (2*a*(A*b - a*B))/(
3*b*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*(2*a^
2*A*b - 4*A*b^3 + a^3*B + 7*a*b^2*B))/(3*b*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x
]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 1.11573, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4241, 3605, 3649, 3616, 3615, 93, 203, 206}

$$\frac{2a(Ab-aB)}{3bd\left(a^2+b^2\right)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}+\frac{2\left(2a^2Ab+a^3B+7ab^2B-4Ab^3\right)}{3bd\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(A+iB)\sqrt{\tan(c+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/2)),x]
```


```
[Out] ((A + I*B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) + ((A - I*B)
*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[
Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a + b)^(5/2)*d) + (2*a*(A*b - a*B))/(
3*b*(a^2 + b^2)*d*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)) + (2*(2*a^
2*A*b - 4*A*b^3 + a^3*B + 7*a*b^2*B))/(3*b*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x
]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3649

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*b^2 - a*(b*B - a*C))*(a + b*Tan[e
+ f*x])^(m + 1)*(c + d*Tan[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 +
 b^2)), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 + b^2)), Int[(a + b*Tan[e + f
*x])^(m + 1)*(c + d*Tan[e + f*x])^n*Simp[A*(a*(b*c - a*d)*(m + 1) - b^2*d*(
m + n + 2)) + (b*B - a*C)*(b*c*(m + 1) + a*d*(n + 1)) - (m + 1)*(b*c - a*d)
*(A*b - a*B - b*C)*Tan[e + f*x] - d*(A*b^2 - a*(b*B - a*C))*(m + n + 2)*Tan
[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, n}, x] && NeQ[
b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && LtQ[m, -1] &&  !
(ILtQ[n, -1] && ( !IntegerQ[m] || (EqQ[c, 0] && NeQ[a, 0])))
```

Rule 3616

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[A^2 + B^2, 0]
```

Rule 3615

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x
```

```
]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 + b^2, 0] && EqQ[A^2 + B^2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c\right.}{}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3\right.}{3b\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3\right.}{3b\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3\right.}{3b\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}} + \frac{2\left(2a^2Ab-4Ab^3\right.}{3b\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{(A+iB)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{(ia-b)^{5/2}d} + \frac{(A-iB)\tan}{}$$

Mathematica [A] time = 3.57, size = 328, normalized size = 1.15

$$\frac{\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\left(a^2B+2aAb+3b^2B\right)\sqrt{\tan(c+dx)}}{\left(a^2+b^2\right)(a+b\tan(c+dx))^{3/2}} + \frac{\frac{2\left(2a^2Ab+a^3B+7ab^2B-4Ab^3\right)\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}+3\sqrt[4]{-1}b\left(\frac{i(a-ib)^2(A+iB)\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c}}{\sqrt{a+b\tan(c+dx}}\right.}{\sqrt{-a-ib}}\right.}{\left(a^2+b^2\right)^2}\right.}{3bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(5/
2)),x]
```

```
[Out] (Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*((-3*B*Sqrt[Tan[c + d*x]])/(a + b*Ta
n[c + d*x])^(3/2) + ((2*a*A*b + a^2*B + 3*b^2*B)*Sqrt[Tan[c + d*x]])/((a^2
```

```
+ b^2)*(a + b*Tan[c + d*x])^(3/2)) + (3*(-1)^(1/4)*b*((I*(a - I*b)^2*(A + I
*B)*ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c
 + d*x]]])/Sqrt[-a - I*b] + ((a + I*b)^2*(I*A + B)*ArcTanh[((-1)^(1/4)*Sqrt
[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[a - I*b]) + (
2*(2*a^2*A*b - 4*A*b^3 + a^3*B + 7*a*b^2*B)*Sqrt[Tan[c + d*x]])/Sqrt[a + b*
Tan[c + d*x]])/(a^2 + b^2)^2))/(3*b*d)
```

Maple [C] time = 2.073, size = 40379, normalized size = 142.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(3/
2)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(3/
2)), x)
```

3.652 $\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=342

$$\frac{2a(Ab-aB)}{3bd\left(a^2+b^2\right)\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^2d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\sqrt{\tan(c+}{}$$

```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) + (2*B*ArcTa
nh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]
]*Sqrt[Tan[c + d*x]])/(b^(5/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*
x]])/((I*a + b)^(5/2)*d) + (2*a*(A*b - a*B))/(3*b*(a^2 + b^2)*d*Cot[c + d*x
]^(3/2)*(a + b*Tan[c + d*x])^(3/2)) + (2*a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(
b^2*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```

Rubi [A] time = 2.45785, antiderivative size = 342, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4241, 3605, 3645, 3655, 6725, 63, 217, 206, 93, 205, 208}

$$\frac{2a(Ab-aB)}{3bd\left(a^2+b^2\right)\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}+\frac{2a\left(2Ab^3-aB\left(a^2+3b^2\right)\right)}{b^2d\left(a^2+b^2\right)^2\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}+\frac{(-B+iA)\sqrt{\tan(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(5/2)),x]
```


```
[Out] ((I*A - B)*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x
]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/((I*a - b)^(5/2)*d) + (2*B*ArcTa
nh[(Sqrt[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]
]*Sqrt[Tan[c + d*x]])/(b^(5/2)*d) - ((I*A + B)*ArcTanh[(Sqrt[I*a + b]*Sqrt[
Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*
x]])/((I*a + b)^(5/2)*d) + (2*a*(A*b - a*B))/(3*b*(a^2 + b^2)*d*Cot[c + d*x
]^(3/2)*(a + b*Tan[c + d*x])^(3/2)) + (2*a*(2*A*b^3 - a*(a^2 + 3*b^2)*B))/(
b^2*(a^2 + b^2)^2*d*Sqrt[Cot[c + d*x]]*Sqrt[a + b*Tan[c + d*x]])
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3605

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Si
mp[((b*c - a*d)*(B*c - A*d)*(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e + f*x
])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dist[1/(d*(n + 1)*(c^2 + d^2)),
 Int[(a + b*Tan[e + f*x])^(m - 2)*(c + d*Tan[e + f*x])^(n + 1)*Simp[a*A*d*(
b*d*(m - 1) - a*c*(n + 1)) + (b*B*c - (A*b + a*B)*d)*(b*c*(m - 1) + a*d*(n
+ 1)) - d*((a*A - b*B)*(b*c - a*d) + (A*b + a*B)*(a*c + b*d))*(n + 1)*Tan[e
 + f*x] - b*(d*(A*b*c + a*B*c - a*A*d)*(m + n) - b*B*(c^2*(m - 1) - d^2*(n
+ 1)))*Tan[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 1] &&
 LtQ[n, -1] && (IntegerQ[m] || IntegersQ[2*m, 2*n])
```

Rule 3645

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> Simp[((A*d^2 + c*(c*C - B*d))*(a + b*Tan[e
+ f*x])^m*(c + d*Tan[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 + d^2)), x] - Dis
t[1/(d*(n + 1)*(c^2 + d^2)), Int[(a + b*Tan[e + f*x])^(m - 1)*(c + d*Tan[e
+ f*x])^(n + 1)*Simp[A*d*(b*d*m - a*c*(n + 1)) + (c*C - B*d)*(b*c*m + a*d*(
n + 1)) - d*(n + 1)*((A - C)*(b*c - a*d) + B*(a*c + b*d))*Tan[e + f*x] - b*
(d*(B*c - A*d)*(m + n + 1) - C*(c^2*m - d^2*(n + 1)))*Tan[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 + b^2, 0] && NeQ[c^2 + d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3655

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*tan[(e_.) + (f_.)*(x_)] + (C_.)*tan[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n*(A + B*ff*x + C*ff^2*x^2
))/(1 + ff^2*x^2), x], x, Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f,
 A, B, C, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 +
d^2, 0]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
```

```
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(c+dx)}{\cot^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^{5/2}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{5}{2}}(c+dx)(A+B\tan(c+dx))}{(a+b\tan(c+dx))^{5/2}}\,dx$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{\left(2\sqrt{\cot(c+dx)}\sqrt{\tan(c\right.}{}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\right.}{b^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\right.}{b^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\right.}{b^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\right.}{b^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\right.}{b^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2a(Ab-aB)}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}} + \frac{2a\left(2Ab^3-a\right.}{b^2\left(a^2+b^2\right)^2d\sqrt{\cot(c+}}$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{b^{5/2}d} + \frac{2}{3b\left(a^2+b^2\right)d\cot^{\frac{3}{2}}}$$

$$= -\frac{(iA-B)\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}(a+ib)^2d} + \frac{2B\tanh^{-1}\left(\right.}{}$$

Mathematica [C] time = 32.6799, size = 250233, normalized size = 731.68

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(A + B*Tan[c + d*x])/(Cot[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^(5/
2)),x]
```

```
[Out] Result too large to show
```

Maple [C] time = 3.756, size = 76827, normalized size = 224.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan(dx+c)+A}{(b\tan(dx+c)+a)^{\frac{5}{2}}\cot(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(5/
2)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)**(5/2)/(a+b*tan(d*x+c))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B \tan(dx+c) + A}{(b \tan(dx+c) + a)^{\frac{5}{2}} \cot(dx+c)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(d*x+c))/cot(d*x+c)^(5/2)/(a+b*tan(d*x+c))^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)/((b*tan(d*x + c) + a)^(5/2)*cot(d*x + c)^(5/
2)), x)
```

3.653 $\int \frac{\sqrt{\cot(c+dx)}(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=151

$$\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] (B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt
[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) + (B*ArcTanh[(Sqrt[I*a
 + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt
[Tan[c + d*x]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.214753, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.184, Rules used = {21, 4241, 3575, 912, 93, 205, 208}

$$\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[Cot[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x])^(3/2
),x]
```


```
[Out] (B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt
[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) + (B*ArcTanh[(Sqrt[I*a
 + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt
[Tan[c + d*x]])/(Sqrt[I*a + b]*d)
```


Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 912

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_))/((a_) + (c_.)*(x_
)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n, 1/(a + c*x^
2), x], x] /; FreeQ[{a, c, d, e, f, g, m, n}, x] && NeQ[c*d^2 + a*e^2, 0] &
&  !IntegerQ[m] &&  !IntegerQ[n]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{\cot(c+dx)}(aB+bB\tan(c+dx))}{(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{\sqrt{\cot(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$
$$= \left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{1}{\sqrt{\tan(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$$
$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \left(\frac{i}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{i}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right)dx,}{d}$$
$$= \frac{\left(iB\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} +$$
$$= \frac{\left(iB\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{i-(-a+ib)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} +$$
$$= \frac{B\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}\,d} + \frac{B\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan}}{\sqrt{a+b\tan(}}\right.}{}$$

Mathematica [A] time = 0.193956, size = 145, normalized size = 0.96

$$\frac{(-1)^{3/4}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[Cot[c + d*x]]*(a*B + b*B*Tan[c + d*x]))/(a + b*Tan[c + d*x]
)^(3/2),x]
```

```
[Out] ((-1)^(3/4)*B*(-(ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqr
t[a + b*Tan[c + d*x]]]/Sqrt[-a - I*b]) - ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*
Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]/Sqrt[a - I*b])*Sqrt[Cot[c + d
*x]]*Sqrt[Tan[c + d*x]])/d
```

Maple [C] time = 0.593, size = 2054, normalized size = 13.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] B/d/(-I*a+(a^2+b^2)^(1/2)-b)/(I*a+(a^2+b^2)^(1/2)-b)/a*2^(1/2)*(cos(d*x+c)/
sin(d*x+c))^(1/2)*(1/cos(d*x+c)*(a*cos(d*x+c)+b*sin(d*x+c)))^(1/2)*(2*I*Ell
ipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+
b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),
1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b*(a^2+b^2)^(1/
2)-2*I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)
/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2
)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b*(a
^2+b^2)^(1/2)-I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(
d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+
(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2)
)*a^3-2*I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)
+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b
^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^
2+I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-
b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(
1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3+2*I*E
llipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^
2+b^2)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+
b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2+2*Ellipt
icF((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)
^(1/2))/sin(d*x+c))^(1/2),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2)
)^(1/2))*(a^2+b^2)^(1/2)*a^2+4*EllipticF((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin
(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),1/2*2^(1/2)*
((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*(a^2+b^2)^(1/2)*b^2-EllipticP
i((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(
1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^
(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*(a^2+b^2)^(1/2)-Ell
ipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+
b^2)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b)
,1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*(a^2+b^2)^(1
/2)-4*EllipticF((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(
-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^
2+b^2)^(1/2))^(1/2))*a^2*b-4*EllipticF((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d
*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),1/2*2^(1/2)*((
-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^3+EllipticPi((((a^2+b^2)^(1/2
)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^
(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^
2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b+EllipticPi((((a^2+b^2)^(1/2)*sin(d*
x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),-(
```

```
-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2
))/(a^2+b^2)^(1/2))^(1/2))*a^2*b)*(a*(cos(d*x+c)-1)/(-b+(a^2+b^2)^(1/2))/si
n(d*x+c))^(1/2)*(((a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/(
a^2+b^2)^(1/2)/sin(d*x+c))^(1/2)*(((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-
a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)*sin(d*x+c)^2/(cos(d*
x+c)-1)/(a*cos(d*x+c)+b*sin(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan(dx+c)+Ba)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^
(3/2), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$B\int \frac{\sqrt{\cot(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] B*Integral(sqrt(cot(c + d*x))/sqrt(a + b*tan(c + d*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bb\tan(dx+c)+Ba)\sqrt{\cot(dx+c)}}{(b\tan(dx+c)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a*B+b*B*tan(d*x+c))/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)*sqrt(cot(d*x + c))/(b*tan(d*x + c) + a)^
(3/2), x)
```

3.654 $\int \frac{aB+bB\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=157

$$\frac{iB\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{iB\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

```
[Out] (I*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) - (I*B*ArcTanh[(Sqrt
[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*
Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d)
```

Rubi [A] time = 0.217849, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.184, Rules used = {21, 4241, 3575, 910, 93, 205, 208}

$$\frac{iB\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}-\frac{iB\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{b+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^(3/2)
),x]
```

```
[Out] (I*B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d) - (I*B*ArcTanh[(Sqrt
[I*a + b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*
Sqrt[Tan[c + d*x]])/(Sqrt[I*a + b]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
```

```
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 910

```
Int[((d_.) + (e_.)*(x_))^(m_)/(Sqrt[(f_.) + (g_.)*(x_)]*((a_.) + (c_.)*(x_)
^2)), x_Symbol] :> Int[ExpandIntegrand[1/(Sqrt[d + e*x]*Sqrt[f + g*x]), (d
+ e*x)^(m + 1/2)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ
[c*d^2 + a*e^2, 0] && IGtQ[m + 1/2, 0]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{aB + bB\tan(c+dx)}{\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{1}{\sqrt{\cot(c+dx)}\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \left(-\frac{1}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{1}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right) dx,\right.}{d}$$

$$= -\frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} +$$

$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{i-(-a+ib)x^2}\,dx, x, \frac{\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d} - \frac{(B}{}$$

$$= \frac{iB\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}\,d} - \frac{iB\tanh^{-1}\left(\frac{\sqrt{ia+b}\sqrt{\tan}}{\sqrt{a+b\tan(}}\right.}{}$$

Mathematica [A] time = 0.174486, size = 144, normalized size = 0.92

$$\frac{\sqrt[4]{-1}B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} - \frac{\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])
^(3/2)),x]
```

```
[Out] ((-1)^(1/4)*B*(ArcTanh[((-1)^(1/4)*Sqrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[
a + b*Tan[c + d*x]]]/Sqrt[-a - I*b] - ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqr
t[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]/Sqrt[a - I*b])*Sqrt[Cot[c + d*x]
]*Sqrt[Tan[c + d*x]])/d
```

Maple [C] time = 0.572, size = 1631, normalized size = 10.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] -B/d/(I*a-(a^2+b^2)^(1/2)+b)/(I*a+(a^2+b^2)^(1/2)-b)*(I*EllipticPi((((a^2+b
^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(
d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-
b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*(a^2+b^2)^(1/2)-I*EllipticPi((
((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2
))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/
2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*(a^2+b^2)^(1/2)-I*Ellipt
icPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2
)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/
2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b+I*EllipticPi(((
(a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2)
)/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2
)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b-2*EllipticPi((((a^2+b^2
)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*
x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+
(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b*(a^2+b^2)^(1/2)-2*EllipticPi((((
a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))
/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)
*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b*(a^2+b^2)^(1/2)+EllipticPi
((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1
/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^
(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2+2*EllipticPi((((a^2
+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/si
n(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*(
(-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^2+EllipticPi((((a^2+b^2)^(1/
2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))
^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b
^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2+2*EllipticPi((((a^2+b^2)^(1/2)*sin(d
*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(
-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2
))/(a^2+b^2)^(1/2))^(1/2))*b^2)*cos(d*x+c)*sin(d*x+c)*(1/cos(d*x+c)*(a*cos(
d*x+c)+b*sin(d*x+c)))^(1/2)*(a*(cos(d*x+c)-1)/(-b+(a^2+b^2)^(1/2))/sin(d*x+
c))^(1/2)*(((a^2+b^2)^(1/2)*sin(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/(a^2+b^
2)^(1/2)/sin(d*x+c))^(1/2)*(((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(
d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)*2^(1/2)/(a*cos(d*x+c)+b*si
n(d*x+c))/(cos(d*x+c)-1)/(cos(d*x+c)/sin(d*x+c))^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan(dx+c)+Ba}{(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x
 + c))), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)**(1/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan(dx+c)+Ba}{(b\tan(dx+c)+a)^{\frac{3}{2}}\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(1/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)^(3/2)*sqrt(cot(d*x
 + c))), x)
```

3.655 $\int \frac{aB+bB\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=215

$$-\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{2B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}-\frac{B\sqrt{\tan}}{}$$

```
[Out] -((B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) + (2*B*ArcTanh[(Sqr
t[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[
Tan[c + d*x]])/(Sqrt[b]*d) - (B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/
Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a
+ b]*d)
```

Rubi [A] time = 0.259455, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.29, Rules used = {21, 4241, 3575, 910, 63, 217, 206, 912, 93, 205, 208}

$$-\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tan^{-1}\left(\frac{\sqrt{-b+ia}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{d\sqrt{-b+ia}}+\frac{2B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{b}d}-\frac{B\sqrt{\tan}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*B + b*B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^(3/2)
),x]
```

```
[Out] -((B*ArcTan[(Sqrt[I*a - b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sq
rt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a - b]*d)) + (2*B*ArcTanh[(Sqr
t[b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[
Tan[c + d*x]])/(Sqrt[b]*d) - (B*ArcTanh[(Sqrt[I*a + b]*Sqrt[Tan[c + d*x]])/
Sqrt[a + b*Tan[c + d*x]]]*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]])/(Sqrt[I*a
+ b]*d)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
```

```
a + b*x])
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3575

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*tan[(e_.) +
(f_.)*(x_)])^(n_), x_Symbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, D
ist[ff/f, Subst[Int[((a + b*ff*x)^m*(c + d*ff*x)^n)/(1 + ff^2*x^2), x], x,
Tan[e + f*x]/ff], x]] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 + b^2, 0] && NeQ[c^2 + d^2, 0]
```

Rule 910

```
Int[((d_.) + (e_.)*(x_))^(m_)/(Sqrt[(f_.) + (g_.)*(x_)]*((a_.) + (c_.)*(x_)
^2)), x_Symbol] :> Int[ExpandIntegrand[1/(Sqrt[d + e*x]*Sqrt[f + g*x]), (d
+ e*x)^(m + 1/2)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ
[c*d^2 + a*e^2, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 912

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_))/((a_) + (c_.)*(x_
)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n, 1/(a + c*x^
2), x], x] /; FreeQ[{a, c, d, e, f, g, m, n}, x] && NeQ[c*d^2 + a*e^2, 0] &
&  !IntegerQ[m] &&  !IntegerQ[n]
```

Rule 93

```
Int[(((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_))/((e_.) + (f_.)*(x
_)), x_Symbol] :> With[{q = Denominator[m]}, Dist[q, Subst[Int[x^(q*(m + 1)
 - 1)/(b*e - a*f - (d*e - c*f)*x^q), x], x, (a + b*x)^(1/q)/(c + d*x)^(1/q)
], x]] /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[m + n + 1, 0] && RationalQ[n]
 && LtQ[-1, m, 0] && SimplerQ[a + b*x, c + d*x]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{aB+bB\tan(c+dx)}{\cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^{3/2}}\,dx = B\int \frac{1}{\cot^{\frac{3}{2}}(c+dx)\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{\tan^{\frac{3}{2}}(c+dx)}{\sqrt{a+b\tan(c+dx)}}\,dx$$

$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{x^{3/2}}{\sqrt{a+bx}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d}$$

$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \left(\frac{1}{\sqrt{x}\sqrt{a+bx}} - \frac{1}{\sqrt{x}\sqrt{a+bx}(1+x^2)}\right)dx, x, \text{ta}}{d}$$

$$= \frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{d} - \frac{\left(B\sqrt{}\right.}{}$$

$$= -\frac{\left(B\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \left(\frac{i}{2(i-x)\sqrt{x}\sqrt{a+bx}} + \frac{i}{2\sqrt{x}(i+x)\sqrt{a+bx}}\right)dx\right.}{d}$$

$$= -\frac{\left(iB\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{1}{(i-x)\sqrt{x}\sqrt{a+bx}}\,dx, x, \tan(c+dx)\right)}{2d} -$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{b}d} - \frac{\left(iB\sqrt{\cot(c+dx)}\sqrt{\right.}{}$$

$$= -\frac{B\tan^{-1}\left(\frac{\sqrt{ia-b}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}}{\sqrt{ia-b}d} + \frac{2B\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{\text{ta}}}{\sqrt{a+b\,\text{ta}}}\right.}{}$$

Mathematica [A] time = 1.10548, size = 213, normalized size = 0.99

$$\frac{B\sqrt{\tan(c+dx)}\sqrt{\cot(c+dx)}\left(\frac{(-1)^{3/4}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{-a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{-a-ib}} + \frac{(-1)^{3/4}\tanh^{-1}\left(\frac{\sqrt[4]{-1}\sqrt{a-ib}\sqrt{\tan(c+dx)}}{\sqrt{a+b\tan(c+dx)}}\right)}{\sqrt{a-ib}} + \frac{2\sqrt{a}\sqrt{\frac{b\tan(c+dx)}{a}+1}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{}}{}\right.}{\sqrt{b}\sqrt{a+b\tan(c+dx)}}\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*B + b*B*Tan[c + d*x])/(Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])
^(3/2)),x]
```

```
[Out] (B*Sqrt[Cot[c + d*x]]*Sqrt[Tan[c + d*x]]*(((-1)^(3/4)*ArcTanh[((-1)^(1/4)*S
qrt[-a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a + b*Tan[c + d*x]]])/Sqrt[-a - I*b]
```

```
 + ((-1)^(3/4)*ArcTanh[((-1)^(1/4)*Sqrt[a - I*b]*Sqrt[Tan[c + d*x]])/Sqrt[a
 + b*Tan[c + d*x]]])/Sqrt[a - I*b] + (2*Sqrt[a]*ArcSinh[(Sqrt[b]*Sqrt[Tan[c
 + d*x]])/Sqrt[a]]*Sqrt[1 + (b*Tan[c + d*x])/a])/(Sqrt[b]*Sqrt[a + b*Tan[c
+ d*x]])))/d
```

Maple [C] time = 0.498, size = 4640, normalized size = 21.6

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x)
```

```
[Out] 2*B/d/(-b+(a^2+b^2)^(1/2)+a)/(I*a-(a^2+b^2)^(1/2)+b)/(I*a+(a^2+b^2)^(1/2)-b
)/(-b+(a^2+b^2)^(1/2)-a)*2^(1/2)*(((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-
a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)*(((a^2+b^2)^(1/2)*si
n(d*x+c)+b*sin(d*x+c)+a*cos(d*x+c)-a)/(a^2+b^2)^(1/2)/sin(d*x+c))^(1/2)*(a*
(cos(d*x+c)-1)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)*(2*EllipticPi((((a^2+
b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin
(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b
+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3*b-EllipticPi((((a^2+b^2)^(1/2
)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^
(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b+(a^2+b^2
)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3*(a^2+b^2)^(1/2)+5*EllipticPi((((a^2+b^
2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d
*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b+(
a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b^2+2*EllipticPi((((a^2+b^2)^(1
/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c)
)^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b+(a^2+b
^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^3-4*EllipticPi((((a^2+b^2)^(1/2)*sin
(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)
,(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/
2))/(a^2+b^2)^(1/2))^(1/2))*b^3*(a^2+b^2)^(1/2)+EllipticPi((((a^2+b^2)^(1/2
)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^
(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b
^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^3*b+2*EllipticPi((((a^2+b^2)^(1/2)*sin
(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)
,-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(
1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^3-EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)
-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a
^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^
2+b^2)^(1/2))^(1/2))*a^3*(a^2+b^2)^(1/2)-5*EllipticPi((((a^2+b^2)^(1/2)*sin
```

(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2)
,(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/
2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b^2+2*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+
c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+
(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(
a^2+b^2)^(1/2))^(1/2))*a*b^3+4*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*si
n(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^
2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2
)^(1/2))^(1/2))*b^3*(a^2+b^2)^(1/2)+2*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+
c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+
(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(
a^2+b^2)^(1/2))^(1/2))*a^3*b+EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(
d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)
^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)
^(1/2))^(1/2))*a^3*b+2*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)
-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2)
)/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2)
)^(1/2))*a*b^3-4*I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*c
os(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I
*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1
/2))*b^4+4*I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x
+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a
^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*
b^4-4*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/
(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(
1/2)-a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^4+Ellip
ticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^
2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2
2^(1/2)((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^4+4*EllipticPi((((
a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))
/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*
((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^4-EllipticPi((((a^2+b^2)^(1
/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c)
)^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b+(a^2+b
^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^4+3*(a^2+b^2)^(1/2)*EllipticPi((((a^2+
b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin
(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(1/2)*((-b
+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b-2*(a^2+b^2)^(1/2)*EllipticP
i((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(
1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(-b+(a^2+b^2)^(1/2)-a),1/2*2^(
1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2-2*EllipticPi((((a^
2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/s
in(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*
((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2*(a^2+b^2)^(1/2)-2*Ellip
ticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^

```
2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/
2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a*b^2*(a^2+b^2)^(1/
2)-3*(a^2+b^2)^(1/2)*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a
*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/
(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(
1/2))*a^2*b-2*(a^2+b^2)^(1/2)*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin
(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2
)^(1/2))/(-b+(a^2+b^2)^(1/2)+a),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)
^(1/2))^(1/2))*a*b^2+I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)
-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2)
)/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2)
)^(1/2))*a^2*b*(a^2+b^2)^(1/2)-I*EllipticPi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*
sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1/2),-(-b+(a^2
+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2
+b^2)^(1/2))^(1/2))*a^2*b*(a^2+b^2)^(1/2)+4*I*EllipticPi((((a^2+b^2)^(1/2)*
sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(d*x+c))^(1
/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2^(1/2)*((-b+(a^2+b^2)
^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^3*(a^2+b^2)^(1/2)-4*I*EllipticPi((((a^2+b
^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1/2))/sin(
d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^(1/2)*((-
b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*b^3*(a^2+b^2)^(1/2)-3*I*Elliptic
Pi((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^
(1/2))/sin(d*x+c))^(1/2),(-b+(a^2+b^2)^(1/2))/(I*a+(a^2+b^2)^(1/2)-b),1/2*2
^(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b^2+3*I*EllipticPi
((((a^2+b^2)^(1/2)*sin(d*x+c)-b*sin(d*x+c)-a*cos(d*x+c)+a)/(-b+(a^2+b^2)^(1
/2))/sin(d*x+c))^(1/2),-(-b+(a^2+b^2)^(1/2))/(I*a-(a^2+b^2)^(1/2)+b),1/2*2^
(1/2)*((-b+(a^2+b^2)^(1/2))/(a^2+b^2)^(1/2))^(1/2))*a^2*b^2)*(1/cos(d*x+c)*
(a*cos(d*x+c)+b*sin(d*x+c)))^(1/2)*cos(d*x+c)^2/(a*cos(d*x+c)+b*sin(d*x+c))
/(cos(d*x+c)-1)/(cos(d*x+c)/sin(d*x+c))^(3/2)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)**(3/2)/(a+b*tan(d*x+c))**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bb\tan(dx+c)+Ba}{(b\tan(dx+c)+a)^{\frac{3}{2}}\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*B+b*B*tan(d*x+c))/cot(d*x+c)^(3/2)/(a+b*tan(d*x+c))^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*b*tan(d*x + c) + B*a)/((b*tan(d*x + c) + a)^(3/2)*cot(d*x + c)
^(3/2)), x)
```

3.656 $\int \cot^m(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=195

$$\frac{(A+iB)\cot^{m-1}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(1-m;-n,1;2-m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(1-m)}+\frac{(A\cdots}{\cdots}$$

```
[Out] ((A + I*B)*AppellF1[1 - m, -n, 1, 2 - m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
+ d*x]]*Cot[c + d*x]^(-1 + m)*(a + b*Tan[c + d*x])^n)/(2*d*(1 - m)*(1 + (b*
Tan[c + d*x])/a)^n) + ((A - I*B)*AppellF1[1 - m, -n, 1, 2 - m, -((b*Tan[c +
 d*x])/a), I*Tan[c + d*x]]*Cot[c + d*x]^(-1 + m)*(a + b*Tan[c + d*x])^n)/(2
*d*(1 - m)*(1 + (b*Tan[c + d*x])/a)^n)
```

Rubi [A] time = 0.440167, antiderivative size = 195, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {4241, 3603, 3602, 135, 133}

$$\frac{(A+iB)\cot^{m-1}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(1-m;-n,1;2-m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right)}{2d(1-m)}+\frac{(A\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^m*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((A + I*B)*AppellF1[1 - m, -n, 1, 2 - m, -((b*Tan[c + d*x])/a), (-I)*Tan[c
+ d*x]]*Cot[c + d*x]^(-1 + m)*(a + b*Tan[c + d*x])^n)/(2*d*(1 - m)*(1 + (b*
Tan[c + d*x])/a)^n) + ((A - I*B)*AppellF1[1 - m, -n, 1, 2 - m, -((b*Tan[c +
 d*x])/a), I*Tan[c + d*x]]*Cot[c + d*x]^(-1 + m)*(a + b*Tan[c + d*x])^n)/(2
*d*(1 - m)*(1 + (b*Tan[c + d*x])/a)^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 135

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Dist[(c^IntPart[n]*(c + d*x)^FracPart[n])/(1 + (d*x)/c)^FracPart
[n], Int[(b*x)^m*(1 + (d*x)/c)^n*(e + f*x)^p, x], x] /; FreeQ[{b, c, d, e,
f, m, n, p}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !GtQ[c, 0]
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rubi steps

$$\int \cot^m(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = (\cot^m(c+dx)\tan^m(c+dx))\int \tan^{-m}(c+dx)(a+b\tan(c$$

$$= \frac{1}{2}((A-iB)\cot^m(c+dx)\tan^m(c+dx))\int(1+i\tan(c+dx$$

$$= \frac{((A-iB)\cot^m(c+dx)\tan^m(c+dx))\,\mathrm{Subst}\left(\int \frac{x^{-m}(a+bx)^n}{1-ix}\,d\right.}{2d}$$

$$= \frac{\left((A-iB)\cot^m(c+dx)\tan^m(c+dx)(a+b\tan(c+dx))^n\left(1\right.\right.}{2d}$$

$$= \frac{(A+iB)F_1\left(1-m;-n,1;2-m;-\frac{b\tan(c+dx)}{a},-i\tan(c+dx)\right.}{2d(1-}$$

Mathematica [F] time = 6.2417, size = 0, normalized size = 0.

$$\int \cot^m(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^m*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Cot[c + d*x]^m*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x]
```

Maple [F] time = 0.397, size = 0, normalized size = 0.

$$\int (\cot(dx+c))^m (a+b\tan(dx+c))^n (A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((B\tan(dx+c)+A)(b\tan(dx+c)+a)^{n}\cot(dx+c)^{m},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**m*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^{n}\cot(dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^m*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^m, x)
```

3.657 $\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=169

$$-\frac{(A+iB)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(-\frac{1}{2};1,-n;\frac{1}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d}-\frac{(A-iB)\sqrt{}}{}$$

```
[Out] -(((A + I*B)*AppellF1[-1/2, 1, -n, 1/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x
])/a)]*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*x])/
a)^n)) - ((A - I*B)*AppellF1[-1/2, 1, -n, 1/2, I*Tan[c + d*x], -((b*Tan[c +
 d*x])/a)]*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*
x])/a)^n)
```

Rubi [A] time = 0.487656, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4241, 3603, 3602, 130, 511, 510}

$$-\frac{(A+iB)\sqrt{\cot(c+dx)}(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(-\frac{1}{2};1,-n;\frac{1}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d}-\frac{(A-iB)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] -(((A + I*B)*AppellF1[-1/2, 1, -n, 1/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x
])/a)]*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*x])/
a)^n)) - ((A - I*B)*AppellF1[-1/2, 1, -n, 1/2, I*Tan[c + d*x], -((b*Tan[c +
 d*x])/a)]*Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*
x])/a)^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 511

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x
^n)/a)^FracPart[p], Int[(e*x)^m*(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /;
FreeQ[{a, b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] &&
 NeQ[m, n - 1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 510

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(a^p*c^q*(e*x)^(m + 1)*AppellF1[(m + 1)/n, -p, -
q, 1 + (m + 1)/n, -((b*x^n)/a), -((d*x^n)/c)])/(e*(m + 1)), x] /; FreeQ[{a,
 b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] && NeQ[m, n
 - 1] && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^n(A+}{\tan^{\frac{3}{2}}(c+dx}$$

$$= \frac{1}{2}\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(1+i\tan(c+}{\text{ta}}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{(a+bx)^n}{(1-ix)x^{3/2}}d\right.}{2d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{\left(a+bx^2\right)^n}{x^2\left(1-ix^2\right)}d\right.}{d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n\right.}{}$$

$$= -\frac{(A+iB)F_1\left(-\frac{1}{2};1,-n;\frac{1}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)\sqrt{\text{c}}}{d}$$

Mathematica [F] time = 8.40279, size = 0, normalized size = 0.

$$\int \cot^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Cot[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.4, size = 0, normalized size = 0.

$$\int (\cot(dx+c))^{\frac{3}{2}}(a+b\tan(dx+c))^n(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^(3/2), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((B\cot(dx+c)\tan(dx+c)+A\cot(dx+c))(b\tan(dx+c)+a)^n\sqrt{\cot(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*cot(d*x + c)*tan(d*x + c) + A*cot(d*x + c))*(b*tan(d*x + c) + a
)^n*sqrt(cot(d*x + c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(3/2)*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\cot(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*cot(d*x + c)^(3/2), x
)
```

3.658 $\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=167

$$\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{1}{2};1,-n;\frac{3}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d\sqrt{\cot(c+dx)}}+\frac{(A-iB)(a+b\tan(c+dx))^n}{}$$

```
[Out] ((A + I*B)*AppellF1[1/2, 1, -n, 3/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + (b*Tan[c + d*x])/a)^
n) + ((A - I*B)*AppellF1[1/2, 1, -n, 3/2, I*Tan[c + d*x], -((b*Tan[c + d*x]
)/a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + (b*Tan[c + d*x])/a
)^n)
```

Rubi [A] time = 0.432217, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4241, 3603, 3602, 130, 430, 429}

$$\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{1}{2};1,-n;\frac{3}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d\sqrt{\cot(c+dx)}}+\frac{(A-iB)(a+b\tan(c+dx))^n}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((A + I*B)*AppellF1[1/2, 1, -n, 3/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + (b*Tan[c + d*x])/a)^
n) + ((A - I*B)*AppellF1[1/2, 1, -n, 3/2, I*Tan[c + d*x], -((b*Tan[c + d*x]
)/a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Cot[c + d*x]]*(1 + (b*Tan[c + d*x])/a
)^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(a+b\tan(c+dx))^n(A+\mathrm{I}}{\sqrt{\tan(c+dx}}$$

$$= \frac{1}{2}\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \frac{(1+i\tan(c+d}{\sqrt{\mathrm{t}}}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int \frac{(a+bx)^n}{(1-ix)\sqrt{x}}\,dx\right.}{2d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\mathrm{Subst}\left(\int \frac{\left(a+bx^2\right)^n}{1-ix^2}\,dx\right.}{d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n\left(1\right.\right.}{d}$$

$$= \frac{(A+iB)F_1\left(\frac{1}{2};1,-n;\frac{3}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)(a+b\,\mathrm{t}}{d\sqrt{\cot(c+dx)}}$$

Mathematica [F] time = 9.53169, size = 0, normalized size = 0.

$$\int \sqrt{\cot(c+dx)}(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Sqrt[Cot[c + d*x]]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.419, size = 0, normalized size = 0.

$$\int \sqrt{\cot(dx+c)}\,(a+b\tan(dx+c))^n\,(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\sqrt{\cot(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*sqrt(cot(d*x + c)), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\sqrt{\cot(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*sqrt(cot(d*x + c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)**(1/2)*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan{(dx+c)}+A)(b\tan{(dx+c)}+a)^n\sqrt{\cot{(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*sqrt(cot(d*x + c)), x
)
```

3.659 $\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$

Optimal. Leaf size=173

$$\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{3}{2};1,-n;\frac{5}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{3d\cot^{\frac{3}{2}}(c+dx)}+\frac{(A-iB)(a+b\tan(c+dx)}{}$$

```
[Out] ((A + I*B)*AppellF1[3/2, 1, -n, 5/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*(a + b*Tan[c + d*x])^n)/(3*d*Cot[c + d*x]^(3/2)*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[3/2, 1, -n, 5/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*(a + b*Tan[c + d*x])^n)/(3*d*Cot[c + d*x]^(3/2)*(1 + (b*Tan[c + d*x
])/a)^n)
```

Rubi [A] time = 0.463324, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4241, 3603, 3602, 130, 511, 510}

$$\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{3}{2};1,-n;\frac{5}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{3d\cot^{\frac{3}{2}}(c+dx)}+\frac{(A-iB)(a+b\tan(c+dx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],x]
```


```
[Out] ((A + I*B)*AppellF1[3/2, 1, -n, 5/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*(a + b*Tan[c + d*x])^n)/(3*d*Cot[c + d*x]^(3/2)*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[3/2, 1, -n, 5/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*(a + b*Tan[c + d*x])^n)/(3*d*Cot[c + d*x]^(3/2)*(1 + (b*Tan[c + d*x
])/a)^n)
```


Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 511

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x
^n)/a)^FracPart[p], Int[(e*x)^m*(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /;
FreeQ[{a, b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] &&
 NeQ[m, n - 1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 510

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(a^p*c^q*(e*x)^(m + 1)*AppellF1[(m + 1)/n, -p, -
q, 1 + (m + 1)/n, -((b*x^n)/a), -((d*x^n)/c)])/(e*(m + 1)), x] /; FreeQ[{a,
 b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] && NeQ[m, n
 - 1] && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n(A$$

$$= \frac{1}{2}\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int (1+i\tan(c+dx))\sqrt{\tan(c+$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}(a+bx)^n}{1-ix}\,dx, x, \tan(c\right.}{2d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{x^2\left(a+bx^2\right)^n}{1-ix^2}\,dx, x, \sqrt{\tan(}\right.}{d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+d}{a}\right.\right.}{d}$$

$$= \frac{(A+iB)F_1\left(\frac{3}{2};1,-n;\frac{5}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)(a+b\tan(c+dx)}{3d\cot^{\frac{3}{2}}(c+dx)}$$

Mathematica [F] time = 15.1959, size = 0, normalized size = 0.

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\cot(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
x]
```

```
[Out] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Cot[c + d*x]],
 x]
```

Maple [F] time = 0.438, size = 0, normalized size = 0.

$$\int (a+b\tan(dx+c))^n (A+B\tan(dx+c)) \frac{1}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

```
[Out] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/sqrt(cot(d*x + c)), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\sqrt{\cot(dx+c)}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/sqrt(cot(d*x + c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**n*(A+B*tan(d*x+c))/cot(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\sqrt{\cot(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/sqrt(cot(d*x + c)), x
)
```

3.660 $\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=173

$$\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{5}{2};1,-n;\frac{7}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{5d\cot^{\frac{5}{2}}(c+dx)}+\frac{(A-iB)(a+b\tan(c+dx))^n}{}$$

```
[Out] ((A + I*B)*AppellF1[5/2, 1, -n, 7/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*(a + b*Tan[c + d*x])^n)/(5*d*Cot[c + d*x]^(5/2)*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[5/2, 1, -n, 7/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*(a + b*Tan[c + d*x])^n)/(5*d*Cot[c + d*x]^(5/2)*(1 + (b*Tan[c + d*x
])/a)^n)
```

Rubi [A] time = 0.46238, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4241, 3603, 3602, 130, 511, 510}

$$\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{5}{2};1,-n;\frac{7}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{5d\cot^{\frac{5}{2}}(c+dx)}+\frac{(A-iB)(a+b\tan(c+dx))^n}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),x]
```

```
[Out] ((A + I*B)*AppellF1[5/2, 1, -n, 7/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*(a + b*Tan[c + d*x])^n)/(5*d*Cot[c + d*x]^(5/2)*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[5/2, 1, -n, 7/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*(a + b*Tan[c + d*x])^n)/(5*d*Cot[c + d*x]^(5/2)*(1 + (b*Tan[c + d*x
])/a)^n)
```

Rule 4241

```
Int[(cot[(a_.) + (b_.)*(x_)]*(c_.))^(m_.)*(u_), x_Symbol] :> Dist[(c*Cot[a
+ b*x])^m*(c*Tan[a + b*x])^m, Int[ActivateTrig[u]/(c*Tan[a + b*x])^m, x], x
] /; FreeQ[{a, b, c, m}, x] &&  !IntegerQ[m] && KnownTangentIntegrandQ[u, x
]
```

Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 511

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x
^n)/a)^FracPart[p], Int[(e*x)^m*(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /;
FreeQ[{a, b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] &&
 NeQ[m, n - 1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 510

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(a^p*c^q*(e*x)^(m + 1)*AppellF1[(m + 1)/n, -p, -
q, 1 + (m + 1)/n, -((b*x^n)/a), -((d*x^n)/c)])/(e*(m + 1)), x] /; FreeQ[{a,
 b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] && NeQ[m, n
 - 1] && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx = \left(\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+I$$

$$= \frac{1}{2}\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\int (1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{x^{3/2}(a+bx)^n}{1-ix}\,dx, x, \tan(c+\right.}{2d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}\right)\text{Subst}\left(\int \frac{x^4(a+bx^2)^n}{1-ix^2}\,dx, x, \sqrt{\tan(c\right.}}{d}$$

$$= \frac{\left((A-iB)\sqrt{\cot(c+dx)}\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+dx)}{a}\right.\right.}{d}$$

$$= \frac{(A+iB)F_1\left(\frac{5}{2};1,-n;\frac{7}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)(a+b\tan(c+dx))^n}{5d\cot^{\frac{5}{2}}(c+dx)}$$

Mathematica [F] time = 15.4057, size = 0, normalized size = 0.

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\cot^{\frac{3}{2}}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),
x]
```

```
[Out] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Cot[c + d*x]^(3/2),
 x]
```

Maple [F] time = 0.394, size = 0, normalized size = 0.

$$\int (a+b\tan(dx+c))^n (A+B\tan(dx+c))(\cot(dx+c))^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

```
[Out] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/cot(d*x + c)^(3/2), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\cot(dx+c)^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/cot(d*x + c)^(3/2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**n*(A+B*tan(d*x+c))/cot(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\cot(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/cot(d*x+c)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/cot(d*x + c)^(3/2), x
)
```

3.661 $\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=173

$$\frac{(A+iB)\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{5}{2};1,-n;\frac{7}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{5d}+\frac{(A-iB)\tan}{}$$

```
[Out] ((A + I*B)*AppellF1[5/2, 1, -n, 7/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^n)/(5*d*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[5/2, 1, -n, 7/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^n)/(5*d*(1 + (b*Tan[c + d*x
])/a)^n)
```

Rubi [A] time = 0.366916, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {3603, 3602, 130, 511, 510}

$$\frac{(A+iB)\tan^{\frac{5}{2}}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{5}{2};1,-n;\frac{7}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{5d}+\frac{(A-iB)\tan}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```



```
[Out] ((A + I*B)*AppellF1[5/2, 1, -n, 7/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^n)/(5*d*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[5/2, 1, -n, 7/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*Tan[c + d*x]^(5/2)*(a + b*Tan[c + d*x])^n)/(5*d*(1 + (b*Tan[c + d*x
])/a)^n)
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
```

```
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 511

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x
^n)/a)^FracPart[p], Int[(e*x)^m*(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /;
FreeQ[{a, b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] &&
 NeQ[m, n - 1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 510

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(a^p*c^q*(e*x)^(m + 1)*AppellF1[(m + 1)/n, -p, -
q, 1 + (m + 1)/n, -((b*x^n)/a), -((d*x^n)/c)])/(e*(m + 1)), x] /; FreeQ[{a,
 b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] && NeQ[m, n
 - 1] && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int(1+i\tan(c+dx))\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c$$

$$= \frac{(A-iB)\,\text{Subst}\left(\int \frac{x^{3/2}(a+bx)^n}{1-ix}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+i}{}$$

$$= \frac{(A-iB)\,\text{Subst}\left(\int \frac{x^4(a+bx^2)^n}{1-ix^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} + \frac{(A+}{}$$

$$= \frac{\left((A-iB)(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+dx)}{a}\right)^{-n}\right)\text{Subst}\Big(}{d}$$

$$= \frac{(A+iB)F_1\left(\frac{5}{2};1,-n;\frac{7}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)\tan^{\frac{5}{2}}(}{5d}$$

Mathematica [F] time = 2.62131, size = 0, normalized size = 0.

$$\int \tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.371, size = 0, normalized size = 0.

$$\int (\tan(dx+c))^{\frac{3}{2}}(a+b\tan(dx+c))^n(A+B\tan(dx+c))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\tan(dx+c)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*tan(d*x + c)^(3/2), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(B\tan(dx+c)^2+A\tan(dx+c)\right)(b\tan(dx+c)+a)^n\sqrt{\tan(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c)^2 + A*tan(d*x + c))*(b*tan(d*x + c) + a)^n*sqrt(ta
n(d*x + c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(3/2)*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(3/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.662 $\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$

Optimal. Leaf size=173

$$\frac{(A+iB)\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{3}{2};1,-n;\frac{5}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{3d}+\frac{(A-iB)\tan^{\frac{3}{2}}(}{}$$

```
[Out] ((A + I*B)*AppellF1[3/2, 1, -n, 5/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n)/(3*d*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[3/2, 1, -n, 5/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n)/(3*d*(1 + (b*Tan[c + d*x
])/a)^n)
```

Rubi [A] time = 0.363423, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {3603, 3602, 130, 511, 510}

$$\frac{(A+iB)\tan^{\frac{3}{2}}(c+dx)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{3}{2};1,-n;\frac{5}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{3d}+\frac{(A-iB)\tan^{\frac{3}{2}}(}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```


```
[Out] ((A + I*B)*AppellF1[3/2, 1, -n, 5/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n)/(3*d*(1 + (b*Tan[c + d*x])/a
)^n) + ((A - I*B)*AppellF1[3/2, 1, -n, 5/2, I*Tan[c + d*x], -((b*Tan[c + d*
x])/a)]*Tan[c + d*x]^(3/2)*(a + b*Tan[c + d*x])^n)/(3*d*(1 + (b*Tan[c + d*x
])/a)^n)
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] && !IntegerQ[m] &&
```

```
!IntegerQ[n] && !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] && !IntegerQ[m] && !IntegerQ[n] && !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 511

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x
^n)/a)^FracPart[p], Int[(e*x)^m*(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /;
FreeQ[{a, b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] &&
 NeQ[m, n - 1] && !(IntegerQ[p] || GtQ[a, 0])
```

Rule 510

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(a^p*c^q*(e*x)^(m + 1)*AppellF1[(m + 1)/n, -p, -
q, 1 + (m + 1)/n, -((b*x^n)/a), -((d*x^n)/c)])/(e*(m + 1)), x] /; FreeQ[{a,
 b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] && NeQ[m, n
 - 1] && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx = \frac{1}{2}(A-iB)\int(1+i\tan(c+dx))\sqrt{\tan(c+dx)}(a+b\tan(c-$$

$$= \frac{(A-iB)\operatorname{Subst}\left(\int\frac{\sqrt{x}(a+bx)^n}{1-ix}\,dx,x,\tan(c+dx)\right)}{2d} + \frac{(A+iB)}{}$$

$$= \frac{(A-iB)\operatorname{Subst}\left(\int\frac{x^2(a+bx^2)^n}{1-ix^2}\,dx,x,\sqrt{\tan(c+dx)}\right)}{d} + \frac{(A+}{}$$

$$= \frac{\left((A-iB)(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+dx)}{a}\right)^{-n}\operatorname{Subst}\left(\int\right.\right.}{d}$$

$$= \frac{(A+iB)F_1\left(\frac{3}{2};1,-n;\frac{5}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)\tan^{\frac{3}{2}}(c}{3d}$$

Mathematica [F] time = 1.91191, size = 0, normalized size = 0.

$$\int \sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n(A+B\tan(c+dx))\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]),x]
```

```
[Out] Integrate[Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]), x
]
```

Maple [F] time = 0.399, size = 0, normalized size = 0.

$$\int \sqrt{\tan(dx+c)}\,(a+b\tan(dx+c))^n\,(A+B\tan(dx+c))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

```
[Out] int(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\sqrt{\tan(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="maxima")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*sqrt(tan(d*x + c)), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((B\tan(dx+c)+A)(b\tan(dx+c)+a)^n\sqrt{\tan(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n*sqrt(tan(d*x + c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**(1/2)*(a+b*tan(d*x+c))**n*(A+B*tan(d*x+c)),x)
```

```
[Out] Timed out
```

Giac [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^(1/2)*(a+b*tan(d*x+c))^n*(A+B*tan(d*x+c)),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError
```

3.663 $\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$

Optimal. Leaf size=167

$$\frac{(A+iB)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{1}{2};1,-n;\frac{3}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d}+\frac{(A-iB)\sqrt{\mathrm{ta}}}{}$$

```
[Out] ((A + I*B)*AppellF1[1/2, 1, -n, 3/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*x])/a)^
n) + ((A - I*B)*AppellF1[1/2, 1, -n, 3/2, I*Tan[c + d*x], -((b*Tan[c + d*x]
)/a)]*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*x])/a
)^n)
```

Rubi [A] time = 0.331004, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {3603, 3602, 130, 430, 429}

$$\frac{(A+iB)\sqrt{\tan(c+dx)}(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(\frac{1}{2};1,-n;\frac{3}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d}+\frac{(A-iB)\sqrt{\mathrm{ta}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],x]
```


```
[Out] ((A + I*B)*AppellF1[1/2, 1, -n, 3/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x])/
a)]*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*x])/a)^
n) + ((A - I*B)*AppellF1[1/2, 1, -n, 3/2, I*Tan[c + d*x], -((b*Tan[c + d*x]
)/a)]*Sqrt[Tan[c + d*x]]*(a + b*Tan[c + d*x])^n)/(d*(1 + (b*Tan[c + d*x])/a
)^n)
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
 !IntegerQ[n] &&  !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] &&  !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 430

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p],
 Int[(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, p, q}
, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1] &&  !(IntegerQ[p] || GtQ[a, 0])
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx = \frac{1}{2}(A-iB)\int \frac{(1+i\tan(c+dx))(a+b\tan(c+dx))^n}{\sqrt{\tan(c+dx)}}\,dx + \frac{1}{2}(A+iB)\int$$

$$= \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{(a+bx)^n}{(1-ix)\sqrt{x}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+iB)\,\mathrm{Subst}\left(\int \frac{(a}{(1}\right.}{}$$

$$= \frac{(A-iB)\,\mathrm{Subst}\left(\int \frac{(a+bx^2)^n}{1-ix^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} + \frac{(A+iB)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{\left((A-iB)(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+dx)}{a}\right)^{-n}\right)\mathrm{Subst}\left(\int \frac{\left(1+\frac{bx^2}{a}\right)^n}{1-ix^2}\,dx\right.}{d}$$

$$= \frac{(A+iB)F_1\left(\frac{1}{2};1,-n;\frac{3}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)\sqrt{\tan(c+dx)}(a+}{d}$$

Mathematica [F] time = 1.35454, size = 0, normalized size = 0.

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\sqrt{\tan(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
x]
```

```
[Out] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Sqrt[Tan[c + d*x]],
 x]
```

Maple [F] time = 0.405, size = 0, normalized size = 0.

$$\int (a+b\tan(dx+c))^n (A+B\tan(dx+c))\frac{1}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

```
[Out] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\sqrt{\tan(dx+c)}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/sqrt(tan(d*x + c)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))\,(a+b\tan(c+dx))^n}{\sqrt{\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**n*(A+B*tan(d*x+c))/tan(d*x+c)**(1/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**n/sqrt(tan(c + d*x)), x
)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\sqrt{\tan(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/sqrt(tan(d*x + c)), x
)
```

3.664 $\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$

Optimal. Leaf size=169

$$-\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(-\frac{1}{2};1,-n;\frac{1}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d\sqrt{\tan(c+dx)}}-\frac{(A-iB)(a+b\tan(c+dx$$

```
[Out] -(((A + I*B)*AppellF1[-1/2, 1, -n, 1/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x
])/a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Tan[c + d*x]]*(1 + (b*Tan[c + d*x])/
a)^n)) - ((A - I*B)*AppellF1[-1/2, 1, -n, 1/2, I*Tan[c + d*x], -((b*Tan[c +
 d*x])/a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Tan[c + d*x]]*(1 + (b*Tan[c + d*
x])/a)^n)
```

Rubi [A] time = 0.375159, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {3603, 3602, 130, 511, 510}

$$-\frac{(A+iB)(a+b\tan(c+dx))^n\left(\frac{b\tan(c+dx)}{a}+1\right)^{-n}F_1\left(-\frac{1}{2};1,-n;\frac{1}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)}{d\sqrt{\tan(c+dx)}}-\frac{(A-iB)(a+b\tan(c+dx$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),x]
```


```
[Out] -(((A + I*B)*AppellF1[-1/2, 1, -n, 1/2, (-I)*Tan[c + d*x], -((b*Tan[c + d*x
])/a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Tan[c + d*x]]*(1 + (b*Tan[c + d*x])/
a)^n)) - ((A - I*B)*AppellF1[-1/2, 1, -n, 1/2, I*Tan[c + d*x], -((b*Tan[c +
 d*x])/a)]*(a + b*Tan[c + d*x])^n)/(d*Sqrt[Tan[c + d*x]]*(1 + (b*Tan[c + d*
x])/a)^n)
```


Rule 3603

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Di
st[(A + I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*Tan[e + f*x])^n*(1 - I*Ta
n[e + f*x]), x], x] + Dist[(A - I*B)/2, Int[(a + b*Tan[e + f*x])^m*(c + d*T
an[e + f*x])^n*(1 + I*Tan[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
B, m, n}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 + b^2, 0] &&  !IntegerQ[m] &&
```

```
!IntegerQ[n] && !IntegersQ[2*m, 2*n] && NeQ[A^2 + B^2, 0]
```

Rule 3602

```
Int[((a_.) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Dis
t[A^2/f, Subst[Int[((a + b*x)^m*(c + d*x)^n)/(A - B*x), x], x, Tan[e + f*x]
], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 + b^2, 0] && !IntegerQ[m] && !IntegerQ[n] && !IntegersQ[2*m, 2*n]
 && EqQ[A^2 + B^2, 0]
```

Rule 130

```
Int[((e_.)*(x_))^(p_)*((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_
Symbol] :> With[{k = Denominator[p]}, Dist[k/e, Subst[Int[x^(k*(p + 1) - 1)
*(a + (b*x^k)/e)^m*(c + (d*x^k)/e)^n, x], x, (e*x)^(1/k)], x]] /; FreeQ[{a,
 b, c, d, e, m, n}, x] && NeQ[b*c - a*d, 0] && FractionQ[p] && IntegerQ[m]
```

Rule 511

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x
^n)/a)^FracPart[p], Int[(e*x)^m*(1 + (b*x^n)/a)^p*(c + d*x^n)^q, x], x] /;
FreeQ[{a, b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] &&
 NeQ[m, n - 1] && !(IntegerQ[p] || GtQ[a, 0])
```

Rule 510

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(a^p*c^q*(e*x)^(m + 1)*AppellF1[(m + 1)/n, -p, -
q, 1 + (m + 1)/n, -((b*x^n)/a), -((d*x^n)/c)])/(e*(m + 1)), x] /; FreeQ[{a,
 b, c, d, e, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[m, -1] && NeQ[m, n
 - 1] && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rubi steps

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx = \frac{1}{2}(A-iB)\int \frac{(1+i\tan(c+dx))(a+b\tan(c+dx))^n}{\tan^{\frac{3}{2}}(c+dx)}\,dx + \frac{1}{2}(A+iB)\int$$

$$= \frac{(A-iB)\operatorname{Subst}\left(\int \frac{(a+bx)^n}{(1-ix)x^{3/2}}\,dx, x, \tan(c+dx)\right)}{2d} + \frac{(A+iB)\operatorname{Subst}\left(\int \frac{(a\cdots}{(1+\cdots}\right.}{}$$

$$= \frac{(A-iB)\operatorname{Subst}\left(\int \frac{\left(a+bx^2\right)^n}{x^2\left(1-ix^2\right)}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d} + \frac{(A+iB)\operatorname{Subst}\left(\int \frac{(\cdots}{x\cdots}\right.}{}$$

$$= \frac{\left((A-iB)(a+b\tan(c+dx))^n\left(1+\frac{b\tan(c+dx)}{a}\right)^{-n}\right)\operatorname{Subst}\left(\int \frac{\left(1+\frac{bx^2}{a}\right)^n}{x^2\left(1-ix^2\right)}\,dx,\right.}{d}$$

$$= -\frac{(A+iB)F_1\left(-\frac{1}{2};1,-n;\frac{1}{2};-i\tan(c+dx),-\frac{b\tan(c+dx)}{a}\right)(a+b\tan(c+dx\cdots}{d\sqrt{\tan(c+dx)}}$$

Mathematica [F] time = 2.3891, size = 0, normalized size = 0.

$$\int \frac{(a+b\tan(c+dx))^n(A+B\tan(c+dx))}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
x]
```

```
[Out] Integrate[((a + b*Tan[c + d*x])^n*(A + B*Tan[c + d*x]))/Tan[c + d*x]^(3/2),
 x]
```

Maple [F] time = 0.373, size = 0, normalized size = 0.

$$\int (a+b\tan(dx+c))^n\,(A+B\tan(dx+c))\,(\tan(dx+c))^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

```
[Out] int((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\tan(dx+c)^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/tan(d*x + c)^(3/2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(A+B\tan(c+dx))\,(a+b\tan(c+dx))^n}{\tan^{\frac{3}{2}}(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))**n*(A+B*tan(d*x+c))/tan(d*x+c)**(3/2),x)
```

```
[Out] Integral((A + B*tan(c + d*x))*(a + b*tan(c + d*x))**n/tan(c + d*x)**(3/2),
x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(dx+c)+A)(b\tan(dx+c)+a)^n}{\tan(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*tan(d*x+c))^n*(A+B*tan(d*x+c))/tan(d*x+c)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((B*tan(d*x + c) + A)*(b*tan(d*x + c) + a)^n/tan(d*x + c)^(3/2), x
)
```

3.665 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx$

Optimal. Leaf size=63

$$\frac{a(B+iA)(c-ic\tan(e+fx))^n}{fn}-\frac{aB(c-ic\tan(e+fx))^{n+1}}{cf(n+1)}$$

```
[Out] (a*(I*A + B)*(c - I*c*Tan[e + f*x])^n)/(f*n) - (a*B*(c - I*c*Tan[e + f*x])^
(1 + n))/(c*f*(1 + n))
```

Rubi [A] time = 0.0944794, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{a(B+iA)(c-ic\tan(e+fx))^n}{fn}-\frac{aB(c-ic\tan(e+fx))^{n+1}}{cf(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n,x]
```

```
[Out] (a*(I*A + B)*(c - I*c*Tan[e + f*x])^n)/(f*n) - (a*B*(c - I*c*Tan[e + f*x])^
(1 + n))/(c*f*(1 + n))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx = \frac{(ac)\,\text{Subst}\left(\int (A+Bx)(c-icx)^{-1+n}\,dx, x, \tan(e+f\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left((A-iB)(c-icx)^{-1+n} + \frac{iB(c-icx)^n}{c}\right) dx\right.}{f}$$

$$= \frac{a(iA+B)(c-ic\tan(e+fx))^n}{fn} - \frac{aB(c-ic\tan(e+f}{cf(1+n)}$$

Mathematica [A] time = 3.82473, size = 75, normalized size = 1.19

$$\frac{ia(c\sec(e+fx))^n(An+A+Bn\tan(e+fx)-iB)\exp(n(-\log(c\sec(e+fx))+\log(c-ic\tan(e+fx))))}{fn(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^n,x]
```

```
[Out] (I*a*E^(n*(-Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*(c*Sec[e + f*
x])^n*(A - I*B + A*n + B*n*Tan[e + f*x]))/(f*n*(1 + n))
```

Maple [B] time = 0.347, size = 128, normalized size = 2.

$$\frac{ie^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}Aa}{f\,(1+n)} + \frac{ie^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}Aa}{fn\,(1+n)} + \frac{e^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}aB}{fn\,(1+n)} + \frac{iBa\tan\left(fx+e\right)e^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}}{f\,(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x)
```

```
[Out] I/f/(1+n)*exp(n*ln(c-I*c*tan(f*x+e)))*A*a+I/f/n/(1+n)*exp(n*ln(c-I*c*tan(f*
x+e)))*A*a+1/f/n/(1+n)*exp(n*ln(c-I*c*tan(f*x+e)))*a*B+I*a*B/f/(1+n)*tan(f*
x+e)*exp(n*ln(c-I*c*tan(f*x+e)))
```

Maxima [B] time = 2.09935, size = 420, normalized size = 6.67

$$\frac{((A-iB)ac^n n+(A-iB)ac^n)2^n\cos\left(-2fx+n\arctan\left(\sin\left(2fx+2e\right),\cos\left(2fx+2e\right)+1\right)-2e\right)+((A+iB)ac^n n-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, algor
ithm="maxima")
```

```
[Out] (((A - I*B)*a*c^n*n + (A - I*B)*a*c^n)*2^n*cos(-2*f*x + n*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e) + 1) - 2*e) + ((A + I*B)*a*c^n*n + (A - I*B)*a*c^
n)*2^n*cos(n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - ((I*A + B)*
a*c^n*n + (I*A + B)*a*c^n)*2^n*sin(-2*f*x + n*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e) + 1) - 2*e) - ((I*A - B)*a*c^n*n + (I*A + B)*a*c^n)*2^n*sin(n
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)))/((-I*n^2 + (-I*n^2 - I*n
)*cos(2*f*x + 2*e) + (n^2 + n)*sin(2*f*x + 2*e) - I*n)*(cos(2*f*x + 2*e)^2
+ sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/2*n)*f)
```

Fricas [A] time = 1.40102, size = 225, normalized size = 3.57

$$\frac{\left((iA-B)an+(iA+B)a+((iA+B)an+(iA+B)a)e^{(2ifx+2ie)}\right)\left(\frac{2c}{e^{(2ifx+2ie)}+1}\right)^n}{fn^2+fn+\left(fn^2+fn\right)e^{(2ifx+2ie)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, algor
ithm="fricas")
```

```
[Out] ((I*A - B)*a*n + (I*A + B)*a + ((I*A + B)*a*n + (I*A + B)*a)*e^(2*I*f*x + 2
*I*e))*(2*c/(e^(2*I*f*x + 2*I*e) + 1))^n/(f*n^2 + f*n + (f*n^2 + f*n)*e^(2*
I*f*x + 2*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e) +
c)^n, x)
```

3.666 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^4\,dx$

Optimal. Leaf size=59

$$\frac{ac^4(B+iA)(1-i\tan(e+fx))^4}{4f}-\frac{aBc^4(1-i\tan(e+fx))^5}{5f}$$

```
[Out] (a*(I*A + B)*c^4*(1 - I*Tan[e + f*x])^4)/(4*f) - (a*B*c^4*(1 - I*Tan[e + f*
x])^5)/(5*f)
```

Rubi [A] time = 0.0835138, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{ac^4(B+iA)(1-i\tan(e+fx))^4}{4f}-\frac{aBc^4(1-i\tan(e+fx))^5}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4,x]
```

```
[Out] (a*(I*A + B)*c^4*(1 - I*Tan[e + f*x])^4)/(4*f) - (a*B*c^4*(1 - I*Tan[e + f*
x])^5)/(5*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^4\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (A+Bx)(c-icx)^3\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left((A-iB)(c-icx)^3+\frac{iB(c-icx)^4}{c}\right)dx,x,\right.}{f}$$
$$= \frac{a(iA+B)c^4(1-i\tan(e+fx))^4}{4f} - \frac{aBc^4(1-i\tan(e+}{5f}$$

Mathematica [B] time = 3.47291, size = 226, normalized size = 3.83

$$\frac{ac^4\sec(e)\sec^5(e+fx)(5(3B-5iA)\cos(2e+fx)+5(3B-5iA)\cos(fx)-25A\sin(2e+fx)+15A\sin(2e+3fx)-10A\,\mathrm{s}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^4,x]
```

```
[Out] (a*c^4*Sec[e]*Sec[e + f*x]^5*(5*((-5*I)*A + 3*B)*Cos[f*x] + 5*((-5*I)*A + 3
*B)*Cos[2*e + f*x] - (10*I)*A*Cos[2*e + 3*f*x] + 10*B*Cos[2*e + 3*f*x] - (1
0*I)*A*Cos[4*e + 3*f*x] + 10*B*Cos[4*e + 3*f*x] + 25*A*Sin[f*x] + (15*I)*B*
Sin[f*x] - 25*A*Sin[2*e + f*x] - (15*I)*B*Sin[2*e + f*x] + 15*A*Sin[2*e + 3
*f*x] + (5*I)*B*Sin[2*e + 3*f*x] - 10*A*Sin[4*e + 3*f*x] - (10*I)*B*Sin[4*e
 + 3*f*x] + 5*A*Sin[4*e + 5*f*x] + (3*I)*B*Sin[4*e + 5*f*x]))/(40*f)
```

Maple [A] time = 0.012, size = 99, normalized size = 1.7

$$\frac{ac^4}{f}\left(\frac{i}{5}B\left(\tan\left(fx+e\right)\right)^5+\frac{i}{4}A\left(\tan\left(fx+e\right)\right)^4-iB\left(\tan\left(fx+e\right)\right)^3-\frac{3B\left(\tan\left(fx+e\right)\right)^4}{4}-\frac{3i}{2}A\left(\tan\left(fx+e\right)\right)^2-A\left(\mathrm{t}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/f*a*c^4*(1/5*I*B*tan(f*x+e)^5+1/4*I*A*tan(f*x+e)^4-I*B*tan(f*x+e)^3-3/4*B
*tan(f*x+e)^4-3/2*I*A*tan(f*x+e)^2-A*tan(f*x+e)^3+1/2*B*tan(f*x+e)^2+A*tan(
f*x+e))
```

Maxima [A] time = 2.18342, size = 131, normalized size = 2.22

$$\frac{12i\,Bac^4\tan\left(fx+e\right)^5-15\,(-i\,A+3\,B)ac^4\tan\left(fx+e\right)^4-(60\,A+60i\,B)ac^4\tan\left(fx+e\right)^3-30\,(3i\,A-B)ac^4\tan\left(fx\right.}{60\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, algor
ithm="maxima")
```

```
[Out] 1/60*(12*I*B*a*c^4*tan(f*x + e)^5 - 15*(-I*A + 3*B)*a*c^4*tan(f*x + e)^4 -
(60*A + 60*I*B)*a*c^4*tan(f*x + e)^3 - 30*(3*I*A - B)*a*c^4*tan(f*x + e)^2
+ 60*A*a*c^4*tan(f*x + e))/f
```

Fricas [B] time = 1.29535, size = 282, normalized size = 4.78

$$\frac{(20i\,A+20\,B)ac^4e^{\left(2i\,fx+2i\,e\right)}+(20i\,A-12\,B)ac^4}{5\left(fe^{\left(10i\,fx+10i\,e\right)}+5\,fe^{\left(8i\,fx+8i\,e\right)}+10\,fe^{\left(6i\,fx+6i\,e\right)}+10\,fe^{\left(4i\,fx+4i\,e\right)}+5\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, algor
ithm="fricas")
```

```
[Out] 1/5*((20*I*A + 20*B)*a*c^4*e^(2*I*f*x + 2*I*e) + (20*I*A - 12*B)*a*c^4)/(f*
e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e)
+ 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 15.0631, size = 148, normalized size = 2.51

$$\frac{\frac{\left(4iAac^4+4Bac^4\right)e^{-8ie}e^{2ifx}}{f}+\frac{\left(20iAac^4-12Bac^4\right)e^{-10ie}}{5f}}{e^{10ifx}+5e^{-2ie}e^{8ifx}+10e^{-4ie}e^{6ifx}+10e^{-6ie}e^{4ifx}+5e^{-8ie}e^{2ifx}+e^{-10ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] ((4*I*A*a*c**4 + 4*B*a*c**4)*exp(-8*I*e)*exp(2*I*f*x)/f + (20*I*A*a*c**4 -
12*B*a*c**4)*exp(-10*I*e)/(5*f))/(exp(10*I*f*x) + 5*exp(-2*I*e)*exp(8*I*f*x
) + 10*exp(-4*I*e)*exp(6*I*f*x) + 10*exp(-6*I*e)*exp(4*I*f*x) + 5*exp(-8*I*
e)*exp(2*I*f*x) + exp(-10*I*e))
```

Giac [B] time = 1.72624, size = 161, normalized size = 2.73

$$\frac{20i\,Aac^4e^{\left(2i\,fx+2i\,e\right)} + 20\,Bac^4e^{\left(2i\,fx+2i\,e\right)} + 20i\,Aac^4 - 12\,Bac^4}{5\left(fe^{\left(10i\,fx+10i\,e\right)} + 5\,fe^{\left(8i\,fx+8i\,e\right)} + 10\,fe^{\left(6i\,fx+6i\,e\right)} + 10\,fe^{\left(4i\,fx+4i\,e\right)} + 5\,fe^{\left(2i\,fx+2i\,e\right)} + f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, algor
ithm="giac")
```

```
[Out] 1/5*(20*I*A*a*c^4*e^(2*I*f*x + 2*I*e) + 20*B*a*c^4*e^(2*I*f*x + 2*I*e) + 20
*I*A*a*c^4 - 12*B*a*c^4)/(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e)
 + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2
*I*e) + f)
```

3.667 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^3\,dx$

Optimal. Leaf size=59

$$\frac{ac^3(B+iA)(1-i\tan(e+fx))^3}{3f}-\frac{aBc^3(1-i\tan(e+fx))^4}{4f}$$

```
[Out] (a*(I*A + B)*c^3*(1 - I*Tan[e + f*x])^3)/(3*f) - (a*B*c^3*(1 - I*Tan[e + f*
x])^4)/(4*f)
```

Rubi [A] time = 0.0932845, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{ac^3(B+iA)(1-i\tan(e+fx))^3}{3f}-\frac{aBc^3(1-i\tan(e+fx))^4}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3,x]
```

```
[Out] (a*(I*A + B)*c^3*(1 - I*Tan[e + f*x])^3)/(3*f) - (a*B*c^3*(1 - I*Tan[e + f*
x])^4)/(4*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^3\,dx = \frac{(ac)\,\text{Subst}\left(\int (A+Bx)(c-icx)^2\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left((A-iB)(c-icx)^2+\frac{iB(c-icx)^3}{c}\right) dx, x,\right.}{f}$$
$$= \frac{a(iA+B)c^3(1-i\tan(e+fx))^3}{3f} - \frac{aBc^3(1-i\tan(e+}{4f}$$

Mathematica [B] time = 3.47084, size = 161, normalized size = 2.73

$$\frac{ac^3\sec(e)\sec^4(e+fx)(3(B-iA)\cos(e+2fx)+3(B-2iA)\cos(e)+5A\sin(e+2fx)-3A\sin(3e+2fx)+2A\sin(3e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^3,x]
```

```
[Out] (a*c^3*Sec[e]*Sec[e + f*x]^4*(3*((-2*I)*A + B)*Cos[e] + 3*((-I)*A + B)*Cos[
e + 2*f*x] - (3*I)*A*Cos[3*e + 2*f*x] + 3*B*Cos[3*e + 2*f*x] - 6*A*Sin[e] -
 (3*I)*B*Sin[e] + 5*A*Sin[e + 2*f*x] + I*B*Sin[e + 2*f*x] - 3*A*Sin[3*e + 2
*f*x] - (3*I)*B*Sin[3*e + 2*f*x] + 2*A*Sin[3*e + 4*f*x] + I*B*Sin[3*e + 4*f
*x]))/(12*f)
```

Maple [A] time = 0.011, size = 75, normalized size = 1.3

$$\frac{ac^3}{f}\left(-\frac{2i}{3}B\left(\tan\left(fx+e\right)\right)^3-\frac{B\left(\tan\left(fx+e\right)\right)^4}{4}-iA\left(\tan\left(fx+e\right)\right)^2-\frac{A\left(\tan\left(fx+e\right)\right)^3}{3}+\frac{B\left(\tan\left(fx+e\right)\right)^2}{2}+A\tan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/f*a*c^3*(-2/3*I*B*tan(f*x+e)^3-1/4*B*tan(f*x+e)^4-I*A*tan(f*x+e)^2-1/3*A*
tan(f*x+e)^3+1/2*B*tan(f*x+e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.70329, size = 99, normalized size = 1.68

$$-\frac{3\,Bac^3\tan\left(fx+e\right)^4+(4\,A+8i\,B)ac^3\tan\left(fx+e\right)^3-6\,(-2i\,A+B)ac^3\tan\left(fx+e\right)^2-12\,Aac^3\tan\left(fx+e\right)}{12\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, algor
ithm="maxima")
```

```
[Out] -1/12*(3*B*a*c^3*tan(f*x + e)^4 + (4*A + 8*I*B)*a*c^3*tan(f*x + e)^3 - 6*(-
2*I*A + B)*a*c^3*tan(f*x + e)^2 - 12*A*a*c^3*tan(f*x + e))/f
```

Fricas [A] time = 1.36608, size = 236, normalized size = 4.

$$\frac{(8i\,A+8\,B)ac^3e^{\left(2i\,fx+2i\,e\right)}+(8i\,A-4\,B)ac^3}{3\left(fe^{\left(8i\,fx+8i\,e\right)}+4\,fe^{\left(6i\,fx+6i\,e\right)}+6\,fe^{\left(4i\,fx+4i\,e\right)}+4\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, algor
ithm="fricas")
```

```
[Out] 1/3*((8*I*A + 8*B)*a*c^3*e^(2*I*f*x + 2*I*e) + (8*I*A - 4*B)*a*c^3)/(f*e^(8
*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e
^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 9.01819, size = 133, normalized size = 2.25

$$\frac{\frac{\left(8iAac^3-4Bac^3\right)e^{-8ie}}{3f}+\frac{\left(8iAac^3+8Bac^3\right)e^{-6ie}e^{2ifx}}{3f}}{e^{8ifx}+4e^{-2ie}e^{6ifx}+6e^{-4ie}e^{4ifx}+4e^{-6ie}e^{2ifx}+e^{-8ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] ((8*I*A*a*c**3 - 4*B*a*c**3)*exp(-8*I*e)/(3*f) + (8*I*A*a*c**3 + 8*B*a*c**3
)*exp(-6*I*e)*exp(2*I*f*x)/(3*f))/(exp(8*I*f*x) + 4*exp(-2*I*e)*exp(6*I*f*x
```

```
) + 6*exp(-4*I*e)*exp(4*I*f*x) + 4*exp(-6*I*e)*exp(2*I*f*x) + exp(-8*I*e))
```

Giac [B] time = 1.59732, size = 143, normalized size = 2.42

$$\frac{8i\,Aac^3e^{(2i\,fx+2i\,e)}+8\,Bac^3e^{(2i\,fx+2i\,e)}+8i\,Aac^3-4\,Bac^3}{3\left(fe^{(8i\,fx+8i\,e)}+4\,fe^{(6i\,fx+6i\,e)}+6\,fe^{(4i\,fx+4i\,e)}+4\,fe^{(2i\,fx+2i\,e)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, algor
ithm="giac")
```

```
[Out] 1/3*(8*I*A*a*c^3*e^(2*I*f*x + 2*I*e) + 8*B*a*c^3*e^(2*I*f*x + 2*I*e) + 8*I*
A*a*c^3 - 4*B*a*c^3)/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f
*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

3.668 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^2\,dx$

Optimal. Leaf size=66

$$-\frac{ac^2(-B+iA)\tan^2(e+fx)}{2f}+\frac{aAc^2\tan(e+fx)}{f}-\frac{iaBc^2\tan^3(e+fx)}{3f}$$

```
[Out] (a*A*c^2*Tan[e + f*x])/f - (a*(I*A - B)*c^2*Tan[e + f*x]^2)/(2*f) - ((I/3)*
a*B*c^2*Tan[e + f*x]^3)/f
```

Rubi [A] time = 0.0852537, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$-\frac{ac^2(-B+iA)\tan^2(e+fx)}{2f}+\frac{aAc^2\tan(e+fx)}{f}-\frac{iaBc^2\tan^3(e+fx)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2,x]
```


```
[Out] (a*A*c^2*Tan[e + f*x])/f - (a*(I*A - B)*c^2*Tan[e + f*x]^2)/(2*f) - ((I/3)*
a*B*c^2*Tan[e + f*x]^3)/f
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^2\,dx = \frac{(ac)\operatorname{Subst}(\int (A+Bx)(c-icx)\,dx,x,\tan(e+fx))}{f}$$
$$= \frac{(ac)\operatorname{Subst}\left(\int \left(Ac+(-iA+B)cx-iBcx^2\right)\,dx,x,\tan\right.}{f}$$
$$= \frac{aAc^2\tan(e+fx)}{f} - \frac{a(iA-B)c^2\tan^2(e+fx)}{2f} - \frac{iaB}{}$$

Mathematica [A] time = 2.34587, size = 109, normalized size = 1.65

$$\frac{ac^2\sec(e)\sec^3(e+fx)(3(B-iA)\cos(2e+fx)+3(B-iA)\cos(fx)-3A\sin(2e+fx)+3A\sin(2e+3fx)+6A\sin(fx)}{12f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^2,x]
```

```
[Out] (a*c^2*Sec[e]*Sec[e + f*x]^3*(3*((-I)*A + B)*Cos[f*x] + 3*((-I)*A + B)*Cos[
2*e + f*x] + 6*A*Sin[f*x] - 3*A*Sin[2*e + f*x] - (3*I)*B*Sin[2*e + f*x] + 3
*A*Sin[2*e + 3*f*x] + I*B*Sin[2*e + 3*f*x]))/(12*f)
```

Maple [A] time = 0.012, size = 53, normalized size = 0.8

$$\frac{ac^2}{f}\left(-\frac{i}{3}B\left(\tan\left(fx+e\right)\right)^3-\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^2+\frac{B\left(\tan\left(fx+e\right)\right)^2}{2}+A\tan\left(fx+e\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 1/f*a*c^2*(-1/3*I*B*tan(f*x+e)^3-1/2*I*A*tan(f*x+e)^2+1/2*B*tan(f*x+e)^2+A*
tan(f*x+e))
```

Maxima [A] time = 1.72229, size = 74, normalized size = 1.12

$$\frac{-2i\,Bac^2\tan\left(fx+e\right)^3-3\,(i\,A-B)ac^2\tan\left(fx+e\right)^2+6\,Aac^2\tan\left(fx+e\right)}{6\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, algor
ithm="maxima")
```

```
[Out] 1/6*(-2*I*B*a*c^2*tan(f*x + e)^3 - 3*(I*A - B)*a*c^2*tan(f*x + e)^2 + 6*A*a
*c^2*tan(f*x + e))/f
```

Fricas [A] time = 1.28905, size = 201, normalized size = 3.05

$$\frac{(6i\,A+6\,B)ac^2e^{(2i\,fx+2i\,e)}+(6i\,A-2\,B)ac^2}{3\left(fe^{(6i\,fx+6i\,e)}+3\,fe^{(4i\,fx+4i\,e)}+3\,fe^{(2i\,fx+2i\,e)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, algor
ithm="fricas")
```

```
[Out] 1/3*((6*I*A + 6*B)*a*c^2*e^(2*I*f*x + 2*I*e) + (6*I*A - 2*B)*a*c^2)/(f*e^(6
*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 5.57772, size = 114, normalized size = 1.73

$$\frac{\frac{\left(2iAac^2+2Bac^2\right)e^{-4ie}e^{2ifx}}{f}+\frac{\left(6iAac^2-2Bac^2\right)e^{-6ie}}{3f}}{e^{6ifx}+3e^{-2ie}e^{4ifx}+3e^{-4ie}e^{2ifx}+e^{-6ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] ((2*I*A*a*c**2 + 2*B*a*c**2)*exp(-4*I*e)*exp(2*I*f*x)/f + (6*I*A*a*c**2 - 2
*B*a*c**2)*exp(-6*I*e)/(3*f))/(exp(6*I*f*x) + 3*exp(-2*I*e)*exp(4*I*f*x) +
```

```
3*exp(-4*I*e)*exp(2*I*f*x) + exp(-6*I*e))
```

Giac [A] time = 1.50044, size = 126, normalized size = 1.91

$$\frac{6i\,Aac^2e^{(2i\,fx+2i\,e)} + 6\,Bac^2e^{(2i\,fx+2i\,e)} + 6i\,Aac^2 - 2\,Bac^2}{3\left(fe^{(6i\,fx+6i\,e)} + 3\,fe^{(4i\,fx+4i\,e)} + 3\,fe^{(2i\,fx+2i\,e)} + f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, algor
ithm="giac")
```

```
[Out] 1/3*(6*I*A*a*c^2*e^(2*I*f*x + 2*I*e) + 6*B*a*c^2*e^(2*I*f*x + 2*I*e) + 6*I*
A*a*c^2 - 2*B*a*c^2)/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f
*e^(2*I*f*x + 2*I*e) + f)
```

3.669 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))\,dx$

Optimal. Leaf size=32

$$\frac{aAc\tan(e+fx)}{f}+\frac{aBc\tan^2(e+fx)}{2f}$$

```
[Out] (a*A*c*Tan[e + f*x])/f + (a*B*c*Tan[e + f*x]^2)/(2*f)
```

Rubi [A] time = 0.0398157, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.027, Rules used = {3588}

$$\frac{aAc\tan(e+fx)}{f}+\frac{aBc\tan^2(e+fx)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]),x]
```

```
[Out] (a*A*c*Tan[e + f*x])/f + (a*B*c*Tan[e + f*x]^2)/(2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rubi steps

$$\begin{aligned}\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))\,dx &= \frac{(ac)\,\text{Subst}\left(\int (A+Bx)\,dx,x,\tan(e+fx)\right)}{f}\\ &= \frac{aAc\tan(e+fx)}{f}+\frac{aBc\tan^2(e+fx)}{2f}\end{aligned}$$

Mathematica [A] time = 0.0414586, size = 32, normalized size = 1.

$$\frac{aAc\tan(e+fx)}{f}+\frac{aBc\sec^2(e+fx)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
),x]
```

```
[Out] (a*B*c*Sec[e + f*x]^2)/(2*f) + (a*A*c*Tan[e + f*x])/f
```

Maple [A] time = 0.011, size = 27, normalized size = 0.8

$$\frac{ac}{f}\left(\frac{B\left(\tan\left(fx+e\right)\right)^2}{2}+A\tan\left(fx+e\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x)
```

```
[Out] 1/f*a*c*(1/2*B*tan(f*x+e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.74679, size = 39, normalized size = 1.22

$$\frac{Bac\tan\left(fx+e\right)^2+2\,Aac\tan\left(fx+e\right)}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algorit
hm="maxima")
```

```
[Out] 1/2*(B*a*c*tan(f*x + e)^2 + 2*A*a*c*tan(f*x + e))/f
```

Fricas [C] time = 1.31214, size = 144, normalized size = 4.5

$$\frac{(2i\,A+2\,B)ace^{(2i\,fx+2i\,e)}+2i\,Aac}{fe^{(4i\,fx+4i\,e)}+2\,fe^{(2i\,fx+2i\,e)}+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algorit
hm="fricas")
```

```
[Out] ((2*I*A + 2*B)*a*c*e^(2*I*f*x + 2*I*e) + 2*I*A*a*c)/(f*e^(4*I*f*x + 4*I*e)
+ 2*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [C] time = 2.80183, size = 82, normalized size = 2.56

$$\frac{\frac{2iAace^{-4ie}}{f}+\frac{(2iAac+2Bac)e^{-2ie}e^{2ifx}}{f}}{e^{4ifx}+2e^{-2ie}e^{2ifx}+e^{-4ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x)
```

```
[Out] (2*I*A*a*c*exp(-4*I*e)/f + (2*I*A*a*c + 2*B*a*c)*exp(-2*I*e)*exp(2*I*f*x)/f
)/(exp(4*I*f*x) + 2*exp(-2*I*e)*exp(2*I*f*x) + exp(-4*I*e))
```

Giac [B] time = 1.42013, size = 153, normalized size = 4.78

$$\frac{Bac\tan\left(fx\right)^{2}\tan\left(e\right)^{2}-2\,Aac\tan\left(fx\right)^{2}\tan\left(e\right)-2\,Aac\tan\left(fx\right)\tan\left(e\right)^{2}+Bac\tan\left(fx\right)^{2}+Bac\tan\left(e\right)^{2}+2\,Aac\tan}{2\left(f\tan\left(fx\right)^{2}\tan\left(e\right)^{2}-2\,f\tan\left(fx\right)\tan\left(e\right)+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algorit
hm="giac")
```

```
[Out] 1/2*(B*a*c*tan(f*x)^2*tan(e)^2 - 2*A*a*c*tan(f*x)^2*tan(e) - 2*A*a*c*tan(f*
x)*tan(e)^2 + B*a*c*tan(f*x)^2 + B*a*c*tan(e)^2 + 2*A*a*c*tan(f*x) + 2*A*a*
c*tan(e) + B*a*c)/(f*tan(f*x)^2*tan(e)^2 - 2*f*tan(f*x)*tan(e) + f)
```

3.670 $\int (a + ia\tan(e + fx))(A + B\tan(e + fx))\,dx$

Optimal. Leaf size=46

$$-\frac{a(B + iA)\log(\cos(e + fx))}{f} + ax(A - iB) + \frac{iaB\tan(e + fx)}{f}$$

```
[Out] a*(A - I*B)*x - (a*(I*A + B)*Log[Cos[e + f*x]])/f + (I*a*B*Tan[e + f*x])/f
```

Rubi [A] time = 0.0308762, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {3525, 3475}

$$-\frac{a(B + iA)\log(\cos(e + fx))}{f} + ax(A - iB) + \frac{iaB\tan(e + fx)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]),x]
```

```
[Out] a*(A - I*B)*x - (a*(I*A + B)*Log[Cos[e + f*x]])/f + (I*a*B*Tan[e + f*x])/f
```

Rule 3525

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[(a*c - b*d)*x, x] + (Dist[b*c + a*d, Int[Tan[e +
 f*x], x], x] + Simp[(b*d*Tan[e + f*x])/f, x]) /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && NeQ[b*c + a*d, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned} \int (a + ia\tan(e + fx))(A + B\tan(e + fx))\,dx &= a(A - iB)x + \frac{iaB\tan(e + fx)}{f} + (a(iA + B))\int \tan(e + fx)\,dx \\ &= a(A - iB)x - \frac{a(iA + B)\log(\cos(e + fx))}{f} + \frac{iaB\tan(e + fx)}{f} \end{aligned}$$

Mathematica [A] time = 0.0328826, size = 66, normalized size = 1.43

$$-\frac{iaA\log(\cos(e+fx))}{f}+aAx-\frac{iaB\tan^{-1}(\tan(e+fx))}{f}+\frac{iaB\tan(e+fx)}{f}-\frac{aB\log(\cos(e+fx))}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]),x]
```

```
[Out] a*A*x - (I*a*B*ArcTan[Tan[e + f*x]])/f - (I*a*A*Log[Cos[e + f*x]])/f - (a*B
*Log[Cos[e + f*x]])/f + (I*a*B*Tan[e + f*x])/f
```

Maple [A] time = 0.013, size = 81, normalized size = 1.8

$$\frac{iBa\tan\left(fx+e\right)}{f}+\frac{\frac{i}{2}a\ln\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)A}{f}+\frac{a\ln\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)B}{2f}-\frac{iBa\arctan\left(\tan\left(fx+e\right)\right)}{f}+\frac{Aa\,\mathrm{ar}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x)
```

```
[Out] I*a*B*tan(f*x+e)/f+1/2*I/f*a*ln(1+tan(f*x+e)^2)*A+1/2/f*a*ln(1+tan(f*x+e)^2
)*B-I/f*a*B*arctan(tan(f*x+e))+1/f*a*A*arctan(tan(f*x+e))
```

Maxima [A] time = 1.73303, size = 68, normalized size = 1.48

$$\frac{2\left(fx+e\right)(A-iB)a-(-iA-B)a\log\left(\tan\left(fx+e\right)^{2}+1\right)+2iBa\tan\left(fx+e\right)}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*(2*(f*x + e)*(A - I*B)*a - (-I*A - B)*a*log(tan(f*x + e)^2 + 1) + 2*I*B
*a*tan(f*x + e))/f
```

Fricas [A] time = 1.37139, size = 161, normalized size = 3.5

$$-\frac{2\,Ba - \left((-i\,A - B)ae^{\left(2i\,fx+2i\,e\right)} + (-i\,A - B)a\right)\log\left(e^{\left(2i\,fx+2i\,e\right)} + 1\right)}{fe^{\left(2i\,fx+2i\,e\right)} + f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x, algorithm="fricas")
```

```
[Out] -(2*B*a - ((-I*A - B)*a*e^(2*I*f*x + 2*I*e) + (-I*A - B)*a)*log(e^(2*I*f*x
+ 2*I*e) + 1))/(f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [A] time = 2.49454, size = 58, normalized size = 1.26

$$-\frac{2Bae^{-2ie}}{f\left(e^{2ifx} + e^{-2ie}\right)} - \frac{a\left(iA + B\right)\log\left(e^{2ifx} + e^{-2ie}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x)
```

```
[Out] -2*B*a*exp(-2*I*e)/(f*(exp(2*I*f*x) + exp(-2*I*e))) - a*(I*A + B)*log(exp(2
*I*f*x) + exp(-2*I*e))/f
```

Giac [B] time = 1.33419, size = 149, normalized size = 3.24

$$\frac{-i\,Aae^{\left(2i\,fx+2i\,e\right)}\log\left(e^{\left(2i\,fx+2i\,e\right)} + 1\right) - Bae^{\left(2i\,fx+2i\,e\right)}\log\left(e^{\left(2i\,fx+2i\,e\right)} + 1\right) - i\,Aa\log\left(e^{\left(2i\,fx+2i\,e\right)} + 1\right) - Ba\log\left(e^{\left(2i\,fx+2i\,e\right)} + \right.}{fe^{\left(2i\,fx+2i\,e\right)} + f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x, algorithm="giac")
```

```
[Out] (-I*A*a*e^(2*I*f*x + 2*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - B*a*e^(2*I*f*x +
 2*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - I*A*a*log(e^(2*I*f*x + 2*I*e) + 1) -
 B*a*log(e^(2*I*f*x + 2*I*e) + 1) - 2*B*a)/(f*e^(2*I*f*x + 2*I*e) + f)
```

3.671 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{c-ic\tan(e+fx)}\,dx$

Optimal. Leaf size=54

$$\frac{a(A-iB)}{cf(\tan(e+fx)+i)}+\frac{aB\log(\cos(e+fx))}{cf}+\frac{iaBx}{c}$$

```
[Out] (I*a*B*x)/c + (a*B*Log[Cos[e + f*x]])/(c*f) + (a*(A - I*B))/(c*f*(I + Tan[e
 + f*x]))
```

Rubi [A] time = 0.0880086, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{a(A-iB)}{cf(\tan(e+fx)+i)}+\frac{aB\log(\cos(e+fx))}{cf}+\frac{iaBx}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x]),x]
```


```
[Out] (I*a*B*x)/c + (a*B*Log[Cos[e + f*x]])/(c*f) + (a*(A - I*B))/(c*f*(I + Tan[e
 + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{-A+iB}{c^2(i+x)^2} - \frac{B}{c^2(i+x)}\right) dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iaBx}{c} + \frac{aB\log(\cos(e+fx))}{cf} + \frac{a(A-iB)}{cf(i+\tan(e+fx))}$$

Mathematica [B] time = 1.74528, size = 123, normalized size = 2.28

$$\frac{a(\sin(e+fx)-i\cos(e+fx))\left(\cos(e+fx)\left(A+iB\log\left(\cos^2(e+fx)\right)-4Bfx-iB\right)+\sin(e+fx)\left(iA+B\log\left(\cos^2(e+\right.\right.\right.}{2cf}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x]),x]
```

```
[Out] (a*((-I)*Cos[e + f*x] + Sin[e + f*x])*(Cos[e + f*x]*(A - I*B - 4*B*f*x + I*
B*Log[Cos[e + f*x]^2]) + 2*B*ArcTan[Tan[2*e + f*x]]*(Cos[e + f*x] - I*Sin[e
 + f*x]) + (I*A + B + (4*I)*B*f*x + B*Log[Cos[e + f*x]^2])*Sin[e + f*x]))/(
2*c*f)
```

Maple [A] time = 0.038, size = 64, normalized size = 1.2

$$\frac{-iBa}{cf\left(\tan\left(fx+e\right)+i\right)} + \frac{Aa}{cf\left(\tan\left(fx+e\right)+i\right)} - \frac{aB\ln\left(\tan\left(fx+e\right)+i\right)}{cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] -I/f*a/c/(tan(f*x+e)+I)*B+1/f*a/c/(tan(f*x+e)+I)*A-1/f*a/c*B*ln(tan(f*x+e)+
I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.45096, size = 112, normalized size = 2.07

$$\frac{(-iA-B)ae^{(2ifx+2ie)}+2Ba\log\left(e^{(2ifx+2ie)}+1\right)}{2cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algorit
hm="fricas")
```

```
[Out] 1/2*((-I*A - B)*a*e^(2*I*f*x + 2*I*e) + 2*B*a*log(e^(2*I*f*x + 2*I*e) + 1))
/(c*f)
```

Sympy [A] time = 1.52932, size = 90, normalized size = 1.67

$$\frac{Ba\log\left(e^{2ifx}+e^{-2ie}\right)}{cf}+\begin{cases}\frac{\left(-iAae^{2ie}-Bae^{2ie}\right)e^{2ifx}}{2cf} & \text{for } 2cf\neq 0\\ \frac{x\left(Aae^{2ie}-iBae^{2ie}\right)}{c} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] B*a*log(exp(2*I*f*x) + exp(-2*I*e))/(c*f) + Piecewise(((-I*A*a*exp(2*I*e) -
 B*a*exp(2*I*e))*exp(2*I*f*x)/(2*c*f), Ne(2*c*f, 0)), (x*(A*a*exp(2*I*e) -
I*B*a*exp(2*I*e))/c, True))
```

Giac [B] time = 1.54162, size = 184, normalized size = 3.41

$$-\frac{\frac{2\,Ba\log\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+i\right)}{c}-\frac{Ba\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+1\right|\right)}{c}-\frac{Ba\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-1\right|\right)}{c}-\frac{3\,Ba\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{2}-2\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+8i\,Ba\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-3\,Ba}{c\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+i\right)^{2}}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algorit
hm="giac")
```

```
[Out] -(2*B*a*log(tan(1/2*f*x + 1/2*e) + I)/c - B*a*log(abs(tan(1/2*f*x + 1/2*e)
+ 1))/c - B*a*log(abs(tan(1/2*f*x + 1/2*e) - 1))/c - (3*B*a*tan(1/2*f*x + 1
/2*e)^2 - 2*A*a*tan(1/2*f*x + 1/2*e) + 8*I*B*a*tan(1/2*f*x + 1/2*e) - 3*B*a
)/(c*(tan(1/2*f*x + 1/2*e) + I)^2))/f
```

3.672 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^2}\,dx$

Optimal. Leaf size=46

$$\frac{a(A+B\tan(e+fx))^2}{2c^2f(B+iA)(1-i\tan(e+fx))^2}$$

```
[Out] (a*(A + B*Tan[e + f*x])^2)/(2*(I*A + B)*c^2*f*(1 - I*Tan[e + f*x])^2)
```

Rubi [A] time = 0.0752459, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 37}

$$\frac{a(A+B\tan(e+fx))^2}{2c^2f(B+iA)(1-i\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^2,
x]
```

```
[Out] (a*(A + B*Tan[e + f*x])^2)/(2*(I*A + B)*c^2*f*(1 - I*Tan[e + f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^2}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(c-icx)^3}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{a(A+B\tan(e+fx))^2}{2(iA+B)c^2f(1-i\tan(e+fx))^2}$$

Mathematica [A] time = 1.83373, size = 62, normalized size = 1.35

$$\frac{a(\cos(3(e+fx))+i\sin(3(e+fx)))((B-3iA)\cos(e+fx)-(A+3iB)\sin(e+fx))}{8c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^2,x]
```

```
[Out] (a*(((-3*I)*A + B)*Cos[e + f*x] - (A + (3*I)*B)*Sin[e + f*x])*(Cos[3*(e + f
*x)] + I*Sin[3*(e + f*x)]))/(8*c^2*f)
```

Maple [A] time = 0.043, size = 46, normalized size = 1.

$$\frac{a}{fc^2}\left(-\frac{-iA-B}{2\left(\tan\left(fx+e\right)+i\right)^2}+\frac{iB}{\tan\left(fx+e\right)+i}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 1/f*a/c^2*(-1/2*(-I*A-B)/(tan(f*x+e)+I)^2+I*B/(tan(f*x+e)+I))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.36832, size = 117, normalized size = 2.54

$$\frac{(-iA-B)ae^{(4ifx+4ie)}+(-2iA+2B)ae^{(2ifx+2ie)}}{8c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, algor
ithm="fricas")
```

```
[Out] 1/8*((-I*A - B)*a*e^(4*I*f*x + 4*I*e) + (-2*I*A + 2*B)*a*e^(2*I*f*x + 2*I*e
))/(c^2*f)
```

Sympy [A] time = 1.49322, size = 155, normalized size = 3.37

$$\begin{cases} \frac{\left(-8iAac^2fe^{2ie}+8Bac^2fe^{2ie}\right)e^{2ifx}+\left(-4iAac^2fe^{4ie}-4Bac^2fe^{4ie}\right)e^{4ifx}}{32c^4f^2} & \text{for } 32c^4f^2 \neq 0 \\ \frac{x\left(Aae^{4ie}+Aae^{2ie}-iBae^{4ie}+iBae^{2ie}\right)}{2c^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] Piecewise((((-8*I*A*a*c**2*f*exp(2*I*e) + 8*B*a*c**2*f*exp(2*I*e))*exp(2*I*
f*x) + (-4*I*A*a*c**2*f*exp(4*I*e) - 4*B*a*c**2*f*exp(4*I*e))*exp(4*I*f*x))
/(32*c**4*f**2), Ne(32*c**4*f**2, 0)), (x*(A*a*exp(4*I*e) + A*a*exp(2*I*e)
- I*B*a*exp(4*I*e) + I*B*a*exp(2*I*e))/(2*c**2), True))
```

Giac [B] time = 1.40107, size = 113, normalized size = 2.46

$$-\frac{2\left(Aa\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{3}+iAa\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2}-Ba\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2}-Aa\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)\right)}{c^{2}f\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+i\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, algor
ithm="giac")
```

```
[Out] -2*(A*a*tan(1/2*f*x + 1/2*e)^3 + I*A*a*tan(1/2*f*x + 1/2*e)^2 - B*a*tan(1/2
*f*x + 1/2*e)^2 - A*a*tan(1/2*f*x + 1/2*e))/(c^2*f*(tan(1/2*f*x + 1/2*e) +
I)^4)
```

3.673 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^3}\,dx$

Optimal. Leaf size=55

$$-\frac{a(A-iB)}{3c^3f(\tan(e+fx)+i)^3}-\frac{aB}{2c^3f(\tan(e+fx)+i)^2}$$

```
[Out] -(a*(A - I*B))/(3*c^3*f*(I + Tan[e + f*x])^3) - (a*B)/(2*c^3*f*(I + Tan[e +
 f*x])^2)
```

Rubi [A] time = 0.0867701, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$-\frac{a(A-iB)}{3c^3f(\tan(e+fx)+i)^3}-\frac{aB}{2c^3f(\tan(e+fx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^3,
x]
```

```
[Out] -(a*(A - I*B))/(3*c^3*f*(I + Tan[e + f*x])^3) - (a*B)/(2*c^3*f*(I + Tan[e +
 f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^4}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A-iB}{c^4(i+x)^4}+\frac{B}{c^4(i+x)^3}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{a(A-iB)}{3c^3f(i+\tan(e+fx))^3}-\frac{aB}{2c^3f(i+\tan(e+fx))^2}$$

Mathematica [A] time = 1.29339, size = 72, normalized size = 1.31

$$\frac{a(\cos(4(e+fx))+i\sin(4(e+fx)))(-2(A+2iB)\sin(2(e+fx))+2(B-2iA)\cos(2(e+fx))-3iA)}{24c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^3,x]
```

```
[Out] (a*((-3*I)*A + 2*((-2*I)*A + B)*Cos[2*(e + f*x)] - 2*(A + (2*I)*B)*Sin[2*(e
 + f*x)])*(Cos[4*(e + f*x)] + I*Sin[4*(e + f*x)]))/(24*c^3*f)
```

Maple [A] time = 0.043, size = 43, normalized size = 0.8

$$\frac{a}{fc^3}\left(-\frac{B}{2\left(\tan\left(fx+e\right)+i\right)^2}-\frac{A-iB}{3\left(\tan\left(fx+e\right)+i\right)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/f*a/c^3*(-1/2*B/(tan(f*x+e)+I)^2-1/3*(A-I*B)/(tan(f*x+e)+I)^3)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.40369, size = 159, normalized size = 2.89

$$\frac{(-iA-B)ae^{(6ifx+6ie)}-3iAae^{(4ifx+4ie)}+(-3iA+3B)ae^{(2ifx+2ie)}}{24c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, algor
ithm="fricas")
```

```
[Out] 1/24*((-I*A - B)*a*e^(6*I*f*x + 6*I*e) - 3*I*A*a*e^(4*I*f*x + 4*I*e) + (-3*
I*A + 3*B)*a*e^(2*I*f*x + 2*I*e))/(c^3*f)
```

Sympy [A] time = 1.94791, size = 202, normalized size = 3.67

$$\begin{cases} \frac{-192iAac^6f^2e^{4ie}e^{4ifx}+\left(-192iAac^6f^2e^{2ie}+192Bac^6f^2e^{2ie}\right)e^{2ifx}+\left(-64iAac^6f^2e^{6ie}-64Bac^6f^2e^{6ie}\right)e^{6ifx}}{1536c^9f^3} & \text{for } 1536c^9f^3\neq 0 \\ \frac{x\left(Aae^{6ie}+2Aae^{4ie}+Aae^{2ie}-iBae^{6ie}+iBae^{2ie}\right)}{4c^3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] Piecewise(((-192*I*A*a*c**6*f**2*exp(4*I*e)*exp(4*I*f*x) + (-192*I*A*a*c**6
*f**2*exp(2*I*e) + 192*B*a*c**6*f**2*exp(2*I*e))*exp(2*I*f*x) + (-64*I*A*a*
c**6*f**2*exp(6*I*e) - 64*B*a*c**6*f**2*exp(6*I*e))*exp(6*I*f*x))/(1536*c**
9*f**3), Ne(1536*c**9*f**3, 0)), (x*(A*a*exp(6*I*e) + 2*A*a*exp(4*I*e) + A*
a*exp(2*I*e) - I*B*a*exp(6*I*e) + I*B*a*exp(2*I*e))/(4*c**3), True))
```

Giac [B] time = 1.37792, size = 201, normalized size = 3.65

$$-\frac{2\left(3\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{5}+6i\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{4}-3\,Ba\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{4}-10\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{3}-2i\,Ba\tan\left(\frac{1}{2}\,f\right.\right.}{3\,c^{3}f\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+i\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, algor
ithm="giac")
```

```
[Out] -2/3*(3*A*a*tan(1/2*f*x + 1/2*e)^5 + 6*I*A*a*tan(1/2*f*x + 1/2*e)^4 - 3*B*a
*tan(1/2*f*x + 1/2*e)^4 - 10*A*a*tan(1/2*f*x + 1/2*e)^3 - 2*I*B*a*tan(1/2*f
*x + 1/2*e)^3 - 6*I*A*a*tan(1/2*f*x + 1/2*e)^2 + 3*B*a*tan(1/2*f*x + 1/2*e)
^2 + 3*A*a*tan(1/2*f*x + 1/2*e))/(c^3*f*(tan(1/2*f*x + 1/2*e) + I)^6)
```

3.674 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^4}\,dx$

Optimal. Leaf size=57

$$-\frac{a(B+iA)}{4c^4f(\tan(e+fx)+i)^4}-\frac{iaB}{3c^4f(\tan(e+fx)+i)^3}$$

```
[Out] -(a*(I*A + B))/(4*c^4*f*(I + Tan[e + f*x])^4) - ((I/3)*a*B)/(c^4*f*(I + Tan
[e + f*x])^3)
```

Rubi [A] time = 0.0878122, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$-\frac{a(B+iA)}{4c^4f(\tan(e+fx)+i)^4}-\frac{iaB}{3c^4f(\tan(e+fx)+i)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^4,
x]
```

```
[Out] -(a*(I*A + B))/(4*c^4*f*(I + Tan[e + f*x])^4) - ((I/3)*a*B)/(c^4*f*(I + Tan
[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^4}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^5}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{iA+B}{c^5(i+x)^5} + \frac{iB}{c^5(i+x)^4}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{a(iA+B)}{4c^4 f(i+\tan(e+fx))^4} - \frac{iaB}{3c^4 f(i+\tan(e+fx))^3}$$

Mathematica [A] time = 1.53203, size = 97, normalized size = 1.7

$$\frac{a(\cos(5(e+fx))+i\sin(5(e+fx)))(-(3A+5iB)(2\sin(e+fx)+3\sin(3(e+fx)))+2(B-15iA)\cos(e+fx)+3(3B-5i}{192c^4 f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^4,x]
```

```
[Out] (a*(2*((-15*I)*A + B)*Cos[e + f*x] + 3*((-5*I)*A + 3*B)*Cos[3*(e + f*x)] -
(3*A + (5*I)*B)*(2*Sin[e + f*x] + 3*Sin[3*(e + f*x)]))*(Cos[5*(e + f*x)] +
I*Sin[5*(e + f*x)]))/(192*c^4*f)
```

Maple [A] time = 0.045, size = 44, normalized size = 0.8

$$\frac{a}{fc^4}\left(-\frac{iA+B}{4\left(\tan\left(fx+e\right)+i\right)^4} - \frac{\frac{i}{3}B}{\left(\tan\left(fx+e\right)+i\right)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/f*a/c^4*(-1/4*(I*A+B)/(tan(f*x+e)+I)^4-1/3*I*B/(tan(f*x+e)+I)^3)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.4196, size = 236, normalized size = 4.14

$$\frac{(-3i\,A-3\,B)ae^{(8i\,fx+8i\,e)}+(-12i\,A-4\,B)ae^{(6i\,fx+6i\,e)}+(-18i\,A+6\,B)ae^{(4i\,fx+4i\,e)}+(-12i\,A+12\,B)ae^{(2i\,fx+2i\,e)}}{192\,c^4 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, algor
ithm="fricas")
```

```
[Out] 1/192*((-3*I*A - 3*B)*a*e^(8*I*f*x + 8*I*e) + (-12*I*A - 4*B)*a*e^(6*I*f*x
+ 6*I*e) + (-18*I*A + 6*B)*a*e^(4*I*f*x + 4*I*e) + (-12*I*A + 12*B)*a*e^(2*
I*f*x + 2*I*e))/(c^4*f)
```

Sympy [B] time = 2.75311, size = 306, normalized size = 5.37

$$\begin{cases} \frac{\left(-98304iAac^{12}f^3e^{2ie}+98304Bac^{12}f^3e^{2ie}\right)e^{2ifx}+\left(-147456iAac^{12}f^3e^{4ie}+49152Bac^{12}f^3e^{4ie}\right)e^{4ifx}+\left(-98304iAac^{12}f^3e^{6ie}-32768Bac^{12}f^3e^{6ie}\right)e^{6ifx}+\left(-24576iAac\right.}{1572864c^{16}f^4} \\ \frac{x\left(Aae^{8ie}+3Aae^{6ie}+3Aae^{4ie}+Aae^{2ie}-iBae^{8ie}-iBae^{6ie}+iBae^{4ie}+iBae^{2ie}\right)}{8c^4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] Piecewise(((((-98304*I*A*a*c**12*f**3*exp(2*I*e) + 98304*B*a*c**12*f**3*exp(
2*I*e))*exp(2*I*f*x) + (-147456*I*A*a*c**12*f**3*exp(4*I*e) + 49152*B*a*c**
12*f**3*exp(4*I*e))*exp(4*I*f*x) + (-98304*I*A*a*c**12*f**3*exp(6*I*e) - 32
768*B*a*c**12*f**3*exp(6*I*e))*exp(6*I*f*x) + (-24576*I*A*a*c**12*f**3*exp(
8*I*e) - 24576*B*a*c**12*f**3*exp(8*I*e))*exp(8*I*f*x))/(1572864*c**16*f**4
), Ne(1572864*c**16*f**4, 0)), (x*(A*a*exp(8*I*e) + 3*A*a*exp(6*I*e) + 3*A*
a*exp(4*I*e) + A*a*exp(2*I*e) - I*B*a*exp(8*I*e) - I*B*a*exp(6*I*e) + I*B*a
```

```
*exp(4*I*e) + I*B*a*exp(2*I*e))/(8*c**4), True))
```

Giac [B] time = 1.39136, size = 288, normalized size = 5.05

$$-\frac{2\left(3\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{7}+9i\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{6}-3\,Ba\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{6}-21\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{5}-4i\,Ba\tan\left(\frac{1}{2}\,f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, algor
ithm="giac")
```

```
[Out] -2/3*(3*A*a*tan(1/2*f*x + 1/2*e)^7 + 9*I*A*a*tan(1/2*f*x + 1/2*e)^6 - 3*B*a
*tan(1/2*f*x + 1/2*e)^6 - 21*A*a*tan(1/2*f*x + 1/2*e)^5 - 4*I*B*a*tan(1/2*f
*x + 1/2*e)^5 - 24*I*A*a*tan(1/2*f*x + 1/2*e)^4 + 8*B*a*tan(1/2*f*x + 1/2*e
)^4 + 21*A*a*tan(1/2*f*x + 1/2*e)^3 + 4*I*B*a*tan(1/2*f*x + 1/2*e)^3 + 9*I*
A*a*tan(1/2*f*x + 1/2*e)^2 - 3*B*a*tan(1/2*f*x + 1/2*e)^2 - 3*A*a*tan(1/2*f
*x + 1/2*e))/(c^4*f*(tan(1/2*f*x + 1/2*e) + I)^8)
```

3.675 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^5}\,dx$

Optimal. Leaf size=55

$$\frac{a(A-iB)}{5c^5f(\tan(e+fx)+i)^5}+\frac{aB}{4c^5f(\tan(e+fx)+i)^4}$$

```
[Out] (a*(A - I*B))/(5*c^5*f*(I + Tan[e + f*x])^5) + (a*B)/(4*c^5*f*(I + Tan[e +
f*x])^4)
```

Rubi [A] time = 0.0889989, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{a(A-iB)}{5c^5f(\tan(e+fx)+i)^5}+\frac{aB}{4c^5f(\tan(e+fx)+i)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^5,
x]
```

```
[Out] (a*(A - I*B))/(5*c^5*f*(I + Tan[e + f*x])^5) + (a*B)/(4*c^5*f*(I + Tan[e +
f*x])^4)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^5}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^6}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{-A+iB}{c^6(i+x)^6}-\frac{B}{c^6(i+x)^5}\right)dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{a(A-iB)}{5c^5f(i+\tan(e+fx))^5}+\frac{aB}{4c^5f(i+\tan(e+fx))^4}$$

Mathematica [B] time = 2.84203, size = 124, normalized size = 2.25

$$-\frac{ia(\cos(6(e+fx))+i\sin(6(e+fx)))(5(6A+iB)\cos(2(e+fx))+4(3A+2iB)\cos(4(e+fx))-10iA\sin(2(e+fx))-8i}{320c^5f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^5,x]
```

```
[Out] ((-I/320)*a*(20*A + 5*(6*A + I*B)*Cos[2*(e + f*x)] + 4*(3*A + (2*I)*B)*Cos[
4*(e + f*x)] - (10*I)*A*Sin[2*(e + f*x)] + 15*B*Sin[2*(e + f*x)] - (8*I)*A*
Sin[4*(e + f*x)] + 12*B*Sin[4*(e + f*x)])*(Cos[6*(e + f*x)] + I*Sin[6*(e +
f*x)]))/(c^5*f)
```

Maple [A] time = 0.047, size = 45, normalized size = 0.8

$$\frac{a}{fc^5}\left(\frac{B}{4\left(\tan\left(fx+e\right)+i\right)^4}-\frac{-A+iB}{5\left(\tan\left(fx+e\right)+i\right)^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] 1/f*a/c^5*(1/4*B/(tan(f*x+e)+I)^4-1/5*(-A+I*B)/(tan(f*x+e)+I)^5)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.34209, size = 282, normalized size = 5.13

$$\frac{(-2iA-2B)ae^{(10ifx+10ie)}+(-10iA-5B)ae^{(8ifx+8ie)}-20iAae^{(6ifx+6ie)}+(-20iA+10B)ae^{(4ifx+4ie)}+(-10iA+10}{320c^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, algor
ithm="fricas")
```

```
[Out] 1/320*((-2*I*A - 2*B)*a*e^(10*I*f*x + 10*I*e) + (-10*I*A - 5*B)*a*e^(8*I*f*
x + 8*I*e) - 20*I*A*a*e^(6*I*f*x + 6*I*e) + (-20*I*A + 10*B)*a*e^(4*I*f*x +
 4*I*e) + (-10*I*A + 10*B)*a*e^(2*I*f*x + 2*I*e))/(c^5*f)
```

Sympy [B] time = 2.1803, size = 350, normalized size = 6.36

$$\begin{cases} \frac{-10485760iAac^{20}f^4e^{6ie}e^{6ifx}+\left(-5242880iAac^{20}f^4e^{2ie}+5242880Bac^{20}f^4e^{2ie}\right)e^{2ifx}+\left(-10485760iAac^{20}f^4e^{4ie}+5242880Bac^{20}f^4e^{4ie}\right)e^{4ifx}+\left(-5242880iAac^{20}f^4\right.}{167772160c^{25}f^5} \\ \frac{x\left(Aae^{10ie}+4Aae^{8ie}+6Aae^{6ie}+4Aae^{4ie}+Aae^{2ie}-iBae^{10ie}-2iBae^{8ie}+2iBae^{4ie}+iBae^{2ie}\right)}{16c^5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] Piecewise((((-10485760*I*A*a*c**20*f**4*exp(6*I*e)*exp(6*I*f*x) + (-5242880*
I*A*a*c**20*f**4*exp(2*I*e) + 5242880*B*a*c**20*f**4*exp(2*I*e))*exp(2*I*f*
x) + (-10485760*I*A*a*c**20*f**4*exp(4*I*e) + 5242880*B*a*c**20*f**4*exp(4*
```

```
I*e))*exp(4*I*f*x) + (-5242880*I*A*a*c**20*f**4*exp(8*I*e) - 2621440*B*a*c*
*20*f**4*exp(8*I*e))*exp(8*I*f*x) + (-1048576*I*A*a*c**20*f**4*exp(10*I*e)
- 1048576*B*a*c**20*f**4*exp(10*I*e))*exp(10*I*f*x))/(167772160*c**25*f**5)
, Ne(167772160*c**25*f**5, 0)), (x*(A*a*exp(10*I*e) + 4*A*a*exp(8*I*e) + 6*
A*a*exp(6*I*e) + 4*A*a*exp(4*I*e) + A*a*exp(2*I*e) - I*B*a*exp(10*I*e) - 2*
I*B*a*exp(8*I*e) + 2*I*B*a*exp(4*I*e) + I*B*a*exp(2*I*e))/(16*c**5), True))
```

Giac [B] time = 1.49759, size = 374, normalized size = 6.8

$$-\frac{2\left(5\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{9}+20i\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{8}-5\,Ba\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{8}-60\,Aa\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{7}-10i\,Ba\tan\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, algor
ithm="giac")
```

```
[Out] -2/5*(5*A*a*tan(1/2*f*x + 1/2*e)^9 + 20*I*A*a*tan(1/2*f*x + 1/2*e)^8 - 5*B*
a*tan(1/2*f*x + 1/2*e)^8 - 60*A*a*tan(1/2*f*x + 1/2*e)^7 - 10*I*B*a*tan(1/2
*f*x + 1/2*e)^7 - 100*I*A*a*tan(1/2*f*x + 1/2*e)^6 + 25*B*a*tan(1/2*f*x + 1
/2*e)^6 + 126*A*a*tan(1/2*f*x + 1/2*e)^5 + 24*I*B*a*tan(1/2*f*x + 1/2*e)^5
+ 100*I*A*a*tan(1/2*f*x + 1/2*e)^4 - 25*B*a*tan(1/2*f*x + 1/2*e)^4 - 60*A*a
*tan(1/2*f*x + 1/2*e)^3 - 10*I*B*a*tan(1/2*f*x + 1/2*e)^3 - 20*I*A*a*tan(1/
2*f*x + 1/2*e)^2 + 5*B*a*tan(1/2*f*x + 1/2*e)^2 + 5*A*a*tan(1/2*f*x + 1/2*e
))/(c^5*f*(tan(1/2*f*x + 1/2*e) + I)^10)
```

3.676 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx$

Optimal. Leaf size=109

$$\frac{2a^2(B+iA)(c-ic\tan(e+fx))^n}{fn}-\frac{a^2(3B+iA)(c-ic\tan(e+fx))^{n+1}}{cf(n+1)}+\frac{a^2B(c-ic\tan(e+fx))^{n+2}}{c^2f(n+2)}$$

```
[Out] (2*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^n)/(f*n) - (a^2*(I*A + 3*B)*(c - I*
c*Tan[e + f*x])^(1 + n))/(c*f*(1 + n)) + (a^2*B*(c - I*c*Tan[e + f*x])^(2 +
 n))/(c^2*f*(2 + n))
```

Rubi [A] time = 0.163657, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{2a^2(B+iA)(c-ic\tan(e+fx))^n}{fn}-\frac{a^2(3B+iA)(c-ic\tan(e+fx))^{n+1}}{cf(n+1)}+\frac{a^2B(c-ic\tan(e+fx))^{n+2}}{c^2f(n+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n,
x]
```

```
[Out] (2*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^n)/(f*n) - (a^2*(I*A + 3*B)*(c - I*
c*Tan[e + f*x])^(1 + n))/(c*f*(1 + n)) + (a^2*B*(c - I*c*Tan[e + f*x])^(2 +
 n))/(c^2*f*(2 + n))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)(A+Bx)(c-icx)^{-1+n}\,dx,x,\right.}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(2a(A-iB)(c-icx)^{-1+n} - \frac{a(A-3iB)(c-}{c}\right.\right.}{f}$$
$$= \frac{2a^2(iA+B)(c-ic\tan(e+fx))^n}{fn} - \frac{a^2(iA+3B)(c-}{cf(}$$

Mathematica [A] time = 6.62668, size = 146, normalized size = 1.34

$$\frac{a^2\sec^2(e+fx)(c\sec(e+fx))^n\left(\left(B\left(n^2+2n+4\right)+iA(n+2)^2\right)\cos(2(e+fx))-n(A(n+2)-iB(n+4))\sin(2(e+fx))\right.}{2fn(n+1)(n+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^n,x]
```

```
[Out] (a^2*E^(n*(-Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*Sec[e + f*x]^
2*(c*Sec[e + f*x])^n*((2 + n)*(-(B*(-2 + n)) + I*A*(2 + n)) + (I*A*(2 + n)^
2 + B*(4 + 2*n + n^2))*Cos[2*(e + f*x)] - n*(A*(2 + n) - I*B*(4 + n))*Sin[2
*(e + f*x)]))/(2*f*n*(1 + n)*(2 + n))
```

Maple [B] time = 0.49, size = 280, normalized size = 2.6

$$\frac{ine^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}Aa^2}{f\,(1+n)\,(2+n)} + \frac{4\,ie^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}Aa^2}{f\,(1+n)\,(2+n)} + \frac{4\,ie^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}Aa^2}{fn\,(1+n)\,(2+n)} + \frac{e^{n\ln\left(c-ic\tan\left(fx+e\right)\right)}a^2B}{f\,(1+n)\,(2+n)} + 4\,\frac{e^{n\ln\left(c-ic\tan\left(fx\right.\right.}}{fn\,(1+n)\,(2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x)
```

```
[Out] I/f*n/(1+n)/(2+n)*exp(n*ln(c-I*c*tan(f*x+e)))*A*a^2+4*I/f/(1+n)/(2+n)*exp(n
*ln(c-I*c*tan(f*x+e)))*A*a^2+4*I/f/n/(1+n)/(2+n)*exp(n*ln(c-I*c*tan(f*x+e))
)*A*a^2+1/f/(1+n)/(2+n)*exp(n*ln(c-I*c*tan(f*x+e)))*a^2*B+4/f/n/(1+n)/(2+n)
*exp(n*ln(c-I*c*tan(f*x+e)))*a^2*B-a^2*B/f/(2+n)*tan(f*x+e)^2*exp(n*ln(c-I*
c*tan(f*x+e)))-a^2*(-I*B*n+A*n-4*I*B+2*A)/f/(1+n)/(2+n)*tan(f*x+e)*exp(n*ln
(c-I*c*tan(f*x+e)))
```

Maxima [B] time = 2.42606, size = 902, normalized size = 8.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="maxima")
```

```
[Out] (((2*A + 2*I*B)*a^2*c^n*n^2 + 8*A*a^2*c^n*n + (8*A - 8*I*B)*a^2*c^n)*2^n*co
s(-2*f*x + n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 2*e) + ((2*A
 - 2*I*B)*a^2*c^n*n^2 + (6*A - 6*I*B)*a^2*c^n*n + (4*A - 4*I*B)*a^2*c^n)*2^
n*cos(-4*f*x + n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 4*e) + (
(2*A + 2*I*B)*a^2*c^n*n + (4*A - 4*I*B)*a^2*c^n)*2^n*cos(n*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e) + 1)) - 2*((I*A - B)*a^2*c^n*n^2 + 4*I*A*a^2*c^n
*n + 4*(I*A + B)*a^2*c^n)*2^n*sin(-2*f*x + n*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e) + 1) - 2*e) - 2*((I*A + B)*a^2*c^n*n^2 + 3*(I*A + B)*a^2*c^n*n
 + 2*(I*A + B)*a^2*c^n)*2^n*sin(-4*f*x + n*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e) + 1) - 4*e) - 2*((I*A - B)*a^2*c^n*n + 2*(I*A + B)*a^2*c^n)*2^n*
sin(n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)))/(((-I*n^3 - 3*I*n^2
 - 2*I*n)*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1
)^(1/2*n)*cos(4*f*x + 4*e) + (n^3 + 3*n^2 + 2*n)*(cos(2*f*x + 2*e)^2 + sin(
2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/2*n)*sin(4*f*x + 4*e) + (-I*n^3
 - 3*I*n^2 + (-2*I*n^3 - 6*I*n^2 - 4*I*n)*cos(2*f*x + 2*e) + 2*(n^3 + 3*n^2
 + 2*n)*sin(2*f*x + 2*e) - 2*I*n)*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2
+ 2*cos(2*f*x + 2*e) + 1)^(1/2*n))*f)
```

Fricas [B] time = 1.43118, size = 498, normalized size = 4.57

$$\frac{\left(\left(2i\,A - 2\,B\right)a^2n + \left(4i\,A + 4\,B\right)a^2 + \left(\left(2i\,A + 2\,B\right)a^2n^2 + \left(6i\,A + 6\,B\right)a^2n + \left(4i\,A + 4\,B\right)a^2\right)e^{\left(4i\,fx+4i\,e\right)} + \left(\left(2i\,A - 2\,B\right)a^2n^2\right.}{fn^3 + 3\,fn^2 + 2\,fn + \left(fn^3 + 3\,fn^2 + 2\,fn\right)e^{\left(4i\,fx+4i\,e\right)} + 2\left(fn^3 + 3\,fn^2 + 2\,f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="fricas")
```

```
[Out] ((2*I*A - 2*B)*a^2*n + (4*I*A + 4*B)*a^2 + ((2*I*A + 2*B)*a^2*n^2 + (6*I*A
+ 6*B)*a^2*n + (4*I*A + 4*B)*a^2)*e^(4*I*f*x + 4*I*e) + ((2*I*A - 2*B)*a^2*
n^2 + 8*I*A*a^2*n + (8*I*A + 8*B)*a^2)*e^(2*I*f*x + 2*I*e))*(2*c/(e^(2*I*f*
x + 2*I*e) + 1))^n/(f*n^3 + 3*f*n^2 + 2*f*n + (f*n^3 + 3*f*n^2 + 2*f*n)*e^(
4*I*f*x + 4*I*e) + 2*(f*n^3 + 3*f*n^2 + 2*f*n)*e^(2*I*f*x + 2*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{2}\left(-ic\tan\left(fx+e\right)+c\right)^{n}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2*(-I*c*tan(f*x + e)
+ c)^n, x)
```

3.677 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^5\,dx$

Optimal. Leaf size=99

$$-\frac{a^2c^5(3B+iA)(1-i\tan(e+fx))^6}{6f}+\frac{2a^2c^5(B+iA)(1-i\tan(e+fx))^5}{5f}+\frac{a^2Bc^5(1-i\tan(e+fx))^7}{7f}$$

```
[Out] (2*a^2*(I*A + B)*c^5*(1 - I*Tan[e + f*x])^5)/(5*f) - (a^2*(I*A + 3*B)*c^5*(
1 - I*Tan[e + f*x])^6)/(6*f) + (a^2*B*c^5*(1 - I*Tan[e + f*x])^7)/(7*f)
```

Rubi [A] time = 0.167718, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^2c^5(3B+iA)(1-i\tan(e+fx))^6}{6f}+\frac{2a^2c^5(B+iA)(1-i\tan(e+fx))^5}{5f}+\frac{a^2Bc^5(1-i\tan(e+fx))^7}{7f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^5,
x]
```

```
[Out] (2*a^2*(I*A + B)*c^5*(1 - I*Tan[e + f*x])^5)/(5*f) - (a^2*(I*A + 3*B)*c^5*(
1 - I*Tan[e + f*x])^6)/(6*f) + (a^2*B*c^5*(1 - I*Tan[e + f*x])^7)/(7*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^5\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)(A+Bx)(c-icx)^4\,dx, x, \tan\right.}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(2a(A-iB)(c-icx)^4 - \frac{a(A-3iB)(c-icx)^5}{c}\right.\right.}{f}$$
$$= \frac{2a^2(iA+B)c^5(1-i\tan(e+fx))^5}{5f} - \frac{a^2(iA+3B)c^5(}{}$$

Mathematica [B] time = 9.04328, size = 254, normalized size = 2.57

$$\frac{a^2c^5\sec(e)\sec^7(e+fx)(35(3B-7iA)\cos(2e+fx)+35(3B-7iA)\cos(fx)-245A\sin(2e+fx)+189A\sin(2e+3fx)-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^5,x]
```

```
[Out] (a^2*c^5*Sec[e]*Sec[e + f*x]^7*(35*((-7*I)*A + 3*B)*Cos[f*x] + 35*((-7*I)*A
 + 3*B)*Cos[2*e + f*x] - (105*I)*A*Cos[2*e + 3*f*x] + 105*B*Cos[2*e + 3*f*x
] - (105*I)*A*Cos[4*e + 3*f*x] + 105*B*Cos[4*e + 3*f*x] + 245*A*Sin[f*x] +
(105*I)*B*Sin[f*x] - 245*A*Sin[2*e + f*x] - (105*I)*B*Sin[2*e + f*x] + 189*
A*Sin[2*e + 3*f*x] + (21*I)*B*Sin[2*e + 3*f*x] - 105*A*Sin[4*e + 3*f*x] - (
105*I)*B*Sin[4*e + 3*f*x] + 98*A*Sin[4*e + 5*f*x] + (42*I)*B*Sin[4*e + 5*f*
x] + 14*A*Sin[6*e + 7*f*x] + (6*I)*B*Sin[6*e + 7*f*x]))/(840*f)
```

Maple [A] time = 0.011, size = 147, normalized size = 1.5

$$\frac{c^5a^2}{f}\left(\frac{i}{7}B\left(\tan\left(fx+e\right)\right)^7+\frac{i}{6}A\left(\tan\left(fx+e\right)\right)^6-\frac{2\,i}{5}B\left(\tan\left(fx+e\right)\right)^5-\frac{B\left(\tan\left(fx+e\right)\right)^6}{2}-\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^4-\frac{3\,A}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] 1/f*c^5*a^2*(1/7*I*B*tan(f*x+e)^7+1/6*I*A*tan(f*x+e)^6-2/5*I*B*tan(f*x+e)^5
-1/2*B*tan(f*x+e)^6-1/2*I*A*tan(f*x+e)^4-3/5*A*tan(f*x+e)^5-I*B*tan(f*x+e)^
3-1/2*B*tan(f*x+e)^4-3/2*I*A*tan(f*x+e)^2-2/3*A*tan(f*x+e)^3+1/2*B*tan(f*x+
e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.7265, size = 201, normalized size = 2.03

$$-\frac{-60 i Ba^2c^5\tan\left(fx+e\right)^7 - 70\,(i\,A - 3\,B)a^2c^5\tan\left(fx+e\right)^6 + (252\,A + 168 i\,B)a^2c^5\tan\left(fx+e\right)^5 - 210\,(-i\,A - B)a^2c^5}{420}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x, alg
orithm="maxima")
```

```
[Out] -1/420*(-60*I*B*a^2*c^5*tan(f*x + e)^7 - 70*(I*A - 3*B)*a^2*c^5*tan(f*x + e
)^6 + (252*A + 168*I*B)*a^2*c^5*tan(f*x + e)^5 - 210*(-I*A - B)*a^2*c^5*tan
(f*x + e)^4 + (280*A + 420*I*B)*a^2*c^5*tan(f*x + e)^3 - 210*(-3*I*A + B)*a
^2*c^5*tan(f*x + e)^2 - 420*A*a^2*c^5*tan(f*x + e))/f
```

Fricas [A] time = 1.2768, size = 441, normalized size = 4.45

$$\frac{(1344 i\,A + 1344\,B)a^2c^5e^{\left(4 i\,fx+4 i\,e\right)} + (1568 i\,A - 672\,B)a^2c^5e^{\left(2 i\,fx+2 i\,e\right)} + (224 i\,A - 96\,B)a^2c^5}{105\left(fe^{\left(14 i\,fx+14 i\,e\right)} + 7\,fe^{\left(12 i\,fx+12 i\,e\right)} + 21\,fe^{\left(10 i\,fx+10 i\,e\right)} + 35\,fe^{\left(8 i\,fx+8 i\,e\right)} + 35\,fe^{\left(6 i\,fx+6 i\,e\right)} + 21\,fe^{\left(4 i\,fx+4 i\,e\right)} + 7\,fe^{\left(2 i\,fx+2 i\right.}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x, alg
orithm="fricas")
```

```
[Out] 1/105*((1344*I*A + 1344*B)*a^2*c^5*e^(4*I*f*x + 4*I*e) + (1568*I*A - 672*B)
*a^2*c^5*e^(2*I*f*x + 2*I*e) + (224*I*A - 96*B)*a^2*c^5)/(f*e^(14*I*f*x + 1
4*I*e) + 7*f*e^(12*I*f*x + 12*I*e) + 21*f*e^(10*I*f*x + 10*I*e) + 35*f*e^(8
*I*f*x + 8*I*e) + 35*f*e^(6*I*f*x + 6*I*e) + 21*f*e^(4*I*f*x + 4*I*e) + 7*f
*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 71.3342, size = 231, normalized size = 2.33

$$\frac{\frac{\left(64iAa^2c^5+64Ba^2c^5\right)e^{-10ie}e^{4ifx}}{5f}+\frac{\left(224iAa^2c^5-96Ba^2c^5\right)e^{-12ie}e^{2ifx}}{15f}+\frac{\left(224iAa^2c^5-96Ba^2c^5\right)e^{-14ie}}{105f}}{e^{14ifx}+7e^{-2ie}e^{12ifx}+21e^{-4ie}e^{10ifx}+35e^{-6ie}e^{8ifx}+35e^{-8ie}e^{6ifx}+21e^{-10ie}e^{4ifx}+7e^{-12ie}e^{2ifx}+e^{-14ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] ((64*I*A*a**2*c**5 + 64*B*a**2*c**5)*exp(-10*I*e)*exp(4*I*f*x)/(5*f) + (224
*I*A*a**2*c**5 - 96*B*a**2*c**5)*exp(-12*I*e)*exp(2*I*f*x)/(15*f) + (224*I*
A*a**2*c**5 - 96*B*a**2*c**5)*exp(-14*I*e)/(105*f))/(exp(14*I*f*x) + 7*exp(
-2*I*e)*exp(12*I*f*x) + 21*exp(-4*I*e)*exp(10*I*f*x) + 35*exp(-6*I*e)*exp(8
*I*f*x) + 35*exp(-8*I*e)*exp(6*I*f*x) + 21*exp(-10*I*e)*exp(4*I*f*x) + 7*ex
p(-12*I*e)*exp(2*I*f*x) + exp(-14*I*e))
```

Giac [B] time = 2.17806, size = 258, normalized size = 2.61

$$\frac{1344i\,Aa^2c^5e^{(4i\,fx+4i\,e)}+1344\,Ba^2c^5e^{(4i\,fx+4i\,e)}+1568i\,Aa^2c^5e^{(2i\,fx+2i\,e)}-672\,Ba^2c^5e^{(2i\,fx+2i\,e)}+224i\,Aa^2c^5-96\,Ba^2c}{105\left(fe^{(14i\,fx+14i\,e)}+7\,fe^{(12i\,fx+12i\,e)}+21\,fe^{(10i\,fx+10i\,e)}+35\,fe^{(8i\,fx+8i\,e)}+35\,fe^{(6i\,fx+6i\,e)}+21\,fe^{(4i\,fx+4i\,e)}+7\,fe^{(2i\,fx+2i\,e)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x, alg
orithm="giac")
```

```
[Out] 1/105*(1344*I*A*a^2*c^5*e^(4*I*f*x + 4*I*e) + 1344*B*a^2*c^5*e^(4*I*f*x + 4
*I*e) + 1568*I*A*a^2*c^5*e^(2*I*f*x + 2*I*e) - 672*B*a^2*c^5*e^(2*I*f*x + 2
*I*e) + 224*I*A*a^2*c^5 - 96*B*a^2*c^5)/(f*e^(14*I*f*x + 14*I*e) + 7*f*e^(1
2*I*f*x + 12*I*e) + 21*f*e^(10*I*f*x + 10*I*e) + 35*f*e^(8*I*f*x + 8*I*e) +
 35*f*e^(6*I*f*x + 6*I*e) + 21*f*e^(4*I*f*x + 4*I*e) + 7*f*e^(2*I*f*x + 2*I
*e) + f)
```

3.678 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^4\,dx$

Optimal. Leaf size=99

$$-\frac{a^2c^4(3B+iA)(1-i\tan(e+fx))^5}{5f}+\frac{a^2c^4(B+iA)(1-i\tan(e+fx))^4}{2f}+\frac{a^2Bc^4(1-i\tan(e+fx))^6}{6f}$$

```
[Out] (a^2*(I*A + B)*c^4*(1 - I*Tan[e + f*x])^4)/(2*f) - (a^2*(I*A + 3*B)*c^4*(1
- I*Tan[e + f*x])^5)/(5*f) + (a^2*B*c^4*(1 - I*Tan[e + f*x])^6)/(6*f)
```

Rubi [A] time = 0.155122, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^2c^4(3B+iA)(1-i\tan(e+fx))^5}{5f}+\frac{a^2c^4(B+iA)(1-i\tan(e+fx))^4}{2f}+\frac{a^2Bc^4(1-i\tan(e+fx))^6}{6f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4,
x]
```

```
[Out] (a^2*(I*A + B)*c^4*(1 - I*Tan[e + f*x])^4)/(2*f) - (a^2*(I*A + 3*B)*c^4*(1
- I*Tan[e + f*x])^5)/(5*f) + (a^2*B*c^4*(1 - I*Tan[e + f*x])^6)/(6*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^4\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)(A+Bx)(c-icx)^3\,dx, x, \tan\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(2a(A-iB)(c-icx)^3 - \frac{a(A-3iB)(c-icx)^4}{c}\right.\right.}{f}$$

$$= \frac{a^2(iA+B)c^4(1-i\tan(e+fx))^4}{2f} - \frac{a^2(iA+3B)c^4(1}{5}$$

Mathematica [A] time = 5.80774, size = 177, normalized size = 1.79

$$\frac{a^2c^4\sec(e)\sec^6(e+fx)(15(B-iA)\cos(e+2fx)+10(B-3iA)\cos(e)+30A\sin(e+2fx)-15A\sin(3e+2fx)+18A\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^4,x]
```

```
[Out] (a^2*c^4*Sec[e]*Sec[e + f*x]^6*(10*((-3*I)*A + B)*Cos[e] + 15*((-I)*A + B)*
Cos[e + 2*f*x] - (15*I)*A*Cos[3*e + 2*f*x] + 15*B*Cos[3*e + 2*f*x] - 30*A*S
in[e] - (10*I)*B*Sin[e] + 30*A*Sin[e + 2*f*x] - 15*A*Sin[3*e + 2*f*x] - (15
*I)*B*Sin[3*e + 2*f*x] + 18*A*Sin[3*e + 4*f*x] + (6*I)*B*Sin[3*e + 4*f*x] +
 3*A*Sin[5*e + 6*f*x] + I*B*Sin[5*e + 6*f*x]))/(120*f)
```

Maple [A] time = 0.011, size = 101, normalized size = 1.

$$\frac{a^2c^4}{f}\left(-\frac{2i}{5}B\left(\tan\left(fx+e\right)\right)^5-\frac{B\left(\tan\left(fx+e\right)\right)^6}{6}-\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^4-\frac{A\left(\tan\left(fx+e\right)\right)^5}{5}-\frac{2i}{3}B\left(\tan\left(fx+e\right)\right)^3-iA\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/f*a^2*c^4*(-2/5*I*B*tan(f*x+e)^5-1/6*B*tan(f*x+e)^6-1/2*I*A*tan(f*x+e)^4-
1/5*A*tan(f*x+e)^5-2/3*I*B*tan(f*x+e)^3-I*A*tan(f*x+e)^2+1/2*B*tan(f*x+e)^2
+A*tan(f*x+e))
```

Maxima [A] time = 2.43102, size = 158, normalized size = 1.6

$$-\frac{10\,Ba^2c^4\tan\left(fx+e\right)^6+(12\,A+24i\,B)a^2c^4\tan\left(fx+e\right)^5+30i\,Aa^2c^4\tan\left(fx+e\right)^4+40i\,Ba^2c^4\tan\left(fx+e\right)^3+30\,(2}{60\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, alg
orithm="maxima")
```

```
[Out] -1/60*(10*B*a^2*c^4*tan(f*x + e)^6 + (12*A + 24*I*B)*a^2*c^4*tan(f*x + e)^5
 + 30*I*A*a^2*c^4*tan(f*x + e)^4 + 40*I*B*a^2*c^4*tan(f*x + e)^3 + 30*(2*I*
A - B)*a^2*c^4*tan(f*x + e)^2 - 60*A*a^2*c^4*tan(f*x + e))/f
```

Fricas [A] time = 1.4085, size = 393, normalized size = 3.97

$$\frac{(120i\,A+120\,B)a^2c^4e^{\left(4i\,fx+4i\,e\right)}+(144i\,A-48\,B)a^2c^4e^{\left(2i\,fx+2i\,e\right)}+(24i\,A-8\,B)a^2c^4}{15\left(fe^{\left(12i\,fx+12i\,e\right)}+6\,fe^{\left(10i\,fx+10i\,e\right)}+15\,fe^{\left(8i\,fx+8i\,e\right)}+20\,fe^{\left(6i\,fx+6i\,e\right)}+15\,fe^{\left(4i\,fx+4i\,e\right)}+6\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, alg
orithm="fricas")
```

```
[Out] 1/15*((120*I*A + 120*B)*a^2*c^4*e^(4*I*f*x + 4*I*e) + (144*I*A - 48*B)*a^2*
c^4*e^(2*I*f*x + 2*I*e) + (24*I*A - 8*B)*a^2*c^4)/(f*e^(12*I*f*x + 12*I*e)
+ 6*f*e^(10*I*f*x + 10*I*e) + 15*f*e^(8*I*f*x + 8*I*e) + 20*f*e^(6*I*f*x +
6*I*e) + 15*f*e^(4*I*f*x + 4*I*e) + 6*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 40.7263, size = 212, normalized size = 2.14

$$\frac{\frac{\left(8iAa^2c^4+8Ba^2c^4\right)e^{-8ie}e^{4ifx}}{f}+\frac{\left(24iAa^2c^4-8Ba^2c^4\right)e^{-12ie}}{15f}+\frac{\left(48iAa^2c^4-16Ba^2c^4\right)e^{-10ie}e^{2ifx}}{5f}}{e^{12ifx}+6e^{-2ie}e^{10ifx}+15e^{-4ie}e^{8ifx}+20e^{-6ie}e^{6ifx}+15e^{-8ie}e^{4ifx}+6e^{-10ie}e^{2ifx}+e^{-12ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] ((8*I*A*a**2*c**4 + 8*B*a**2*c**4)*exp(-8*I*e)*exp(4*I*f*x)/f + (24*I*A*a**
2*c**4 - 8*B*a**2*c**4)*exp(-12*I*e)/(15*f) + (48*I*A*a**2*c**4 - 16*B*a**2
*c**4)*exp(-10*I*e)*exp(2*I*f*x)/(5*f))/(exp(12*I*f*x) + 6*exp(-2*I*e)*exp(
10*I*f*x) + 15*exp(-4*I*e)*exp(8*I*f*x) + 20*exp(-6*I*e)*exp(6*I*f*x) + 15*
exp(-8*I*e)*exp(4*I*f*x) + 6*exp(-10*I*e)*exp(2*I*f*x) + exp(-12*I*e))
```

Giac [B] time = 1.85636, size = 240, normalized size = 2.42

$$\frac{120i\,Aa^2c^4e^{(4i\,fx+4i\,e)}+120\,Ba^2c^4e^{(4i\,fx+4i\,e)}+144i\,Aa^2c^4e^{(2i\,fx+2i\,e)}-48\,Ba^2c^4e^{(2i\,fx+2i\,e)}+24i\,Aa^2c^4-8\,Ba^2c^4}{15\left(fe^{(12i\,fx+12i\,e)}+6\,fe^{(10i\,fx+10i\,e)}+15\,fe^{(8i\,fx+8i\,e)}+20\,fe^{(6i\,fx+6i\,e)}+15\,fe^{(4i\,fx+4i\,e)}+6\,fe^{(2i\,fx+2i\,e)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, alg
orithm="giac")
```

```
[Out] 1/15*(120*I*A*a^2*c^4*e^(4*I*f*x + 4*I*e) + 120*B*a^2*c^4*e^(4*I*f*x + 4*I*
e) + 144*I*A*a^2*c^4*e^(2*I*f*x + 2*I*e) - 48*B*a^2*c^4*e^(2*I*f*x + 2*I*e)
 + 24*I*A*a^2*c^4 - 8*B*a^2*c^4)/(f*e^(12*I*f*x + 12*I*e) + 6*f*e^(10*I*f*x
 + 10*I*e) + 15*f*e^(8*I*f*x + 8*I*e) + 20*f*e^(6*I*f*x + 6*I*e) + 15*f*e^(
4*I*f*x + 4*I*e) + 6*f*e^(2*I*f*x + 2*I*e) + f)
```

3.679 $\int (a + ia\tan(e + fx))^2 (A + B\tan(e + fx))(c - ic\tan(e + fx))^3\,dx$

Optimal. Leaf size=99

$$-\frac{a^2c^3(3B+iA)(1-i\tan(e+fx))^4}{4f}+\frac{2a^2c^3(B+iA)(1-i\tan(e+fx))^3}{3f}+\frac{a^2Bc^3(1-i\tan(e+fx))^5}{5f}$$

```
[Out] (2*a^2*(I*A + B)*c^3*(1 - I*Tan[e + f*x])^3)/(3*f) - (a^2*(I*A + 3*B)*c^3*(
1 - I*Tan[e + f*x])^4)/(4*f) + (a^2*B*c^3*(1 - I*Tan[e + f*x])^5)/(5*f)
```

Rubi [A] time = 0.150024, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^2c^3(3B+iA)(1-i\tan(e+fx))^4}{4f}+\frac{2a^2c^3(B+iA)(1-i\tan(e+fx))^3}{3f}+\frac{a^2Bc^3(1-i\tan(e+fx))^5}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3,
x]
```



```
[Out] (2*a^2*(I*A + B)*c^3*(1 - I*Tan[e + f*x])^3)/(3*f) - (a^2*(I*A + 3*B)*c^3*(
1 - I*Tan[e + f*x])^4)/(4*f) + (a^2*B*c^3*(1 - I*Tan[e + f*x])^5)/(5*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^3\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)(A+Bx)(c-icx)^2\,dx, x, \tan\right.}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(2a(A-iB)(c-icx)^2 - \frac{a(A-3iB)(c-icx)^3}{c}\right.\right.}{f}$$
$$= \frac{2a^2(iA+B)c^3(1-i\tan(e+fx))^3}{3f} - \frac{a^2(iA+3B)c^3(}{}$$

Mathematica [A] time = 5.69938, size = 146, normalized size = 1.47

$$\frac{a^2c^3\sec(e)\sec^5(e+fx)(15(B-iA)\cos(2e+fx)+15(B-iA)\cos(fx)-15A\sin(2e+fx)+25A\sin(2e+3fx)+5A\sin}{120f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^3,x]
```

```
[Out] (a^2*c^3*Sec[e]*Sec[e + f*x]^5*(15*((-I)*A + B)*Cos[f*x] + 15*((-I)*A + B)*
Cos[2*e + f*x] + 35*A*Sin[f*x] - (5*I)*B*Sin[f*x] - 15*A*Sin[2*e + f*x] - (
15*I)*B*Sin[2*e + f*x] + 25*A*Sin[2*e + 3*f*x] + (5*I)*B*Sin[2*e + 3*f*x] +
 5*A*Sin[4*e + 5*f*x] + I*B*Sin[4*e + 5*f*x]))/(120*f)
```

Maple [A] time = 0.012, size = 101, normalized size = 1.

$$\frac{c^3a^2}{f}\left(-\frac{i}{5}B\left(\tan\left(fx+e\right)\right)^5-\frac{i}{4}A\left(\tan\left(fx+e\right)\right)^4-\frac{i}{3}B\left(\tan\left(fx+e\right)\right)^3+\frac{B\left(\tan\left(fx+e\right)\right)^4}{4}-\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^2+\frac{A(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/f*c^3*a^2*(-1/5*I*B*tan(f*x+e)^5-1/4*I*A*tan(f*x+e)^4-1/3*I*B*tan(f*x+e)^
3+1/4*B*tan(f*x+e)^4-1/2*I*A*tan(f*x+e)^2+1/3*A*tan(f*x+e)^3+1/2*B*tan(f*x+
```

```
e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.90972, size = 139, normalized size = 1.4

$$-\frac{12iBa^2c^3\tan\left(fx+e\right)^5-15\left(-iA+B\right)a^2c^3\tan\left(fx+e\right)^4-\left(20A-20iB\right)a^2c^3\tan\left(fx+e\right)^3-30\left(-iA+B\right)a^2c^3\tan}{60f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] -1/60*(12*I*B*a^2*c^3*tan(f*x + e)^5 - 15*(-I*A + B)*a^2*c^3*tan(f*x + e)^4
 - (20*A - 20*I*B)*a^2*c^3*tan(f*x + e)^3 - 30*(-I*A + B)*a^2*c^3*tan(f*x +
 e)^2 - 60*A*a^2*c^3*tan(f*x + e))/f
```

Fricas [A] time = 1.38537, size = 351, normalized size = 3.55

$$\frac{\left(80iA+80B\right)a^2c^3e^{\left(4ifx+4ie\right)}+\left(100iA-20B\right)a^2c^3e^{\left(2ifx+2ie\right)}+\left(20iA-4B\right)a^2c^3}{15\left(fe^{\left(10ifx+10ie\right)}+5fe^{\left(8ifx+8ie\right)}+10fe^{\left(6ifx+6ie\right)}+10fe^{\left(4ifx+4ie\right)}+5fe^{\left(2ifx+2ie\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/15*((80*I*A + 80*B)*a^2*c^3*e^(4*I*f*x + 4*I*e) + (100*I*A - 20*B)*a^2*c^
3*e^(2*I*f*x + 2*I*e) + (20*I*A - 4*B)*a^2*c^3)/(f*e^(10*I*f*x + 10*I*e) +
5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*
e) + 5*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 18.0525, size = 197, normalized size = 1.99

$$\frac{\frac{\left(16iAa^2c^3+16Ba^2c^3\right)e^{-6ie}e^{4ifx}}{3f}+\frac{\left(20iAa^2c^3-4Ba^2c^3\right)e^{-8ie}e^{2ifx}}{3f}+\frac{\left(20iAa^2c^3-4Ba^2c^3\right)e^{-10ie}}{15f}}{e^{10ifx}+5e^{-2ie}e^{8ifx}+10e^{-4ie}e^{6ifx}+10e^{-6ie}e^{4ifx}+5e^{-8ie}e^{2ifx}+e^{-10ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] ((16*I*A*a**2*c**3 + 16*B*a**2*c**3)*exp(-6*I*e)*exp(4*I*f*x)/(3*f) + (20*I
*A*a**2*c**3 - 4*B*a**2*c**3)*exp(-8*I*e)*exp(2*I*f*x)/(3*f) + (20*I*A*a**2
*c**3 - 4*B*a**2*c**3)*exp(-10*I*e)/(15*f))/(exp(10*I*f*x) + 5*exp(-2*I*e)*
exp(8*I*f*x) + 10*exp(-4*I*e)*exp(6*I*f*x) + 10*exp(-6*I*e)*exp(4*I*f*x) +
5*exp(-8*I*e)*exp(2*I*f*x) + exp(-10*I*e))
```

Giac [A] time = 1.69948, size = 223, normalized size = 2.25

$$\frac{80i\,Aa^2c^3e^{\left(4i\,fx+4i\,e\right)}+80\,Ba^2c^3e^{\left(4i\,fx+4i\,e\right)}+100i\,Aa^2c^3e^{\left(2i\,fx+2i\,e\right)}-20\,Ba^2c^3e^{\left(2i\,fx+2i\,e\right)}+20i\,Aa^2c^3-4\,Ba^2c^3}{15\left(fe^{\left(10i\,fx+10i\,e\right)}+5\,fe^{\left(8i\,fx+8i\,e\right)}+10\,fe^{\left(6i\,fx+6i\,e\right)}+10\,fe^{\left(4i\,fx+4i\,e\right)}+5\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] 1/15*(80*I*A*a^2*c^3*e^(4*I*f*x + 4*I*e) + 80*B*a^2*c^3*e^(4*I*f*x + 4*I*e)
 + 100*I*A*a^2*c^3*e^(2*I*f*x + 2*I*e) - 20*B*a^2*c^3*e^(2*I*f*x + 2*I*e) +
 20*I*A*a^2*c^3 - 4*B*a^2*c^3)/(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x +
8*I*e) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f
*x + 2*I*e) + f)
```

3.680 $\int (a + ia\tan(e + fx))^2(A + B\tan(e + fx))(c - ic\tan(e + fx))^2\,dx$

Optimal. Leaf size=62

$$\frac{a^2Ac^2\tan^3(e+fx)}{3f}+\frac{a^2Ac^2\tan(e+fx)}{f}+\frac{a^2Bc^2\sec^4(e+fx)}{4f}$$

```
[Out] (a^2*B*c^2*Sec[e + f*x]^4)/(4*f) + (a^2*A*c^2*Tan[e + f*x])/f + (a^2*A*c^2*
Tan[e + f*x]^3)/(3*f)
```

Rubi [A] time = 0.109028, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 73, 641}

$$\frac{a^2Ac^2\tan^3(e+fx)}{3f}+\frac{a^2Ac^2\tan(e+fx)}{f}+\frac{a^2Bc^2\sec^4(e+fx)}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2,
x]
```

```
[Out] (a^2*B*c^2*Sec[e + f*x]^4)/(4*f) + (a^2*A*c^2*Tan[e + f*x])/f + (a^2*A*c^2*
Tan[e + f*x]^3)/(3*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^2\,dx = \frac{(ac)\,\text{Subst}(\int (a+iax)(A+Bx)(c-icx)\,dx,x,\tan(e}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int (A+Bx)\left(ac+acx^2\right)\,dx,x,\tan(e+f\right.}{f}$$

$$= \frac{a^2Bc^2\sec^4(e+fx)}{4f}+\frac{(aAc)\,\text{Subst}\left(\int\left(ac+acx^2\right)\right.}{f}$$

$$= \frac{a^2Bc^2\sec^4(e+fx)}{4f}+\frac{a^2Ac^2\tan(e+fx)}{f}+\frac{a^2Ac^2\,\text{t}}{}$$

Mathematica [A] time = 0.15596, size = 53, normalized size = 0.85

$$\frac{a^2Ac^2\left(\frac{1}{3}\tan^3(e+fx)+\tan(e+fx)\right)}{f}+\frac{a^2Bc^2\sec^4(e+fx)}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^2,x]
```

```
[Out] (a^2*B*c^2*Sec[e + f*x]^4)/(4*f) + (a^2*A*c^2*(Tan[e + f*x] + Tan[e + f*x]^
3/3))/f
```

Maple [A] time = 0.011, size = 53, normalized size = 0.9

$$\frac{a^2c^2}{f}\left(\frac{B\left(\tan\left(fx+e\right)\right)^4}{4}+\frac{A\left(\tan\left(fx+e\right)\right)^3}{3}+\frac{B\left(\tan\left(fx+e\right)\right)^2}{2}+A\tan\left(fx+e\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 1/f*a^2*c^2*(1/4*B*tan(f*x+e)^4+1/3*A*tan(f*x+e)^3+1/2*B*tan(f*x+e)^2+A*tan
(f*x+e))
```

Maxima [A] time = 1.65437, size = 97, normalized size = 1.56

$$\frac{3\,Ba^2c^2\tan\left(fx+e\right)^4+4\,Aa^2c^2\tan\left(fx+e\right)^3+6\,Ba^2c^2\tan\left(fx+e\right)^2+12\,Aa^2c^2\tan\left(fx+e\right)}{12\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] 1/12*(3*B*a^2*c^2*tan(f*x + e)^4 + 4*A*a^2*c^2*tan(f*x + e)^3 + 6*B*a^2*c^2
*tan(f*x + e)^2 + 12*A*a^2*c^2*tan(f*x + e))/f
```

Fricas [C] time = 1.35671, size = 284, normalized size = 4.58

$$\frac{(12i\,A+12\,B)a^2c^2e^{(4i\,fx+4i\,e)}+16i\,Aa^2c^2e^{(2i\,fx+2i\,e)}+4i\,Aa^2c^2}{3\left(fe^{(8i\,fx+8i\,e)}+4\,fe^{(6i\,fx+6i\,e)}+6\,fe^{(4i\,fx+4i\,e)}+4\,fe^{(2i\,fx+2i\,e)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/3*((12*I*A + 12*B)*a^2*c^2*e^(4*I*f*x + 4*I*e) + 16*I*A*a^2*c^2*e^(2*I*f*
x + 2*I*e) + 4*I*A*a^2*c^2)/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e
) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [C] time = 10.5884, size = 158, normalized size = 2.55

$$\frac{\frac{16iAa^2c^2e^{-6ie}e^{2ifx}}{3f}+\frac{4iAa^2c^2e^{-8ie}}{3f}+\frac{\left(4iAa^2c^2+4Ba^2c^2\right)e^{-4ie}e^{4ifx}}{f}}{e^{8ifx}+4e^{-2ie}e^{6ifx}+6e^{-4ie}e^{4ifx}+4e^{-6ie}e^{2ifx}+e^{-8ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] (16*I*A*a**2*c**2*exp(-6*I*e)*exp(2*I*f*x)/(3*f) + 4*I*A*a**2*c**2*exp(-8*I
*e)/(3*f) + (4*I*A*a**2*c**2 + 4*B*a**2*c**2)*exp(-4*I*e)*exp(4*I*f*x)/f)/(
exp(8*I*f*x) + 4*exp(-2*I*e)*exp(6*I*f*x) + 6*exp(-4*I*e)*exp(4*I*f*x) + 4*
exp(-6*I*e)*exp(2*I*f*x) + exp(-8*I*e))
```

Giac [B] time = 1.68467, size = 555, normalized size = 8.95

$$\frac{3\,Ba^2c^2\tan\left(fx\right)^4\tan\left(e\right)^4-12\,Aa^2c^2\tan\left(fx\right)^4\tan\left(e\right)^3-12\,Aa^2c^2\tan\left(fx\right)^3\tan\left(e\right)^4+6\,Ba^2c^2\tan\left(fx\right)^4\tan\left(e\right)^2+6\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/12*(3*B*a^2*c^2*tan(f*x)^4*tan(e)^4 - 12*A*a^2*c^2*tan(f*x)^4*tan(e)^3 -
12*A*a^2*c^2*tan(f*x)^3*tan(e)^4 + 6*B*a^2*c^2*tan(f*x)^4*tan(e)^2 + 6*B*a^
2*c^2*tan(f*x)^2*tan(e)^4 - 4*A*a^2*c^2*tan(f*x)^4*tan(e) + 24*A*a^2*c^2*ta
n(f*x)^3*tan(e)^2 + 24*A*a^2*c^2*tan(f*x)^2*tan(e)^3 - 4*A*a^2*c^2*tan(f*x)
*tan(e)^4 + 3*B*a^2*c^2*tan(f*x)^4 + 12*B*a^2*c^2*tan(f*x)^2*tan(e)^2 + 3*B
*a^2*c^2*tan(e)^4 + 4*A*a^2*c^2*tan(f*x)^3 - 24*A*a^2*c^2*tan(f*x)^2*tan(e)
 - 24*A*a^2*c^2*tan(f*x)*tan(e)^2 + 4*A*a^2*c^2*tan(e)^3 + 6*B*a^2*c^2*tan(
f*x)^2 + 6*B*a^2*c^2*tan(e)^2 + 12*A*a^2*c^2*tan(f*x) + 12*A*a^2*c^2*tan(e)
 + 3*B*a^2*c^2)/(f*tan(f*x)^4*tan(e)^4 - 4*f*tan(f*x)^3*tan(e)^3 + 6*f*tan(
f*x)^2*tan(e)^2 - 4*f*tan(f*x)*tan(e) + f)
```

3.681 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))\,dx$

Optimal. Leaf size=64

$$\frac{a^2c(B+iA)\tan^2(e+fx)}{2f}+\frac{a^2Ac\tan(e+fx)}{f}+\frac{ia^2Bc\tan^3(e+fx)}{3f}$$

```
[Out] (a^2*A*c*Tan[e + f*x])/f + (a^2*(I*A + B)*c*Tan[e + f*x]^2)/(2*f) + ((I/3)*
a^2*B*c*Tan[e + f*x]^3)/f
```

Rubi [A] time = 0.0823462, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{a^2c(B+iA)\tan^2(e+fx)}{2f}+\frac{a^2Ac\tan(e+fx)}{f}+\frac{ia^2Bc\tan^3(e+fx)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]),x]
```

```
[Out] (a^2*A*c*Tan[e + f*x])/f + (a^2*(I*A + B)*c*Tan[e + f*x]^2)/(2*f) + ((I/3)*
a^2*B*c*Tan[e + f*x]^3)/f
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))\,dx = \frac{(ac)\,\text{Subst}(\int (a+iax)(A+Bx)\,dx, x, \tan(e+fx))}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(aA+a(iA+B)x+iaBx^2\right)\,dx, x, \tan\right.}{f}$$
$$= \frac{a^2Ac\tan(e+fx)}{f} + \frac{a^2(iA+B)c\tan^2(e+fx)}{2f} + \frac{ia^2}{}$$

Mathematica [A] time = 2.61344, size = 109, normalized size = 1.7

$$\frac{a^2c\sec(e)\sec^3(e+fx)(3(B+iA)\cos(2e+fx)+3(B+iA)\cos(fx)-3A\sin(2e+fx)+3A\sin(2e+3fx)+6A\sin(fx)}{12f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x]),x]
```

```
[Out] (a^2*c*Sec[e]*Sec[e + f*x]^3*(3*(I*A + B)*Cos[f*x] + 3*(I*A + B)*Cos[2*e +
f*x] + 6*A*Sin[f*x] - 3*A*Sin[2*e + f*x] + (3*I)*B*Sin[2*e + f*x] + 3*A*Sin
[2*e + 3*f*x] - I*B*Sin[2*e + 3*f*x]))/(12*f)
```

Maple [A] time = 0.01, size = 53, normalized size = 0.8

$$\frac{a^2c}{f}\left(\frac{i}{3}B\left(\tan\left(fx+e\right)\right)^3+\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^2+\frac{B\left(\tan\left(fx+e\right)\right)^2}{2}+A\tan\left(fx+e\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x)
```

```
[Out] 1/f*a^2*c*(1/3*I*B*tan(f*x+e)^3+1/2*I*A*tan(f*x+e)^2+1/2*B*tan(f*x+e)^2+A*t
an(f*x+e))
```

Maxima [A] time = 1.59281, size = 72, normalized size = 1.12

$$-\frac{-2i\,Ba^2c\tan\left(fx+e\right)^3-3\,(i\,A+B)a^2c\tan\left(fx+e\right)^2-6\,Aa^2c\tan\left(fx+e\right)}{6\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] -1/6*(-2*I*B*a^2*c*tan(f*x + e)^3 - 3*(I*A + B)*a^2*c*tan(f*x + e)^2 - 6*A*
a^2*c*tan(f*x + e))/f
```

Fricas [A] time = 1.25207, size = 262, normalized size = 4.09

$$\frac{(12i\,A+12\,B)a^2ce^{\left(4i\,fx+4i\,e\right)}+(18i\,A+6\,B)a^2ce^{\left(2i\,fx+2i\,e\right)}+(6i\,A+2\,B)a^2c}{3\left(fe^{\left(6i\,fx+6i\,e\right)}+3\,fe^{\left(4i\,fx+4i\,e\right)}+3\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] 1/3*((12*I*A + 12*B)*a^2*c*e^(4*I*f*x + 4*I*e) + (18*I*A + 6*B)*a^2*c*e^(2*
I*f*x + 2*I*e) + (6*I*A + 2*B)*a^2*c)/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f
*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 6.42124, size = 150, normalized size = 2.34

$$\frac{\frac{\left(4iAa^2c+4Ba^2c\right)e^{-2ie}e^{4ifx}}{f}+\frac{\left(6iAa^2c+2Ba^2c\right)e^{-4ie}e^{2ifx}}{f}+\frac{\left(6iAa^2c+2Ba^2c\right)e^{-6ie}}{3f}}{e^{6ifx}+3e^{-2ie}e^{4ifx}+3e^{-4ie}e^{2ifx}+e^{-6ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x)
```

```
[Out] ((4*I*A*a**2*c + 4*B*a**2*c)*exp(-2*I*e)*exp(4*I*f*x)/f + (6*I*A*a**2*c + 2
*B*a**2*c)*exp(-4*I*e)*exp(2*I*f*x)/f + (6*I*A*a**2*c + 2*B*a**2*c)*exp(-6*
```

```
I*e)/(3*f))/(exp(6*I*f*x) + 3*exp(-2*I*e)*exp(4*I*f*x) + 3*exp(-4*I*e)*exp(
2*I*f*x) + exp(-6*I*e))
```

Giac [B] time = 1.48197, size = 171, normalized size = 2.67

$$\frac{12i\,Aa^2ce^{\left(4i\,fx+4i\,e\right)}+12\,Ba^2ce^{\left(4i\,fx+4i\,e\right)}+18i\,Aa^2ce^{\left(2i\,fx+2i\,e\right)}+6\,Ba^2ce^{\left(2i\,fx+2i\,e\right)}+6i\,Aa^2c+2\,Ba^2c}{3\left(fe^{\left(6i\,fx+6i\,e\right)}+3\,fe^{\left(4i\,fx+4i\,e\right)}+3\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] 1/3*(12*I*A*a^2*c*e^(4*I*f*x + 4*I*e) + 12*B*a^2*c*e^(4*I*f*x + 4*I*e) + 18
*I*A*a^2*c*e^(2*I*f*x + 2*I*e) + 6*B*a^2*c*e^(2*I*f*x + 2*I*e) + 6*I*A*a^2*
c + 2*B*a^2*c)/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*
I*f*x + 2*I*e) + f)
```

3.682 $\int (a + ia\tan(e + fx))^2 (A + B\tan(e + fx))\,dx$

Optimal. Leaf size=80

$$-\frac{a^2(A - iB)\tan(e + fx)}{f} - \frac{2a^2(B + iA)\log(\cos(e + fx))}{f} + 2a^2x(A - iB) + \frac{B(a + ia\tan(e + fx))^2}{2f}$$

```
[Out] 2*a^2*(A - I*B)*x - (2*a^2*(I*A + B)*Log[Cos[e + f*x]])/f - (a^2*(A - I*B)*
Tan[e + f*x])/f + (B*(a + I*a*Tan[e + f*x])^2)/(2*f)
```

Rubi [A] time = 0.0696908, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3527, 3477, 3475}

$$-\frac{a^2(A - iB)\tan(e + fx)}{f} - \frac{2a^2(B + iA)\log(\cos(e + fx))}{f} + 2a^2x(A - iB) + \frac{B(a + ia\tan(e + fx))^2}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]),x]
```


```
[Out] 2*a^2*(A - I*B)*x - (2*a^2*(I*A + B)*Log[Cos[e + f*x]])/f - (a^2*(A - I*B)*
Tan[e + f*x])/f + (B*(a + I*a*Tan[e + f*x])^2)/(2*f)
```


Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))\,dx = \frac{B(a+ia\tan(e+fx))^2}{2f} - (-A+iB)\int (a+ia\tan(e+fx))^2\,dx$$
$$= 2a^2(A-iB)x - \frac{a^2(A-iB)\tan(e+fx)}{f} + \frac{B(a+ia\tan(e+fx))^2}{2f} + \left(2a^2\right.$$
$$= 2a^2(A-iB)x - \frac{2a^2(iA+B)\log(\cos(e+fx))}{f} - \frac{a^2(A-iB)\tan(e+fx)}{f}$$

Mathematica [B] time = 2.20088, size = 263, normalized size = 3.29

$$\frac{a^2\sec(e)\sec^2(e+fx)(\cos(2fx)+i\sin(2fx))\left(-8(A-iB)\cos(e)\cos^2(e+fx)\tan^{-1}(\tan(3e+fx))-i\left((B+iA)\cos(e+2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]),x]
```

```
[Out] (a^2*Sec[e]*Sec[e + f*x]^2*(Cos[2*f*x] + I*Sin[2*f*x])*(-8*(A - I*B)*ArcTan
[Tan[3*e + f*x]]*Cos[e]*Cos[e + f*x]^2 - I*((4*I)*A*f*x*Cos[3*e + 2*f*x] +
4*B*f*x*Cos[3*e + 2*f*x] + (I*A + B)*Cos[e + 2*f*x]*(4*f*x - I*Log[Cos[e +
f*x]^2]) + A*Cos[3*e + 2*f*x]*Log[Cos[e + f*x]^2] - I*B*Cos[3*e + 2*f*x]*Lo
g[Cos[e + f*x]^2] + 2*Cos[e]*((-I)*B + (4*I)*A*f*x + 4*B*f*x + (A - I*B)*Lo
g[Cos[e + f*x]^2]) + (2*I)*A*Sin[e] + 4*B*Sin[e] - (2*I)*A*Sin[e + 2*f*x] -
 4*B*Sin[e + 2*f*x])))/(4*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.011, size = 123, normalized size = 1.5

$$-\frac{a^2B\left(\tan\left(fx+e\right)\right)^2}{2f} + \frac{2\,ia^2B\tan\left(fx+e\right)}{f} - \frac{a^2A\tan\left(fx+e\right)}{f} + \frac{ia^2A\ln\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}{f} + \frac{a^2B\ln\left(1+\left(\tan\left(fx\right.\right.\right.}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x)
```

```
[Out] -1/2/f*a^2*B*tan(f*x+e)^2+2*I/f*a^2*B*tan(f*x+e)-1/f*a^2*A*tan(f*x+e)+I/f*a
^2*A*ln(1+tan(f*x+e)^2)+1/f*a^2*B*ln(1+tan(f*x+e)^2)-2*I/f*a^2*B*arctan(tan
```

```
(f*x+e))+2/f*a^2*A*arctan(tan(f*x+e))
```

Maxima [A] time = 1.61246, size = 100, normalized size = 1.25

$$-\frac{Ba^2\tan\left(fx+e\right)^2-2\left(fx+e\right)(2A-2iB)a^2-2(iA+B)a^2\log\left(\tan\left(fx+e\right)^2+1\right)+(2A-4iB)a^2\tan\left(fx+e\right)}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x, algorithm="maxima")
```

```
[Out] -1/2*(B*a^2*tan(f*x + e)^2 - 2*(f*x + e)*(2*A - 2*I*B)*a^2 - 2*(I*A + B)*a^
2*log(tan(f*x + e)^2 + 1) + (2*A - 4*I*B)*a^2*tan(f*x + e))/f
```

Fricas [A] time = 1.46747, size = 339, normalized size = 4.24

$$\frac{(-2iA-6B)a^2e^{(2ifx+2ie)}+(-2iA-4B)a^2+\left((-2iA-2B)a^2e^{(4ifx+4ie)}+(-4iA-4B)a^2e^{(2ifx+2ie)}+(-2iA-2B)a^2\right.}{fe^{(4ifx+4ie)}+2fe^{(2ifx+2ie)}+f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x, algorithm="fricas")
```

```
[Out] ((-2*I*A - 6*B)*a^2*e^(2*I*f*x + 2*I*e) + (-2*I*A - 4*B)*a^2 + ((-2*I*A - 2
*B)*a^2*e^(4*I*f*x + 4*I*e) + (-4*I*A - 4*B)*a^2*e^(2*I*f*x + 2*I*e) + (-2*
I*A - 2*B)*a^2)*log(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(4*I*f*x + 4*I*e) + 2*f*
e^(2*I*f*x + 2*I*e) + f)
```

Sympy [A] time = 3.55835, size = 121, normalized size = 1.51

$$-\frac{2a^2(iA+B)\log\left(e^{2ifx}+e^{-2ie}\right)}{f}+\frac{-\frac{\left(2iAa^2+4Ba^2\right)e^{-4ie}}{f}-\frac{\left(2iAa^2+6Ba^2\right)e^{-2ie}e^{2ifx}}{f}}{e^{4ifx}+2e^{-2ie}e^{2ifx}+e^{-4ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e)),x)
```

```
[Out] -2*a**2*(I*A + B)*log(exp(2*I*f*x) + exp(-2*I*e))/f + (-(2*I*A*a**2 + 4*B*a
**2)*exp(-4*I*e)/f - (2*I*A*a**2 + 6*B*a**2)*exp(-2*I*e)*exp(2*I*f*x)/f)/(e
xp(4*I*f*x) + 2*exp(-2*I*e)*exp(2*I*f*x) + exp(-4*I*e))
```

Giac [B] time = 1.48404, size = 309, normalized size = 3.86

$$\frac{-2i\,Aa^2e^{(4i\,fx+4i\,e)}\log\left(e^{(2i\,fx+2i\,e)}+1\right)-2\,Ba^2e^{(4i\,fx+4i\,e)}\log\left(e^{(2i\,fx+2i\,e)}+1\right)-4i\,Aa^2e^{(2i\,fx+2i\,e)}\log\left(e^{(2i\,fx+2i\,e)}+1\right)-4\,B}{fe^{(4i}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x, algorithm="giac")
```

```
[Out] (-2*I*A*a^2*e^(4*I*f*x + 4*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - 2*B*a^2*e^(4
*I*f*x + 4*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - 4*I*A*a^2*e^(2*I*f*x + 2*I*e
)*log(e^(2*I*f*x + 2*I*e) + 1) - 4*B*a^2*e^(2*I*f*x + 2*I*e)*log(e^(2*I*f*x
 + 2*I*e) + 1) - 2*I*A*a^2*e^(2*I*f*x + 2*I*e) - 6*B*a^2*e^(2*I*f*x + 2*I*e
) - 2*I*A*a^2*log(e^(2*I*f*x + 2*I*e) + 1) - 2*B*a^2*log(e^(2*I*f*x + 2*I*e
) + 1) - 2*I*A*a^2 - 4*B*a^2)/(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I
*e) + f)
```

3.683 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{c-ic\tan(e+fx)}\,dx$

Optimal. Leaf size=93

$$\frac{2a^2(A-iB)}{cf(\tan(e+fx)+i)}+\frac{a^2(3B+iA)\log(\cos(e+fx))}{cf}-\frac{a^2x(A-3iB)}{c}-\frac{ia^2B\tan(e+fx)}{cf}$$

```
[Out] -((a^2*(A - (3*I)*B)*x)/c) + (a^2*(I*A + 3*B)*Log[Cos[e + f*x]])/(c*f) - (I
*a^2*B*Tan[e + f*x])/(c*f) + (2*a^2*(A - I*B))/(c*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.155555, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{2a^2(A-iB)}{cf(\tan(e+fx)+i)}+\frac{a^2(3B+iA)\log(\cos(e+fx))}{cf}-\frac{a^2x(A-3iB)}{c}-\frac{ia^2B\tan(e+fx)}{cf}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x]),
x]
```

```
[Out] -((a^2*(A - (3*I)*B)*x)/c) + (a^2*(I*A + 3*B)*Log[Cos[e + f*x]])/(c*f) - (I
*a^2*B*Tan[e + f*x])/(c*f) + (2*a^2*(A - I*B))/(c*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{iaB}{c^2}-\frac{2a(A-iB)}{c^2(i+x)^2}-\frac{ia(A-3iB)}{c^2(i+x)}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{a^2(A-3iB)x}{c}+\frac{a^2(iA+3B)\log(\cos(e+fx))}{cf}-\frac{ia^2B\tan(e+fx)}{cf}+$$

Mathematica [B] time = 5.07876, size = 418, normalized size = 4.49

$$\frac{a^2\sec(e)(\sin(e+fx)-i\cos(e+fx))^2(A+B\tan(e+fx))\left(2fx(A-3iB)\cos^3(e)\cos(e+fx)+\cos(e)\cos(e+fx)\left(-i\cos\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x]),x]
```

```
[Out] (a^2*Sec[e]*(2*(A - (3*I)*B)*f*x*Cos[e]^3*Cos[e + f*x] + A*f*x*Cos[3*e]*Cos
[e + f*x] + (2*I)*A*f*x*Cos[2*e]*Cos[e + f*x]*Sin[e] + 6*B*f*x*Cos[2*e]*Cos
[e + f*x]*Sin[e] - (2*I)*Cos[e]^2*Cos[e + f*x]*((5*A - (9*I)*B)*f*x + ((-I)
*A - 3*B)*Log[Cos[e + f*x]^2])*Sin[e] + (2*I)*A*f*x*Cos[e + f*x]*Sin[e]^3 +
 6*B*f*x*Cos[e + f*x]*Sin[e]^3 - 2*(A - (3*I)*B)*ArcTan[Tan[3*e + f*x]]*Cos
[e]*Cos[e + f*x]*(Cos[2*e] - I*Sin[2*e]) - (6*I)*B*f*x*Cos[e + f*x]*Sin[e]*
Sin[2*e] + (2*I)*B*Cos[2*e]*Sin[f*x] + 2*B*Sin[2*e]*Sin[f*x] + Cos[e]*Cos[e
 + f*x]*(A*f*x + 2*(I*A + B)*Cos[2*f*x] - I*Cos[2*e]*(6*B*f*x + (A - (3*I)*
B)*Log[Cos[e + f*x]^2]) - 2*A*f*x*Sin[e]^2 + (18*I)*B*f*x*Sin[e]^2 - 6*B*f*
x*Sin[2*e] - 2*A*Sin[2*f*x] + (2*I)*B*Sin[2*f*x]))*((-I)*Cos[e + f*x] + Sin
[e + f*x])^2*(A + B*Tan[e + f*x]))/(2*c*f*(Cos[f*x] + I*Sin[f*x])^2*(A*Cos[
e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.04, size = 113, normalized size = 1.2

$$\frac{-ia^2B\tan\left(fx+e\right)}{cf}-\frac{2\,iBa^2}{cf\left(\tan\left(fx+e\right)+i\right)}+2\,\frac{a^2A}{cf\left(\tan\left(fx+e\right)+i\right)}-\frac{iAa^2\ln\left(\tan\left(fx+e\right)+i\right)}{cf}-3\,\frac{a^2B\ln\left(\tan\left(fx+\right.\right.}{cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] -I*a^2*B*tan(f*x+e)/c/f-2*I/f*a^2/c/(tan(f*x+e)+I)*B+2/f*a^2/c/(tan(f*x+e)+
I)*A-I/f*a^2/c*A*ln(tan(f*x+e)+I)-3/f*a^2/c*B*ln(tan(f*x+e)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.47812, size = 275, normalized size = 2.96

$$\frac{(-iA-B)a^2e^{(4ifx+4ie)}+(-iA-B)a^2e^{(2ifx+2ie)}+2Ba^2+\left((iA+3B)a^2e^{(2ifx+2ie)}+(iA+3B)a^2\right)\log\left(e^{(2ifx+2ie)}+1\right)}{cfe^{(2ifx+2ie)}+cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] ((-I*A - B)*a^2*e^(4*I*f*x + 4*I*e) + (-I*A - B)*a^2*e^(2*I*f*x + 2*I*e) +
2*B*a^2 + ((I*A + 3*B)*a^2*e^(2*I*f*x + 2*I*e) + (I*A + 3*B)*a^2)*log(e^(2*
I*f*x + 2*I*e) + 1))/(c*f*e^(2*I*f*x + 2*I*e) + c*f)
```

Sympy [A] time = 1.77546, size = 144, normalized size = 1.55

$$\frac{2Ba^2e^{-2ie}}{cf\left(e^{2ifx}+e^{-2ie}\right)}+\frac{a^2\left(iA+3B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{cf}+\frac{\begin{cases}-\frac{iAa^2e^{2ie}e^{2ifx}}{f}-\frac{Ba^2e^{2ie}e^{2ifx}}{f} & \text{for } f\neq 0\\ x\left(2Aa^2e^{2ie}-2iBa^2e^{2ie}\right) & \text{otherwise}\end{cases}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] 2*B*a**2*exp(-2*I*e)/(c*f*(exp(2*I*f*x) + exp(-2*I*e))) + a**2*(I*A + 3*B)*
log(exp(2*I*f*x) + exp(-2*I*e))/(c*f) + Piecewise((-I*A*a**2*exp(2*I*e)*exp
(2*I*f*x)/f - B*a**2*exp(2*I*e)*exp(2*I*f*x)/f, Ne(f, 0)), (x*(2*A*a**2*exp
(2*I*e) - 2*I*B*a**2*exp(2*I*e)), True))/c
```

Giac [B] time = 1.44234, size = 385, normalized size = 4.14

$$\frac{2\left(-iAa^2-3Ba^2\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+i\right)}{c}+\frac{\left(iAa^2+3Ba^2\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{c}-\frac{\left(-iAa^2-3Ba^2\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{c}-\frac{iAa^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2+3B\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] (2*(-I*A*a^2 - 3*B*a^2)*log(tan(1/2*f*x + 1/2*e) + I)/c + (I*A*a^2 + 3*B*a^
2)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/c - (-I*A*a^2 - 3*B*a^2)*log(abs(tan(
1/2*f*x + 1/2*e) - 1))/c - (I*A*a^2*tan(1/2*f*x + 1/2*e)^2 + 3*B*a^2*tan(1/
2*f*x + 1/2*e)^2 - 2*I*B*a^2*tan(1/2*f*x + 1/2*e) - I*A*a^2 - 3*B*a^2)/((ta
n(1/2*f*x + 1/2*e)^2 - 1)*c) - (-3*I*A*a^2*tan(1/2*f*x + 1/2*e)^2 - 9*B*a^2
*tan(1/2*f*x + 1/2*e)^2 + 10*A*a^2*tan(1/2*f*x + 1/2*e) - 22*I*B*a^2*tan(1/
2*f*x + 1/2*e) + 3*I*A*a^2 + 9*B*a^2)/(c*(tan(1/2*f*x + 1/2*e) + I)^2))/f
```

3.684 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^2}\,dx$

Optimal. Leaf size=91

$$-\frac{a^2(A-3iB)}{c^2f(\tan(e+fx)+i)}+\frac{a^2(B+iA)}{c^2f(\tan(e+fx)+i)^2}-\frac{a^2B\log(\cos(e+fx))}{c^2f}-\frac{ia^2Bx}{c^2}$$

```
[Out] ((-I)*a^2*B*x)/c^2 - (a^2*B*Log[Cos[e + f*x]])/(c^2*f) + (a^2*(I*A + B))/(c
^2*f*(I + Tan[e + f*x])^2) - (a^2*(A - (3*I)*B))/(c^2*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.151359, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^2(A-3iB)}{c^2f(\tan(e+fx)+i)}+\frac{a^2(B+iA)}{c^2f(\tan(e+fx)+i)^2}-\frac{a^2B\log(\cos(e+fx))}{c^2f}-\frac{ia^2Bx}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
2,x]
```

```
[Out] ((-I)*a^2*B*x)/c^2 - (a^2*B*Log[Cos[e + f*x]])/(c^2*f) + (a^2*(I*A + B))/(c
^2*f*(I + Tan[e + f*x])^2) - (a^2*(A - (3*I)*B))/(c^2*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{2ia(A-iB)}{c^3(i+x)^3} + \frac{a(A-3iB)}{c^3(i+x)^2} + \frac{aB}{c^3(i+x)}\right)dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{ia^2Bx}{c^2} - \frac{a^2B\log(\cos(e+fx))}{c^2f} + \frac{a^2(iA+B)}{c^2f(i+\tan(e+fx))^2} - \frac{a^2(A-}{c^2f(i+\tan}$$

Mathematica [B] time = 3.16926, size = 184, normalized size = 2.02

$$\frac{a^2(\cos(2(e+2fx))+i\sin(2(e+2fx)))\left(-i\cos(2(e+fx))\left(A-2iB\log\left(\cos^2(e+fx)\right)+8Bfx-iB\right)+A\sin(2(e+fx))-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^2,x]
```

```
[Out] (a^2*(4*B - I*Cos[2*(e + f*x)]*(A - I*B + 8*B*f*x - (2*I)*B*Log[Cos[e + f*x
]^2]) + A*Sin[2*(e + f*x)] - I*B*Sin[2*(e + f*x)] - 8*B*f*x*Sin[2*(e + f*x)
] + (2*I)*B*Log[Cos[e + f*x]^2]*Sin[2*(e + f*x)] + 4*B*ArcTan[Tan[3*e + f*x
]]*(I*Cos[2*(e + f*x)] + Sin[2*(e + f*x)]))*(Cos[2*(e + 2*f*x)] + I*Sin[2*(
e + 2*f*x)]))/(4*c^2*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.044, size = 116, normalized size = 1.3

$$\frac{3\,ia^2B}{fc^2\left(\tan\left(fx+e\right)+i\right)} - \frac{a^2A}{fc^2\left(\tan\left(fx+e\right)+i\right)} + \frac{iAa^2}{fc^2\left(\tan\left(fx+e\right)+i\right)^2} + \frac{a^2B}{fc^2\left(\tan\left(fx+e\right)+i\right)^2} + \frac{a^2B\ln\left(\tan\left(fx+\right.\right.}{fc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 3*I/f*a^2/c^2/(tan(f*x+e)+I)*B-1/f*a^2/c^2/(tan(f*x+e)+I)*A+I/f*a^2/c^2/(ta
n(f*x+e)+I)^2*A+1/f*a^2/c^2/(tan(f*x+e)+I)^2*B+1/f*a^2/c^2*B*ln(tan(f*x+e)+
I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.50054, size = 161, normalized size = 1.77

$$\frac{(-i\,A - B)a^2e^{\left(4i\,fx+4i\,e\right)} + 4\,Ba^2e^{\left(2i\,fx+2i\,e\right)} - 4\,Ba^2\log\left(e^{\left(2i\,fx+2i\,e\right)} + 1\right)}{4\,c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/4*((-I*A - B)*a^2*e^(4*I*f*x + 4*I*e) + 4*B*a^2*e^(2*I*f*x + 2*I*e) - 4*B
*a^2*log(e^(2*I*f*x + 2*I*e) + 1))/(c^2*f)
```

Sympy [A] time = 1.13304, size = 162, normalized size = 1.78

$$-\frac{Ba^2\log\left(e^{2ifx} + e^{-2ie}\right)}{c^2f} + \begin{cases} \frac{4Ba^2c^2fe^{2ie}e^{2ifx} + \left(-iAa^2c^2fe^{4ie} - Ba^2c^2fe^{4ie}\right)e^{4ifx}}{4c^4f^2} & \text{for}\: 4c^4f^2 \neq 0 \\ \frac{x\left(Aa^2e^{4ie} - iBa^2e^{4ie} + 2iBa^2e^{2ie}\right)}{c^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] -B*a**2*log(exp(2*I*f*x) + exp(-2*I*e))/(c**2*f) + Piecewise(((4*B*a**2*c**
2*f*exp(2*I*e)*exp(2*I*f*x) + (-I*A*a**2*c**2*f*exp(4*I*e) - B*a**2*c**2*f*
exp(4*I*e))*exp(4*I*f*x))/(4*c**4*f**2), Ne(4*c**4*f**2, 0)), (x*(A*a**2*ex
p(4*I*e) - I*B*a**2*exp(4*I*e) + 2*I*B*a**2*exp(2*I*e))/c**2, True))
```

Giac [B] time = 1.53521, size = 275, normalized size = 3.02

$$\frac{\frac{12\,Ba^2\log\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+i\right)}{c^2}-\frac{6\,Ba^2\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+1\right|\right)}{c^2}-\frac{6\,Ba^2\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-1\right|\right)}{c^2}-\frac{25\,Ba^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4+12\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3+112i\,B}{}}{6\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/6*(12*B*a^2*log(tan(1/2*f*x + 1/2*e) + I)/c^2 - 6*B*a^2*log(abs(tan(1/2*f
*x + 1/2*e) + 1))/c^2 - 6*B*a^2*log(abs(tan(1/2*f*x + 1/2*e) - 1))/c^2 - (2
5*B*a^2*tan(1/2*f*x + 1/2*e)^4 + 12*A*a^2*tan(1/2*f*x + 1/2*e)^3 + 112*I*B*
a^2*tan(1/2*f*x + 1/2*e)^3 - 198*B*a^2*tan(1/2*f*x + 1/2*e)^2 - 12*A*a^2*ta
n(1/2*f*x + 1/2*e) - 112*I*B*a^2*tan(1/2*f*x + 1/2*e) + 25*B*a^2)/(c^2*(tan
(1/2*f*x + 1/2*e) + I)^4))/f
```

3.685 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^3}\,dx$

Optimal. Leaf size=93

$$-\frac{a^2(3B+iA)}{2c^3f(\tan(e+fx)+i)^2}-\frac{2a^2(A-iB)}{3c^3f(\tan(e+fx)+i)^3}-\frac{ia^2B}{c^3f(\tan(e+fx)+i)}$$

```
[Out] (-2*a^2*(A - I*B))/(3*c^3*f*(I + Tan[e + f*x])^3) - (a^2*(I*A + 3*B))/(2*c^
3*f*(I + Tan[e + f*x])^2) - (I*a^2*B)/(c^3*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.152321, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^2(3B+iA)}{2c^3f(\tan(e+fx)+i)^2}-\frac{2a^2(A-iB)}{3c^3f(\tan(e+fx)+i)^3}-\frac{ia^2B}{c^3f(\tan(e+fx)+i)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
3,x]
```

```
[Out] (-2*a^2*(A - I*B))/(3*c^3*f*(I + Tan[e + f*x])^3) - (a^2*(I*A + 3*B))/(2*c^
3*f*(I + Tan[e + f*x])^2) - (I*a^2*B)/(c^3*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^4}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{2a(A-iB)}{c^4(i+x)^4} + \frac{a(iA+3B)}{c^4(i+x)^3} + \frac{iaB}{c^4(i+x)^2}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{2a^2(A-iB)}{3c^3f(i+\tan(e+fx))^3} - \frac{a^2(iA+3B)}{2c^3f(i+\tan(e+fx))^2} - \frac{ia^2B}{c^3f(i+\tan(e+f$$

Mathematica [A] time = 2.68653, size = 81, normalized size = 0.87

$$\frac{a^2(\cos(5e+7fx)+i\sin(5e+7fx))((B-5iA)\cos(e+fx)-(A+5iB)\sin(e+fx))}{24c^3f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^3,x]
```

```
[Out] (a^2*(((-5*I)*A + B)*Cos[e + f*x] - (A + (5*I)*B)*Sin[e + f*x])*(Cos[5*e + 7*f*x] + I*Sin[5*e + 7*f*x]))/(24*c^3*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.047, size = 69, normalized size = 0.7

$$\frac{a^2}{fc^3}\left(-\frac{2A-2iB}{3\left(\tan\left(fx+e\right)+i\right)^3}-\frac{iB}{\tan\left(fx+e\right)+i}-\frac{iA+3B}{2\left(\tan\left(fx+e\right)+i\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/f*a^2/c^3*(-1/3*(2*A-2*I*B)/(tan(f*x+e)+I)^3-I*B/(tan(f*x+e)+I)-1/2*(I*A+3*B)/(tan(f*x+e)+I)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.41494, size = 130, normalized size = 1.4

$$\frac{(-2i\,A-2\,B)a^2e^{\left(6i\,fx+6i\,e\right)}+(-3i\,A+3\,B)a^2e^{\left(4i\,fx+4i\,e\right)}}{24\,c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/24*((-2*I*A - 2*B)*a^2*e^(6*I*f*x + 6*I*e) + (-3*I*A + 3*B)*a^2*e^(4*I*f*
x + 4*I*e))/(c^3*f)
```

Sympy [A] time = 1.36629, size = 168, normalized size = 1.81

$$\begin{cases}\frac{\left(-12iAa^2c^3fe^{4ie}+12Ba^2c^3fe^{4ie}\right)e^{4ifx}+\left(-8iAa^2c^3fe^{6ie}-8Ba^2c^3fe^{6ie}\right)e^{6ifx}}{96c^6f^2} & \text{for } 96c^6f^2\neq 0\\ \frac{x\left(Aa^2e^{6ie}+Aa^2e^{4ie}-iBa^2e^{6ie}+iBa^2e^{4ie}\right)}{2c^3} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] Piecewise((((-12*I*A*a**2*c**3*f*exp(4*I*e) + 12*B*a**2*c**3*f*exp(4*I*e))*
exp(4*I*f*x) + (-8*I*A*a**2*c**3*f*exp(6*I*e) - 8*B*a**2*c**3*f*exp(6*I*e))
*exp(6*I*f*x))/(96*c**6*f**2), Ne(96*c**6*f**2, 0)), (x*(A*a**2*exp(6*I*e)
```

```
+ A*a**2*exp(4*I*e) - I*B*a**2*exp(6*I*e) + I*B*a**2*exp(4*I*e))/(2*c**3),
True))
```

Giac [B] time = 1.55278, size = 223, normalized size = 2.4

$$-\frac{2\left(3\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5+3i\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-3\,Ba^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-8\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3+2i\,Ba^2\tan\right.}{3\,c^3f\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+i\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] -2/3*(3*A*a^2*tan(1/2*f*x + 1/2*e)^5 + 3*I*A*a^2*tan(1/2*f*x + 1/2*e)^4 - 3
*B*a^2*tan(1/2*f*x + 1/2*e)^4 - 8*A*a^2*tan(1/2*f*x + 1/2*e)^3 + 2*I*B*a^2*
tan(1/2*f*x + 1/2*e)^3 - 3*I*A*a^2*tan(1/2*f*x + 1/2*e)^2 + 3*B*a^2*tan(1/2
*f*x + 1/2*e)^2 + 3*A*a^2*tan(1/2*f*x + 1/2*e))/(c^3*f*(tan(1/2*f*x + 1/2*e
) + I)^6)
```

3.686 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^4}\,dx$

Optimal. Leaf size=91

$$\frac{a^2(A-3iB)}{3c^4f(\tan(e+fx)+i)^3}-\frac{a^2(B+iA)}{2c^4f(\tan(e+fx)+i)^4}+\frac{a^2B}{2c^4f(\tan(e+fx)+i)^2}$$

```
[Out] -(a^2*(I*A + B))/(2*c^4*f*(I + Tan[e + f*x])^4) + (a^2*(A - (3*I)*B))/(3*c^
4*f*(I + Tan[e + f*x])^3) + (a^2*B)/(2*c^4*f*(I + Tan[e + f*x])^2)
```

Rubi [A] time = 0.149692, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^2(A-3iB)}{3c^4f(\tan(e+fx)+i)^3}-\frac{a^2(B+iA)}{2c^4f(\tan(e+fx)+i)^4}+\frac{a^2B}{2c^4f(\tan(e+fx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
4,x]
```

```
[Out] -(a^2*(I*A + B))/(2*c^4*f*(I + Tan[e + f*x])^4) + (a^2*(A - (3*I)*B))/(3*c^
4*f*(I + Tan[e + f*x])^3) + (a^2*B)/(2*c^4*f*(I + Tan[e + f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^4}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^5}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\operatorname{Subst}\left(\int \left(\frac{2a(iA+B)}{c^5(i+x)^5} - \frac{a(A-3iB)}{c^5(i+x)^4} - \frac{aB}{c^5(i+x)^3}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{a^2(iA+B)}{2c^4f(i+\tan(e+fx))^4} + \frac{a^2(A-3iB)}{3c^4f(i+\tan(e+fx))^3} + \frac{a^2B}{2c^4f(i+\tan(e+$$

Mathematica [A] time = 2.79376, size = 91, normalized size = 1.

$$\frac{a^2(\cos(6e+8fx)+i\sin(6e+8fx))(-3(A+3iB)\sin(2(e+fx))+3(B-3iA)\cos(2(e+fx))-8iA)}{96c^4f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^4,x]
```

```
[Out] (a^2*((-8*I)*A + 3*((-3*I)*A + B)*Cos[2*(e + f*x)] - 3*(A + (3*I)*B)*Sin[2*
(e + f*x)])*(Cos[6*e + 8*f*x] + I*Sin[6*e + 8*f*x]))/(96*c^4*f*(Cos[f*x] +
I*Sin[f*x])^2)
```

Maple [A] time = 0.047, size = 68, normalized size = 0.8

$$\frac{a^2}{fc^4}\left(-\frac{2B+2iA}{4\left(\tan\left(fx+e\right)+i\right)^4} - \frac{-A+3iB}{3\left(\tan\left(fx+e\right)+i\right)^3} + \frac{B}{2\left(\tan\left(fx+e\right)+i\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/f*a^2/c^4*(-1/4*(2*B+2*I*A)/(tan(f*x+e)+I)^4-1/3*(-A+3*I*B)/(tan(f*x+e)+I
)^3+1/2*B/(tan(f*x+e)+I)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.3503, size = 173, normalized size = 1.9

$$\frac{(-3i\,A-3\,B)a^2e^{\left(8i\,fx+8i\,e\right)}-8i\,Aa^2e^{\left(6i\,fx+6i\,e\right)}+(-6i\,A+6\,B)a^2e^{\left(4i\,fx+4i\,e\right)}}{96\,c^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, alg
orithm="fricas")
```

```
[Out] 1/96*((-3*I*A - 3*B)*a^2*e^(8*I*f*x + 8*I*e) - 8*I*A*a^2*e^(6*I*f*x + 6*I*e
) + (-6*I*A + 6*B)*a^2*e^(4*I*f*x + 4*I*e))/(c^4*f)
```

Sympy [A] time = 1.83493, size = 219, normalized size = 2.41

$$\begin{cases} \frac{-512iAa^2c^8f^2e^{6ie}e^{6ifx}+\left(-384iAa^2c^8f^2e^{4ie}+384Ba^2c^8f^2e^{4ie}\right)e^{4ifx}+\left(-192iAa^2c^8f^2e^{8ie}-192Ba^2c^8f^2e^{8ie}\right)e^{8ifx}}{6144c^{12}f^3} & \text{for } 6144c^{12}f^3\neq 0 \\ \frac{x\left(Aa^2e^{8ie}+2Aa^2e^{6ie}+Aa^2e^{4ie}-iBa^2e^{8ie}+iBa^2e^{4ie}\right)}{4c^4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] Piecewise(((-512*I*A*a**2*c**8*f**2*exp(6*I*e)*exp(6*I*f*x) + (-384*I*A*a**
2*c**8*f**2*exp(4*I*e) + 384*B*a**2*c**8*f**2*exp(4*I*e))*exp(4*I*f*x) + (-
192*I*A*a**2*c**8*f**2*exp(8*I*e) - 192*B*a**2*c**8*f**2*exp(8*I*e))*exp(8*
```

```
I*f*x))/(6144*c**12*f**3), Ne(6144*c**12*f**3, 0)), (x*(A*a**2*exp(8*I*e) +
 2*A*a**2*exp(6*I*e) + A*a**2*exp(4*I*e) - I*B*a**2*exp(8*I*e) + I*B*a**2*e
xp(4*I*e))/(4*c**4), True))
```

Giac [B] time = 1.48193, size = 271, normalized size = 2.98

$$-\frac{2\left(3\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^7+6i\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6-3\,Ba^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6-17\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5-16i\,Aa^2\tan\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, alg
orithm="giac")
```

```
[Out] -2/3*(3*A*a^2*tan(1/2*f*x + 1/2*e)^7 + 6*I*A*a^2*tan(1/2*f*x + 1/2*e)^6 - 3
*B*a^2*tan(1/2*f*x + 1/2*e)^6 - 17*A*a^2*tan(1/2*f*x + 1/2*e)^5 - 16*I*A*a^
2*tan(1/2*f*x + 1/2*e)^4 + 6*B*a^2*tan(1/2*f*x + 1/2*e)^4 + 17*A*a^2*tan(1/
2*f*x + 1/2*e)^3 + 6*I*A*a^2*tan(1/2*f*x + 1/2*e)^2 - 3*B*a^2*tan(1/2*f*x +
 1/2*e)^2 - 3*A*a^2*tan(1/2*f*x + 1/2*e))/(c^4*f*(tan(1/2*f*x + 1/2*e) + I)
^8)
```

3.687 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^5}\,dx$

Optimal. Leaf size=95

$$\frac{a^2(3B+iA)}{4c^5f(\tan(e+fx)+i)^4}+\frac{2a^2(A-iB)}{5c^5f(\tan(e+fx)+i)^5}+\frac{ia^2B}{3c^5f(\tan(e+fx)+i)^3}$$

```
[Out] (2*a^2*(A - I*B))/(5*c^5*f*(I + Tan[e + f*x])^5) + (a^2*(I*A + 3*B))/(4*c^5
*f*(I + Tan[e + f*x])^4) + ((I/3)*a^2*B)/(c^5*f*(I + Tan[e + f*x])^3)
```

Rubi [A] time = 0.152285, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^2(3B+iA)}{4c^5f(\tan(e+fx)+i)^4}+\frac{2a^2(A-iB)}{5c^5f(\tan(e+fx)+i)^5}+\frac{ia^2B}{3c^5f(\tan(e+fx)+i)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
5,x]
```

```
[Out] (2*a^2*(A - I*B))/(5*c^5*f*(I + Tan[e + f*x])^5) + (a^2*(I*A + 3*B))/(4*c^5
*f*(I + Tan[e + f*x])^4) + ((I/3)*a^2*B)/(c^5*f*(I + Tan[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^5}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^6}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int \left(-\frac{2a(A-iB)}{c^6(i+x)^6}-\frac{ia(A-3iB)}{c^6(i+x)^5}-\frac{iaB}{c^6(i+x)^4}\right)dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{2a^2(A-iB)}{5c^5f(i+\tan(e+fx))^5}+\frac{a^2(iA+3B)}{4c^5f(i+\tan(e+fx))^4}+\frac{ia^2B}{3c^5f(i+\tan(e+f$$

Mathematica [A] time = 3.62902, size = 116, normalized size = 1.22

$$\frac{a^2(\cos(7e+9fx)+i\sin(7e+9fx))(-(3A+7iB)(5\sin(e+fx)+6\sin(3(e+fx)))+5(B-21iA)\cos(e+fx)+6(3B-7}{960c^5f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^5,x]
```

```
[Out] (a^2*(5*((-21*I)*A + B)*Cos[e + f*x] + 6*((-7*I)*A + 3*B)*Cos[3*(e + f*x)]
- (3*A + (7*I)*B)*(5*Sin[e + f*x] + 6*Sin[3*(e + f*x)]))*(Cos[7*e + 9*f*x]
+ I*Sin[7*e + 9*f*x]))/(960*c^5*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.051, size = 69, normalized size = 0.7

$$\frac{a^2}{fc^5}\left(-\frac{-iA-3B}{4\left(\tan\left(fx+e\right)+i\right)^4}-\frac{-2A+2iB}{5\left(\tan\left(fx+e\right)+i\right)^5}+\frac{\frac{i}{3}B}{\left(\tan\left(fx+e\right)+i\right)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] 1/f*a^2/c^5*(-1/4*(-I*A-3*B)/(tan(f*x+e)+I)^4-1/5*(-2*A+2*I*B)/(tan(f*x+e)+
I)^5+1/3*I*B/(tan(f*x+e)+I)^3)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.42725, size = 255, normalized size = 2.68

$$\frac{(-12i\,A-12\,B)a^2e^{\left(10i\,fx+10i\,e\right)}+(-45i\,A-15\,B)a^2e^{\left(8i\,fx+8i\,e\right)}+(-60i\,A+20\,B)a^2e^{\left(6i\,fx+6i\,e\right)}+(-30i\,A+30\,B)a^2e^{\left(4i\,fx+4i\right.}}{960\,c^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, alg
orithm="fricas")
```

```
[Out] 1/960*((-12*I*A - 12*B)*a^2*e^(10*I*f*x + 10*I*e) + (-45*I*A - 15*B)*a^2*e^
(8*I*f*x + 8*I*e) + (-60*I*A + 20*B)*a^2*e^(6*I*f*x + 6*I*e) + (-30*I*A + 3
0*B)*a^2*e^(4*I*f*x + 4*I*e))/(c^5*f)
```

Sympy [A] time = 1.81099, size = 333, normalized size = 3.51

$$\begin{cases} \frac{\left(-245760iAa^2c^{15}f^3e^{4ie}+245760Ba^2c^{15}f^3e^{4ie}\right)e^{4ifx}+\left(-491520iAa^2c^{15}f^3e^{6ie}+163840Ba^2c^{15}f^3e^{6ie}\right)e^{6ifx}+\left(-368640iAa^2c^{15}f^3e^{8ie}-122880Ba^2c^{15}f^3e^{8ie}\right)e^{8ifx}+}{7864320c^{20}f^4} \\ \frac{x\left(Aa^2e^{10ie}+3Aa^2e^{8ie}+3Aa^2e^{6ie}+Aa^2e^{4ie}-iBa^2e^{10ie}-iBa^2e^{8ie}+iBa^2e^{6ie}+iBa^2e^{4ie}\right)}{8c^5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] Piecewise((((-245760*I*A*a**2*c**15*f**3*exp(4*I*e) + 245760*B*a**2*c**15*f
**3*exp(4*I*e))*exp(4*I*f*x) + (-491520*I*A*a**2*c**15*f**3*exp(6*I*e) + 16
```

```
3840*B*a**2*c**15*f**3*exp(6*I*e))*exp(6*I*f*x) + (-368640*I*A*a**2*c**15*f
**3*exp(8*I*e) - 122880*B*a**2*c**15*f**3*exp(8*I*e))*exp(8*I*f*x) + (-9830
4*I*A*a**2*c**15*f**3*exp(10*I*e) - 98304*B*a**2*c**15*f**3*exp(10*I*e))*ex
p(10*I*f*x))/(7864320*c**20*f**4), Ne(7864320*c**20*f**4, 0)), (x*(A*a**2*e
xp(10*I*e) + 3*A*a**2*exp(8*I*e) + 3*A*a**2*exp(6*I*e) + A*a**2*exp(4*I*e)
- I*B*a**2*exp(10*I*e) - I*B*a**2*exp(8*I*e) + I*B*a**2*exp(6*I*e) + I*B*a*
*2*exp(4*I*e))/(8*c**5), True))
```

Giac [B] time = 1.56321, size = 417, normalized size = 4.39

$$-\frac{2\left(15\,Aa^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^9+45i\,Aa^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^8-15\,Ba^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^8-150\,Aa^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^7-10i\,B\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, alg
orithm="giac")
```

```
[Out] -2/15*(15*A*a^2*tan(1/2*f*x + 1/2*e)^9 + 45*I*A*a^2*tan(1/2*f*x + 1/2*e)^8
- 15*B*a^2*tan(1/2*f*x + 1/2*e)^8 - 150*A*a^2*tan(1/2*f*x + 1/2*e)^7 - 10*I
*B*a^2*tan(1/2*f*x + 1/2*e)^7 - 225*I*A*a^2*tan(1/2*f*x + 1/2*e)^6 + 55*B*a
^2*tan(1/2*f*x + 1/2*e)^6 + 306*A*a^2*tan(1/2*f*x + 1/2*e)^5 + 24*I*B*a^2*t
an(1/2*f*x + 1/2*e)^5 + 225*I*A*a^2*tan(1/2*f*x + 1/2*e)^4 - 55*B*a^2*tan(1
/2*f*x + 1/2*e)^4 - 150*A*a^2*tan(1/2*f*x + 1/2*e)^3 - 10*I*B*a^2*tan(1/2*f
*x + 1/2*e)^3 - 45*I*A*a^2*tan(1/2*f*x + 1/2*e)^2 + 15*B*a^2*tan(1/2*f*x +
1/2*e)^2 + 15*A*a^2*tan(1/2*f*x + 1/2*e))/(c^5*f*(tan(1/2*f*x + 1/2*e) + I)
^10)
```

3.688 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^6}\,dx$

Optimal. Leaf size=91

$$-\frac{a^2(A-3iB)}{5c^6f(\tan(e+fx)+i)^5}+\frac{a^2(B+iA)}{3c^6f(\tan(e+fx)+i)^6}-\frac{a^2B}{4c^6f(\tan(e+fx)+i)^4}$$

```
[Out] (a^2*(I*A + B))/(3*c^6*f*(I + Tan[e + f*x])^6) - (a^2*(A - (3*I)*B))/(5*c^6
*f*(I + Tan[e + f*x])^5) - (a^2*B)/(4*c^6*f*(I + Tan[e + f*x])^4)
```

Rubi [A] time = 0.149589, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^2(A-3iB)}{5c^6f(\tan(e+fx)+i)^5}+\frac{a^2(B+iA)}{3c^6f(\tan(e+fx)+i)^6}-\frac{a^2B}{4c^6f(\tan(e+fx)+i)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
6,x]
```

```
[Out] (a^2*(I*A + B))/(3*c^6*f*(I + Tan[e + f*x])^6) - (a^2*(A - (3*I)*B))/(5*c^6
*f*(I + Tan[e + f*x])^5) - (a^2*B)/(4*c^6*f*(I + Tan[e + f*x])^4)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^6}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^7}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(-\frac{2ia(A-iB)}{c^7(i+x)^7}+\frac{a(A-3iB)}{c^7(i+x)^6}+\frac{aB}{c^7(i+x)^5}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{a^2(iA+B)}{3c^6f(i+\tan(e+fx))^6}-\frac{a^2(A-3iB)}{5c^6f(i+\tan(e+fx))^5}-\frac{a^2B}{4c^6f(i+\tan(e+f$$

Mathematica [A] time = 4.82706, size = 143, normalized size = 1.57

$$-\frac{ia^2(\cos(8e+10fx)+i\sin(8e+10fx))(8(8A+iB)\cos(2(e+fx))+10(2A+iB)\cos(4(e+fx))-16iA\sin(2(e+fx))-}{960c^6f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^6,x]
```

```
[Out] ((-I/960)*a^2*(45*A + 8*(8*A + I*B)*Cos[2*(e + f*x)] + 10*(2*A + I*B)*Cos[4
*(e + f*x)] - (16*I)*A*Sin[2*(e + f*x)] + 32*B*Sin[2*(e + f*x)] - (10*I)*A*
Sin[4*(e + f*x)] + 20*B*Sin[4*(e + f*x)])*(Cos[8*e + 10*f*x] + I*Sin[8*e +
10*f*x]))/(c^6*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.048, size = 66, normalized size = 0.7

$$\frac{a^2}{fc^6}\left(-\frac{A-3\,iB}{5\left(\tan\left(fx+e\right)+i\right)^5}-\frac{B}{4\left(\tan\left(fx+e\right)+i\right)^4}-\frac{-2\,B-2\,iA}{6\left(\tan\left(fx+e\right)+i\right)^6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x)
```

```
[Out] 1/f*a^2/c^6*(-1/5*(A-3*I*B)/(tan(f*x+e)+I)^5-1/4*B/(tan(f*x+e)+I)^4-1/6*(-2
*B-2*I*A)/(tan(f*x+e)+I)^6)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.32842, size = 300, normalized size = 3.3

$$\frac{(-5i\,A - 5\,B)a^2e^{(12i\,fx+12i\,e)} + (-24i\,A - 12\,B)a^2e^{(10i\,fx+10i\,e)} - 45i\,Aa^2e^{(8i\,fx+8i\,e)} + (-40i\,A + 20\,B)a^2e^{(6i\,fx+6i\,e)} + (-15i\,A}{960\,c^6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x, alg
orithm="fricas")
```

```
[Out] 1/960*((-5*I*A - 5*B)*a^2*e^(12*I*f*x + 12*I*e) + (-24*I*A - 12*B)*a^2*e^(1
0*I*f*x + 10*I*e) - 45*I*A*a^2*e^(8*I*f*x + 8*I*e) + (-40*I*A + 20*B)*a^2*e
^(6*I*f*x + 6*I*e) + (-15*I*A + 15*B)*a^2*e^(4*I*f*x + 4*I*e))/(c^6*f)
```

Sympy [A] time = 2.27928, size = 381, normalized size = 4.19

$$\begin{cases} \frac{-141557760iAa^2c^{24}f^4e^{8ie}e^{8ifx}+\left(-47185920iAa^2c^{24}f^4e^{4ie}+47185920Ba^2c^{24}f^4e^{4ie}\right)e^{4ifx}+\left(-125829120iAa^2c^{24}f^4e^{6ie}+62914560Ba^2c^{24}f^4e^{6ie}\right)e^{6ifx}+\left(-75497\right.}{3019898880c^{30}f^5} \\ \frac{x\left(Aa^2e^{12ie}+4Aa^2e^{10ie}+6Aa^2e^{8ie}+4Aa^2e^{6ie}+Aa^2e^{4ie}-iBa^2e^{12ie}-2iBa^2e^{10ie}+2iBa^2e^{6ie}+iBa^2e^{4ie}\right)}{16c^6} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**6,x)
```

```
[Out] Piecewise(((-141557760*I*A*a**2*c**24*f**4*exp(8*I*e)*exp(8*I*f*x) + (-4718
5920*I*A*a**2*c**24*f**4*exp(4*I*e) + 47185920*B*a**2*c**24*f**4*exp(4*I*e)
)*exp(4*I*f*x) + (-125829120*I*A*a**2*c**24*f**4*exp(6*I*e) + 62914560*B*a*
*2*c**24*f**4*exp(6*I*e))*exp(6*I*f*x) + (-75497472*I*A*a**2*c**24*f**4*exp
(10*I*e) - 37748736*B*a**2*c**24*f**4*exp(10*I*e))*exp(10*I*f*x) + (-157286
40*I*A*a**2*c**24*f**4*exp(12*I*e) - 15728640*B*a**2*c**24*f**4*exp(12*I*e)
)*exp(12*I*f*x))/(3019898880*c**30*f**5), Ne(3019898880*c**30*f**5, 0)), (x
*(A*a**2*exp(12*I*e) + 4*A*a**2*exp(10*I*e) + 6*A*a**2*exp(8*I*e) + 4*A*a**
2*exp(6*I*e) + A*a**2*exp(4*I*e) - I*B*a**2*exp(12*I*e) - 2*I*B*a**2*exp(10
*I*e) + 2*I*B*a**2*exp(6*I*e) + I*B*a**2*exp(4*I*e))/(16*c**6), True))
```

Giac [B] time = 1.62622, size = 514, normalized size = 5.65

$$-\frac{2\left(15\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{11}+60i\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{10}-15\,Ba^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{10}-235\,Aa^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{9}-20\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x, alg
orithm="giac")
```

```
[Out] -2/15*(15*A*a^2*tan(1/2*f*x + 1/2*e)^11 + 60*I*A*a^2*tan(1/2*f*x + 1/2*e)^1
0 - 15*B*a^2*tan(1/2*f*x + 1/2*e)^10 - 235*A*a^2*tan(1/2*f*x + 1/2*e)^9 - 2
0*I*B*a^2*tan(1/2*f*x + 1/2*e)^9 - 480*I*A*a^2*tan(1/2*f*x + 1/2*e)^8 + 90*
B*a^2*tan(1/2*f*x + 1/2*e)^8 + 822*A*a^2*tan(1/2*f*x + 1/2*e)^7 + 84*I*B*a^
2*tan(1/2*f*x + 1/2*e)^7 + 904*I*A*a^2*tan(1/2*f*x + 1/2*e)^6 - 158*B*a^2*t
an(1/2*f*x + 1/2*e)^6 - 822*A*a^2*tan(1/2*f*x + 1/2*e)^5 - 84*I*B*a^2*tan(1
/2*f*x + 1/2*e)^5 - 480*I*A*a^2*tan(1/2*f*x + 1/2*e)^4 + 90*B*a^2*tan(1/2*f
*x + 1/2*e)^4 + 235*A*a^2*tan(1/2*f*x + 1/2*e)^3 + 20*I*B*a^2*tan(1/2*f*x +
 1/2*e)^3 + 60*I*A*a^2*tan(1/2*f*x + 1/2*e)^2 - 15*B*a^2*tan(1/2*f*x + 1/2*
e)^2 - 15*A*a^2*tan(1/2*f*x + 1/2*e))/(c^6*f*(tan(1/2*f*x + 1/2*e) + I)^12)
```

3.689 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx$

Optimal. Leaf size=151

$$\frac{a^3(5B+iA)(c-ic\tan(e+fx))^{n+2}}{c^2f(n+2)}+\frac{4a^3(B+iA)(c-ic\tan(e+fx))^n}{fn}-\frac{4a^3(2B+iA)(c-ic\tan(e+fx))^{n+1}}{cf(n+1)}-\frac{a^3B(c-$$

```
[Out] (4*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^n)/(f*n) - (4*a^3*(I*A + 2*B)*(c -
I*c*Tan[e + f*x])^(1 + n))/(c*f*(1 + n)) + (a^3*(I*A + 5*B)*(c - I*c*Tan[e
+ f*x])^(2 + n))/(c^2*f*(2 + n)) - (a^3*B*(c - I*c*Tan[e + f*x])^(3 + n))/(
c^3*f*(3 + n))
```

Rubi [A] time = 0.190707, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3(5B+iA)(c-ic\tan(e+fx))^{n+2}}{c^2f(n+2)}+\frac{4a^3(B+iA)(c-ic\tan(e+fx))^n}{fn}-\frac{4a^3(2B+iA)(c-ic\tan(e+fx))^{n+1}}{cf(n+1)}-\frac{a^3B(c-$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n,
x]
```


```
[Out] (4*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^n)/(f*n) - (4*a^3*(I*A + 2*B)*(c -
I*c*Tan[e + f*x])^(1 + n))/(c*f*(1 + n)) + (a^3*(I*A + 5*B)*(c - I*c*Tan[e
+ f*x])^(2 + n))/(c^2*f*(2 + n)) - (a^3*B*(c - I*c*Tan[e + f*x])^(3 + n))/(
c^3*f*(3 + n))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^{-1+n}\,dx, x,\right.}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(4a^2(A-iB)(c-icx)^{-1+n} - \frac{4a^2(A-2iB}{c}\right.\right.}{}$$
$$= \frac{4a^3(iA+B)(c-ic\tan(e+fx))^n}{fn} - \frac{4a^3(iA+2B)(c}{cf}$$

Mathematica [B] time = 13.1288, size = 822, normalized size = 5.44

$$\frac{\cos^4(e+fx)\left(-\frac{i\sec(e)\left(Be^{n(ifx-\log(c\sec(e+fx))+\log(c-ic\tan(e+fx)))-ifnx}\cos(3e)-iBe^{n(ifx-\log(c\sec(e+fx))+\log(c-ic\tan(e+fx)))-ifnx}\sin(3e)\right)\sin(fx)\sec^3(e+fx)}{n+3}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^n,x]
```

```
[Out] (Cos[e + f*x]^4*((Sec[e]*Sec[e + f*x]^2*(3*A*Cos[e] - (9*I)*B*Cos[e] + A*n*
Cos[e] - (2*I)*B*n*Cos[e] + 2*B*Sin[e] + B*n*Sin[e])*((-I)*E^((-I)*f*n*x +
n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*Cos[3*e] - E^(
(-I)*f*n*x + n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*S
in[3*e]))/((2 + n)*(3 + n)) + (Sec[e]*((12*I)*A*Cos[e] + 12*B*Cos[e] + (13*
I)*A*n*Cos[e] + 9*B*n*Cos[e] + (6*I)*A*n^2*Cos[e] + 6*B*n^2*Cos[e] + I*A*n^
3*Cos[e] + B*n^3*Cos[e] - 9*A*n*Sin[e] + (13*I)*B*n*Sin[e] - 6*A*n^2*Sin[e]
 + (6*I)*B*n^2*Sin[e] - A*n^3*Sin[e] + I*B*n^3*Sin[e])*((2*E^((-I)*f*n*x +
n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*Cos[3*e])/n -
((2*I)*E^((-I)*f*n*x + n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e +
 f*x]]))*Sin[3*e])/n))/((1 + n)*(2 + n)*(3 + n)) + ((9*A - (13*I)*B + 6*A*n
 - (6*I)*B*n + A*n^2 - I*B*n^2)*Sec[e]*Sec[e + f*x]*(-2*E^((-I)*f*n*x + n*(
I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*Cos[3*e] + (2*I)*
E^((-I)*f*n*x + n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]])
```

```
)*Sin[3*e])*Sin[f*x])/((1 + n)*(2 + n)*(3 + n)) - (I*Sec[e]*Sec[e + f*x]^3*
(B*E^((-I)*f*n*x + n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x
]]))*Cos[3*e] - I*B*E^((-I)*f*n*x + n*(I*f*x - Log[c*Sec[e + f*x]] + Log[c
- I*c*Tan[e + f*x]]))*Sin[3*e])*Sin[f*x])/(3 + n))*(a + I*a*Tan[e + f*x])^3
*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(n - (n*(-Log[c*Sec[e + f*x]]
+ Log[c - I*c*Tan[e + f*x]]))/Log[c - I*c*Tan[e + f*x]]))/(f*(Cos[f*x] + I*
Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [C] time = 0.656, size = 4339, normalized size = 28.7

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x)
```

```
[Out] 4*a^3/(3+n)/f/(exp(2*I*(f*x+e))+1)^3/(1+n)/(2+n)/n*(-2*2^n*c^n/((exp(2*I*(f
*x+e))+1)^n)*B*n*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*n*(csgn(I*c/(e
xp(2*I*(f*x+e))+1))-csgn(I/(exp(2*I*(f*x+e))+1)))*(-csgn(I*c/(exp(2*I*(f*x+
e))+1))+csgn(I*c)))+2*I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*n*A*exp(1/2*I*Pi*c
sgn(I*c/(exp(2*I*(f*x+e))+1))*n*(csgn(I*c/(exp(2*I*(f*x+e))+1))-csgn(I/(exp
(2*I*(f*x+e))+1)))*(-csgn(I*c/(exp(2*I*(f*x+e))+1))+csgn(I*c)))+6*I*2^n*c^n
/((exp(2*I*(f*x+e))+1)^n)*A*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*n*(
csgn(I*c/(exp(2*I*(f*x+e))+1))-csgn(I/(exp(2*I*(f*x+e))+1)))*(-csgn(I*c/(ex
p(2*I*(f*x+e))+1))+csgn(I*c)))+11*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*n*exp(
-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*
I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2
*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1
))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(6*I*f*x)*exp(6*I*e)+18*I*2
^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+
1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2
*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(
-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))
+1))*n)*exp(2*I*f*x)*exp(2*I*e)+18*I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*exp
(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2
*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^
2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+
1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)+6*I*2
^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+
1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2
*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(
-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))
```

+1))*n)*exp(6*I*f*x)*exp(6*I*e)+18*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(2*I*f*x)*exp(2*I*e)+18*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)+6*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(6*I*f*x)*exp(6*I*e)+6*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*n*(csgn(I*c/(exp(2*I*(f*x+e))+1))-csgn(I/(exp(2*I*(f*x+e))+1)))*(-csgn(I*c/(exp(2*I*(f*x+e))+1))+csgn(I*c)))-2*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*n^2*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(2*I*f*x)*exp(2*I*e)-2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*n^3*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)+9*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*n*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)-2*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*n^2*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)+I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*n^3*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(6*I*f*x)*exp(6*I*e)+2*I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*n^2*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(2*I*f*x)*exp(2*I*e)+12*I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*n*A*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/

```
(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e)
)+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*
x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(2*I*f*x)*exp(2*I*e)
+8*I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*n^2*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I
*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*
n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1
))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*
I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)+21*I*2^n*c^n/((exp(2*I*(f*x+e))+1
)^n)*n*A*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csg
n(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(
f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2
*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(
4*I*e)+11*I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*n*A*exp(-1/2*I*Pi*csgn(I*c/(ex
p(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(
I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+
e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(e
xp(2*I*(f*x+e))+1))*n)*exp(6*I*f*x)*exp(6*I*e)+6*I*2^n*c^n/((exp(2*I*(f*x+e
))+1)^n)*A*n^2*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*
Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp
(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/
(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(6*I*f*x
)*exp(6*I*e)+I*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*A*n^3*exp(-1/2*I*Pi*csgn(I*
c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*
csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*
(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn
(I/(exp(2*I*(f*x+e))+1))*n)*exp(4*I*f*x)*exp(4*I*e)+2^n*c^n/((exp(2*I*(f*x+
e))+1)^n)*B*n^3*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I
*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(ex
p(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c
/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csgn(I/(exp(2*I*(f*x+e))+1))*n)*exp(6*I*f*
x)*exp(6*I*e)+6*2^n*c^n/((exp(2*I*(f*x+e))+1)^n)*B*n^2*exp(-1/2*I*Pi*csgn(I
*c/(exp(2*I*(f*x+e))+1))^3*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2
*csgn(I*c)*n)*exp(1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I
*(f*x+e))+1))*n)*exp(-1/2*I*Pi*csgn(I*c/(exp(2*I*(f*x+e))+1))*csgn(I*c)*csg
n(I/(exp(2*I*(f*x+e))+1))*n)*exp(6*I*f*x)*exp(6*I*e))
```

Maxima [B] time = 2.70683, size = 1435, normalized size = 9.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
```

```
orithm="maxima")
```

```
[Out] (((8*A + 8*I*B)*a^3*c^n*n^2 + 48*A*a^3*c^n*n + (72*A - 72*I*B)*a^3*c^n)*2^n
*cos(-2*f*x + n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 2*e) + ((
4*A + 4*I*B)*a^3*c^n*n^3 + (32*A + 8*I*B)*a^3*c^n*n^2 + (84*A - 36*I*B)*a^3
*c^n*n + (72*A - 72*I*B)*a^3*c^n)*2^n*cos(-4*f*x + n*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e) + 1) - 4*e) + ((4*A - 4*I*B)*a^3*c^n*n^3 + (24*A - 24*
I*B)*a^3*c^n*n^2 + (44*A - 44*I*B)*a^3*c^n*n + (24*A - 24*I*B)*a^3*c^n)*2^n
*cos(-6*f*x + n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 6*e) + ((
8*A + 8*I*B)*a^3*c^n*n + (24*A - 24*I*B)*a^3*c^n)*2^n*cos(n*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e) + 1)) - 8*((I*A - B)*a^3*c^n*n^2 + 6*I*A*a^3*c^
n*n + 9*(I*A + B)*a^3*c^n)*2^n*sin(-2*f*x + n*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e) + 1) - 2*e) - 4*((I*A - B)*a^3*c^n*n^3 + 2*(4*I*A - B)*a^3*c^
n*n^2 + 3*(7*I*A + 3*B)*a^3*c^n*n + 18*(I*A + B)*a^3*c^n)*2^n*sin(-4*f*x +
n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 4*e) - 4*((I*A + B)*a^3
*c^n*n^3 + 6*(I*A + B)*a^3*c^n*n^2 + 11*(I*A + B)*a^3*c^n*n + 6*(I*A + B)*a
^3*c^n)*2^n*sin(-6*f*x + n*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)
- 6*e) - 8*((I*A - B)*a^3*c^n*n + 3*(I*A + B)*a^3*c^n)*2^n*sin(n*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)))/(((-I*n^4 - 6*I*n^3 - 11*I*n^2 - 6*
I*n)*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/
2*n)*cos(6*f*x + 6*e) + (-3*I*n^4 - 18*I*n^3 - 33*I*n^2 - 18*I*n)*(cos(2*f*
x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/2*n)*cos(4*f*x
 + 4*e) + (n^4 + 6*n^3 + 11*n^2 + 6*n)*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*
e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/2*n)*sin(6*f*x + 6*e) + 3*(n^4 + 6*n^3 +
11*n^2 + 6*n)*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e)
 + 1)^(1/2*n)*sin(4*f*x + 4*e) + (-I*n^4 - 6*I*n^3 - 11*I*n^2 + (-3*I*n^4 -
 18*I*n^3 - 33*I*n^2 - 18*I*n)*cos(2*f*x + 2*e) + 3*(n^4 + 6*n^3 + 11*n^2 +
 6*n)*sin(2*f*x + 2*e) - 6*I*n)*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 +
2*cos(2*f*x + 2*e) + 1)^(1/2*n))*f)
```

Fricas [B] time = 1.55552, size = 830, normalized size = 5.5

$$\frac{\left((8i\,A-8\,B)a^3n+(24i\,A+24\,B)a^3+\left((4i\,A+4\,B)a^3n^3+(24i\,A+24\,B)a^3n^2+(44i\,A+44\,B)a^3n+(24i\,A+24\,B)a^3\right)e^{(}\cdots}{fn^4+6\,fn^3+11\,fn^2+6\,fn+\left(fn^4+6\,fn^3+11\,fn\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="fricas")
```

```
[Out] ((8*I*A - 8*B)*a^3*n + (24*I*A + 24*B)*a^3 + ((4*I*A + 4*B)*a^3*n^3 + (24*I
*A + 24*B)*a^3*n^2 + (44*I*A + 44*B)*a^3*n + (24*I*A + 24*B)*a^3)*e^(6*I*f*
x + 6*I*e) + ((4*I*A - 4*B)*a^3*n^3 + (32*I*A - 8*B)*a^3*n^2 + (84*I*A + 36
*B)*a^3*n + (72*I*A + 72*B)*a^3)*e^(4*I*f*x + 4*I*e) + ((8*I*A - 8*B)*a^3*n
^2 + 48*I*A*a^3*n + (72*I*A + 72*B)*a^3)*e^(2*I*f*x + 2*I*e))*(2*c/(e^(2*I*
f*x + 2*I*e) + 1))^n/(f*n^4 + 6*f*n^3 + 11*f*n^2 + 6*f*n + (f*n^4 + 6*f*n^3
 + 11*f*n^2 + 6*f*n)*e^(6*I*f*x + 6*I*e) + 3*(f*n^4 + 6*f*n^3 + 11*f*n^2 +
6*f*n)*e^(4*I*f*x + 4*I*e) + 3*(f*n^4 + 6*f*n^3 + 11*f*n^2 + 6*f*n)*e^(2*I*
f*x + 2*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(fx+e)+A)(ia\tan(fx+e)+a)^3(-ic\tan(fx+e)+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3*(-I*c*tan(f*x + e)
+ c)^n, x)
```

3.690 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^6\,dx$

Optimal. Leaf size=135

$$\frac{a^3c^6(5B+iA)(1-i\tan(e+fx))^8}{8f}-\frac{4a^3c^6(2B+iA)(1-i\tan(e+fx))^7}{7f}+\frac{2a^3c^6(B+iA)(1-i\tan(e+fx))^6}{3f}-\frac{a^3Bc^6(1-$$

```
[Out] (2*a^3*(I*A + B)*c^6*(1 - I*Tan[e + f*x])^6)/(3*f) - (4*a^3*(I*A + 2*B)*c^6
*(1 - I*Tan[e + f*x])^7)/(7*f) + (a^3*(I*A + 5*B)*c^6*(1 - I*Tan[e + f*x])^
8)/(8*f) - (a^3*B*c^6*(1 - I*Tan[e + f*x])^9)/(9*f)
```

Rubi [A] time = 0.202544, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3c^6(5B+iA)(1-i\tan(e+fx))^8}{8f}-\frac{4a^3c^6(2B+iA)(1-i\tan(e+fx))^7}{7f}+\frac{2a^3c^6(B+iA)(1-i\tan(e+fx))^6}{3f}-\frac{a^3Bc^6(1-$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^6,
x]
```



```
[Out] (2*a^3*(I*A + B)*c^6*(1 - I*Tan[e + f*x])^6)/(3*f) - (4*a^3*(I*A + 2*B)*c^6
*(1 - I*Tan[e + f*x])^7)/(7*f) + (a^3*(I*A + 5*B)*c^6*(1 - I*Tan[e + f*x])^
8)/(8*f) - (a^3*B*c^6*(1 - I*Tan[e + f*x])^9)/(9*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^6\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^5\,dx,x,\text{t}\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(4a^2(A-iB)(c-icx)^5-\frac{4a^2(A-2iB)(c}{c}\right.\right.}{}$$

$$= \frac{2a^3(iA+B)c^6(1-i\tan(e+fx))^6}{3f} - \frac{4a^3(iA+2B)}{}$$

Mathematica [A] time = 11.34, size = 262, normalized size = 1.94

$$\frac{a^3c^6\sec(e)\sec^9(e+fx)(63(B-3iA)\cos(2e+fx)+63(B-3iA)\cos(fx)-189A\sin(2e+fx)+168A\sin(2e+3fx)-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^6,x]
```

```
[Out] (a^3*c^6*Sec[e]*Sec[e + f*x]^9*(63*((-3*I)*A + B)*Cos[f*x] + 63*((-3*I)*A +
 B)*Cos[2*e + f*x] - (84*I)*A*Cos[2*e + 3*f*x] + 84*B*Cos[2*e + 3*f*x] - (8
4*I)*A*Cos[4*e + 3*f*x] + 84*B*Cos[4*e + 3*f*x] + 189*A*Sin[f*x] + (63*I)*B
*Sin[f*x] - 189*A*Sin[2*e + f*x] - (63*I)*B*Sin[2*e + f*x] + 168*A*Sin[2*e
+ 3*f*x] - 84*A*Sin[4*e + 3*f*x] - (84*I)*B*Sin[4*e + 3*f*x] + 108*A*Sin[4*
e + 5*f*x] + (36*I)*B*Sin[4*e + 5*f*x] + 27*A*Sin[6*e + 7*f*x] + (9*I)*B*Si
n[6*e + 7*f*x] + 3*A*Sin[8*e + 9*f*x] + I*B*Sin[8*e + 9*f*x]))/(1008*f)
```

Maple [A] time = 0.012, size = 193, normalized size = 1.4

$$\frac{c^6a^3}{f}\left(-iB\left(\tan\left(fx+e\right)\right)^3+\frac{i}{8}A\left(\tan\left(fx+e\right)\right)^8-\frac{5\,i}{4}A\left(\tan\left(fx+e\right)\right)^4-\frac{3\,B\left(\tan\left(fx+e\right)\right)^8}{8}-\frac{i}{6}A\left(\tan\left(fx+e\right)\right)^6-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^6,x)
```

```
[Out] 1/f*c^6*a^3*(-I*B*tan(f*x+e)^3+1/8*I*A*tan(f*x+e)^8-5/4*I*A*tan(f*x+e)^4-3/
8*B*tan(f*x+e)^8-1/6*I*A*tan(f*x+e)^6-3/7*A*tan(f*x+e)^7+1/9*I*B*tan(f*x+e)
^9-5/6*B*tan(f*x+e)^6-3/2*I*A*tan(f*x+e)^2-A*tan(f*x+e)^5-I*B*tan(f*x+e)^5-
1/4*B*tan(f*x+e)^4-1/7*I*B*tan(f*x+e)^7-1/3*A*tan(f*x+e)^3+1/2*B*tan(f*x+e)
^2+A*tan(f*x+e))
```

Maxima [A] time = 1.68577, size = 266, normalized size = 1.97

$$\frac{280i\,Ba^3c^6\tan\left(fx+e\right)^9-315\,(-i\,A+3\,B)a^3c^6\tan\left(fx+e\right)^8-(1080\,A+360i\,B)a^3c^6\tan\left(fx+e\right)^7-420\,(i\,A+5\,B)a^3c^6 \cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^6,x, alg
orithm="maxima")
```

```
[Out] 1/2520*(280*I*B*a^3*c^6*tan(f*x + e)^9 - 315*(-I*A + 3*B)*a^3*c^6*tan(f*x +
 e)^8 - (1080*A + 360*I*B)*a^3*c^6*tan(f*x + e)^7 - 420*(I*A + 5*B)*a^3*c^6
*tan(f*x + e)^6 - (2520*A + 2520*I*B)*a^3*c^6*tan(f*x + e)^5 - 630*(5*I*A +
 B)*a^3*c^6*tan(f*x + e)^4 - (840*A + 2520*I*B)*a^3*c^6*tan(f*x + e)^3 - 12
60*(3*I*A - B)*a^3*c^6*tan(f*x + e)^2 + 2520*A*a^3*c^6*tan(f*x + e))/f
```

Fricas [A] time = 1.2893, size = 586, normalized size = 4.34

$$\frac{(2688i\,A+2688\,B)a^3c^6e^{(6i\,fx+6i\,e)}+(3456i\,A-1152\,B)a^3c^6e^{(4i\,fx+4i\,e)}+(864i\,A-288\,B)a^3c^6e^{(2i\,fx+2 \cdots}}{63\left(fe^{(18i\,fx+18i\,e)}+9\,fe^{(16i\,fx+16i\,e)}+36\,fe^{(14i\,fx+14i\,e)}+84\,fe^{(12i\,fx+12i\,e)}+126\,fe^{(10i\,fx+10i\,e)}+126\,fe^{(8i\,fx+8i\,e)}+84\,fe^{(6i \cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^6,x, alg
orithm="fricas")
```

```
[Out] 1/63*((2688*I*A + 2688*B)*a^3*c^6*e^(6*I*f*x + 6*I*e) + (3456*I*A - 1152*B)
*a^3*c^6*e^(4*I*f*x + 4*I*e) + (864*I*A - 288*B)*a^3*c^6*e^(2*I*f*x + 2*I*e
) + (96*I*A - 32*B)*a^3*c^6)/(f*e^(18*I*f*x + 18*I*e) + 9*f*e^(16*I*f*x + 1
6*I*e) + 36*f*e^(14*I*f*x + 14*I*e) + 84*f*e^(12*I*f*x + 12*I*e) + 126*f*e^
```

```
(10*I*f*x + 10*I*e) + 126*f*e^(8*I*f*x + 8*I*e) + 84*f*e^(6*I*f*x + 6*I*e)
+ 36*f*e^(4*I*f*x + 4*I*e) + 9*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**6,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.64786, size = 344, normalized size = 2.55

$$\frac{2688i\,Aa^3c^6e^{\left(6i\,fx+6i\,e\right)} + 2688\,Ba^3c^6e^{\left(6i\,fx+6i\,e\right)} + 3456i\,Aa^3c^6e^{\left(4i\,fx+4i\,e\right)} - 1152\,Ba^3c^6e^{\left(4i\,fx+4i\,e\right)} + 864i\,Aa^3c^6e^{\left(2i\,fx+2i\,e\right)}}{63\left(fe^{\left(18i\,fx+18i\,e\right)} + 9\,fe^{\left(16i\,fx+16i\,e\right)} + 36\,fe^{\left(14i\,fx+14i\,e\right)} + 84\,fe^{\left(12i\,fx+12i\,e\right)} + 126\,fe^{\left(10i\,fx+10i\,e\right)} + 126\,fe^{\left(8i\,fx+8i\,e\right)} + 84\,fe^{\left(\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^6,x, alg
orithm="giac")
```

```
[Out] 1/63*(2688*I*A*a^3*c^6*e^(6*I*f*x + 6*I*e) + 2688*B*a^3*c^6*e^(6*I*f*x + 6*
I*e) + 3456*I*A*a^3*c^6*e^(4*I*f*x + 4*I*e) - 1152*B*a^3*c^6*e^(4*I*f*x + 4
*I*e) + 864*I*A*a^3*c^6*e^(2*I*f*x + 2*I*e) - 288*B*a^3*c^6*e^(2*I*f*x + 2*
I*e) + 96*I*A*a^3*c^6 - 32*B*a^3*c^6)/(f*e^(18*I*f*x + 18*I*e) + 9*f*e^(16*
I*f*x + 16*I*e) + 36*f*e^(14*I*f*x + 14*I*e) + 84*f*e^(12*I*f*x + 12*I*e) +
 126*f*e^(10*I*f*x + 10*I*e) + 126*f*e^(8*I*f*x + 8*I*e) + 84*f*e^(6*I*f*x
+ 6*I*e) + 36*f*e^(4*I*f*x + 4*I*e) + 9*f*e^(2*I*f*x + 2*I*e) + f)
```

3.691 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^5\,dx$

Optimal. Leaf size=135

$$\frac{a^3c^5(5B+iA)(1-i\tan(e+fx))^7}{7f}-\frac{2a^3c^5(2B+iA)(1-i\tan(e+fx))^6}{3f}+\frac{4a^3c^5(B+iA)(1-i\tan(e+fx))^5}{5f}-\frac{a^3Bc^5(1-$$

```
[Out] (4*a^3*(I*A + B)*c^5*(1 - I*Tan[e + f*x])^5)/(5*f) - (2*a^3*(I*A + 2*B)*c^5
*(1 - I*Tan[e + f*x])^6)/(3*f) + (a^3*(I*A + 5*B)*c^5*(1 - I*Tan[e + f*x])^
7)/(7*f) - (a^3*B*c^5*(1 - I*Tan[e + f*x])^8)/(8*f)
```

Rubi [A] time = 0.190149, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3c^5(5B+iA)(1-i\tan(e+fx))^7}{7f}-\frac{2a^3c^5(2B+iA)(1-i\tan(e+fx))^6}{3f}+\frac{4a^3c^5(B+iA)(1-i\tan(e+fx))^5}{5f}-\frac{a^3Bc^5(1-$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^5,
x]
```

```
[Out] (4*a^3*(I*A + B)*c^5*(1 - I*Tan[e + f*x])^5)/(5*f) - (2*a^3*(I*A + 2*B)*c^5
*(1 - I*Tan[e + f*x])^6)/(3*f) + (a^3*(I*A + 5*B)*c^5*(1 - I*Tan[e + f*x])^
7)/(7*f) - (a^3*B*c^5*(1 - I*Tan[e + f*x])^8)/(8*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^5\,dx = \frac{(ac)\operatorname{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^4\,dx,x,\text{t}\ldots\right.}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int \left(4a^2(A-iB)(c-icx)^4-\frac{4a^2(A-2iB)(c\ldots}{c}\right.\right.}{\ldots}$$

$$= \frac{4a^3(iA+B)c^5(1-i\tan(e+fx))^5}{5f}-\frac{2a^3(iA+2B)\ldots}{\ldots}$$

Mathematica [A] time = 10.4736, size = 215, normalized size = 1.59

$$\frac{a^3c^5\sec(e)\sec^8(e+fx)(70(B-iA)\cos(e+2fx)+35(B-4iA)\cos(e)+154A\sin(e+2fx)-70A\sin(3e+2fx)+112\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^5,x]
```

```
[Out] (a^3*c^5*Sec[e]*Sec[e + f*x]^8*(35*((-4*I)*A + B)*Cos[e] + 70*((-I)*A + B)*
Cos[e + 2*f*x] - (70*I)*A*Cos[3*e + 2*f*x] + 70*B*Cos[3*e + 2*f*x] - 140*A*
Sin[e] - (35*I)*B*Sin[e] + 154*A*Sin[e + 2*f*x] - (14*I)*B*Sin[e + 2*f*x] -
 70*A*Sin[3*e + 2*f*x] - (70*I)*B*Sin[3*e + 2*f*x] + 112*A*Sin[3*e + 4*f*x]
 + (28*I)*B*Sin[3*e + 4*f*x] + 32*A*Sin[5*e + 6*f*x] + (8*I)*B*Sin[5*e + 6*
f*x] + 4*A*Sin[7*e + 8*f*x] + I*B*Sin[7*e + 8*f*x]))/(840*f)
```

Maple [A] time = 0.012, size = 169, normalized size = 1.3

$$\frac{a^3c^5}{f}\left(-\frac{2i}{7}B\left(\tan\left(fx+e\right)\right)^7-\frac{B\left(\tan\left(fx+e\right)\right)^8}{8}-\frac{i}{3}A\left(\tan\left(fx+e\right)\right)^6-\frac{A\left(\tan\left(fx+e\right)\right)^7}{7}-\frac{4i}{5}B\left(\tan\left(fx+e\right)\right)^5-\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] 1/f*a^3*c^5*(-2/7*I*B*tan(f*x+e)^7-1/8*B*tan(f*x+e)^8-1/3*I*A*tan(f*x+e)^6-
1/7*A*tan(f*x+e)^7-4/5*I*B*tan(f*x+e)^5-1/6*B*tan(f*x+e)^6-I*A*tan(f*x+e)^4
-1/5*A*tan(f*x+e)^5-2/3*I*B*tan(f*x+e)^3+1/4*B*tan(f*x+e)^4-I*A*tan(f*x+e)^
2+1/3*A*tan(f*x+e)^3+1/2*B*tan(f*x+e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.70261, size = 230, normalized size = 1.7

$$-\frac{105\,Ba^3c^5\tan\left(fx+e\right)^8+(120\,A+240i\,B)a^3c^5\tan\left(fx+e\right)^7-140\,(-2i\,A-B)a^3c^5\tan\left(fx+e\right)^6+(168\,A+672i\,B)a^3\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x, alg
orithm="maxima")
```

```
[Out] -1/840*(105*B*a^3*c^5*tan(f*x + e)^8 + (120*A + 240*I*B)*a^3*c^5*tan(f*x +
e)^7 - 140*(-2*I*A - B)*a^3*c^5*tan(f*x + e)^6 + (168*A + 672*I*B)*a^3*c^5*
tan(f*x + e)^5 - 210*(-4*I*A + B)*a^3*c^5*tan(f*x + e)^4 - (280*A - 560*I*B
)*a^3*c^5*tan(f*x + e)^3 - 420*(-2*I*A + B)*a^3*c^5*tan(f*x + e)^2 - 840*A*
a^3*c^5*tan(f*x + e))/f
```

Fricas [A] time = 1.29634, size = 547, normalized size = 4.05

$$\frac{(2688i\,A+2688\,B)a^3c^5e^{(6i\,fx+6i\,e)}+(3584i\,A-896\,B)a^3c^5e^{(4i\,fx+4i\,e)}+(1024i\,A-256\,B)a^3c^5e^{(2i\,fx+2i\,e)}+(128i\cdots}{105\left(fe^{(16i\,fx+16i\,e)}+8\,fe^{(14i\,fx+14i\,e)}+28\,fe^{(12i\,fx+12i\,e)}+56\,fe^{(10i\,fx+10i\,e)}+70\,fe^{(8i\,fx+8i\,e)}+56\,fe^{(6i\,fx+6i\,e)}+28\,fe^{(4i\,fx+\cdots}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x, alg
orithm="fricas")
```

```
[Out] 1/105*((2688*I*A + 2688*B)*a^3*c^5*e^(6*I*f*x + 6*I*e) + (3584*I*A - 896*B)
*a^3*c^5*e^(4*I*f*x + 4*I*e) + (1024*I*A - 256*B)*a^3*c^5*e^(2*I*f*x + 2*I*
e) + (128*I*A - 32*B)*a^3*c^5)/(f*e^(16*I*f*x + 16*I*e) + 8*f*e^(14*I*f*x +
 14*I*e) + 28*f*e^(12*I*f*x + 12*I*e) + 56*f*e^(10*I*f*x + 10*I*e) + 70*f*e
^(8*I*f*x + 8*I*e) + 56*f*e^(6*I*f*x + 6*I*e) + 28*f*e^(4*I*f*x + 4*I*e) +
```

```
8*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.41563, size = 327, normalized size = 2.42

$$\frac{2688i\,Aa^3c^5e^{(6i\,fx+6i\,e)} + 2688\,Ba^3c^5e^{(6i\,fx+6i\,e)} + 3584i\,Aa^3c^5e^{(4i\,fx+4i\,e)} - 896\,Ba^3c^5e^{(4i\,fx+4i\,e)} + 1024i\,Aa^3c^5e^{(2i\,fx+2i\,e)} -}{105\left(fe^{(16i\,fx+16i\,e)} + 8\,fe^{(14i\,fx+14i\,e)} + 28\,fe^{(12i\,fx+12i\,e)} + 56\,fe^{(10i\,fx+10i\,e)} + 70\,fe^{(8i\,fx+8i\,e)} + 56\,fe^{(6i\,fx+6i\,e)} +\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5,x, alg
orithm="giac")
```

```
[Out] 1/105*(2688*I*A*a^3*c^5*e^(6*I*f*x + 6*I*e) + 2688*B*a^3*c^5*e^(6*I*f*x + 6
*I*e) + 3584*I*A*a^3*c^5*e^(4*I*f*x + 4*I*e) - 896*B*a^3*c^5*e^(4*I*f*x + 4
*I*e) + 1024*I*A*a^3*c^5*e^(2*I*f*x + 2*I*e) - 256*B*a^3*c^5*e^(2*I*f*x + 2
*I*e) + 128*I*A*a^3*c^5 - 32*B*a^3*c^5)/(f*e^(16*I*f*x + 16*I*e) + 8*f*e^(1
4*I*f*x + 14*I*e) + 28*f*e^(12*I*f*x + 12*I*e) + 56*f*e^(10*I*f*x + 10*I*e)
 + 70*f*e^(8*I*f*x + 8*I*e) + 56*f*e^(6*I*f*x + 6*I*e) + 28*f*e^(4*I*f*x +
4*I*e) + 8*f*e^(2*I*f*x + 2*I*e) + f)
```

3.692 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^4\,dx$

Optimal. Leaf size=132

$$\frac{a^3c^4(5B+iA)(1-i\tan(e+fx))^6}{6f}-\frac{4a^3c^4(2B+iA)(1-i\tan(e+fx))^5}{5f}+\frac{a^3c^4(B+iA)(1-i\tan(e+fx))^4}{f}-\frac{a^3Bc^4(1-i$$

```
[Out] (a^3*(I*A + B)*c^4*(1 - I*Tan[e + f*x])^4)/f - (4*a^3*(I*A + 2*B)*c^4*(1 -
I*Tan[e + f*x])^5)/(5*f) + (a^3*(I*A + 5*B)*c^4*(1 - I*Tan[e + f*x])^6)/(6*
f) - (a^3*B*c^4*(1 - I*Tan[e + f*x])^7)/(7*f)
```

Rubi [A] time = 0.178058, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3c^4(5B+iA)(1-i\tan(e+fx))^6}{6f}-\frac{4a^3c^4(2B+iA)(1-i\tan(e+fx))^5}{5f}+\frac{a^3c^4(B+iA)(1-i\tan(e+fx))^4}{f}-\frac{a^3Bc^4(1-i$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4,
x]
```

```
[Out] (a^3*(I*A + B)*c^4*(1 - I*Tan[e + f*x])^4)/f - (4*a^3*(I*A + 2*B)*c^4*(1 -
I*Tan[e + f*x])^5)/(5*f) + (a^3*(I*A + 5*B)*c^4*(1 - I*Tan[e + f*x])^6)/(6*
f) - (a^3*B*c^4*(1 - I*Tan[e + f*x])^7)/(7*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^4\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^3\,dx,x,\mathrm{t}\right.}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(4a^2(A-iB)(c-icx)^3-\frac{4a^2(A-2iB)(c}{c}\right.\right.}{}$$

$$= \frac{a^3(iA+B)c^4(1-i\tan(e+fx))^4}{f} - \frac{4a^3(iA+2B)c}{}$$

Mathematica [A] time = 7.02557, size = 172, normalized size = 1.3

$$\frac{a^3c^4\sec(e)\sec^7(e+fx)(70(B-iA)\cos(2e+fx)+70(B-iA)\cos(fx)-70A\sin(2e+fx)+147A\sin(2e+3fx)+49A}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^4,x]
```

```
[Out] (a^3*c^4*Sec[e]*Sec[e + f*x]^7*(70*((-I)*A + B)*Cos[f*x] + 70*((-I)*A + B)*
Cos[2*e + f*x] + 175*A*Sin[f*x] - (35*I)*B*Sin[f*x] - 70*A*Sin[2*e + f*x] -
 (70*I)*B*Sin[2*e + f*x] + 147*A*Sin[2*e + 3*f*x] + (21*I)*B*Sin[2*e + 3*f*
x] + 49*A*Sin[4*e + 5*f*x] + (7*I)*B*Sin[4*e + 5*f*x] + 7*A*Sin[6*e + 7*f*x
] + I*B*Sin[6*e + 7*f*x]))/(840*f)
```

Maple [A] time = 0.012, size = 147, normalized size = 1.1

$$\frac{a^3c^4}{f}\left(-\frac{i}{7}B\left(\tan\left(fx+e\right)\right)^7-\frac{i}{6}A\left(\tan\left(fx+e\right)\right)^6-\frac{2i}{5}B\left(\tan\left(fx+e\right)\right)^5+\frac{B\left(\tan\left(fx+e\right)\right)^6}{6}-\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^4+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/f*a^3*c^4*(-1/7*I*B*tan(f*x+e)^7-1/6*I*A*tan(f*x+e)^6-2/5*I*B*tan(f*x+e)^
5+1/6*B*tan(f*x+e)^6-1/2*I*A*tan(f*x+e)^4+1/5*A*tan(f*x+e)^5-1/3*I*B*tan(f*
x+e)^3+1/2*B*tan(f*x+e)^4-1/2*I*A*tan(f*x+e)^2+2/3*A*tan(f*x+e)^3+1/2*B*tan
(f*x+e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.676, size = 204, normalized size = 1.55

$$\frac{-60i\,Ba^3c^4\tan\left(fx+e\right)^7-70\,(i\,A-B)a^3c^4\tan\left(fx+e\right)^6+(84\,A-168i\,B)a^3c^4\tan\left(fx+e\right)^5-210\,(i\,A-B)a^3c^4\tan\left(f\right.}{420\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, alg
orithm="maxima")
```

```
[Out] 1/420*(-60*I*B*a^3*c^4*tan(f*x + e)^7 - 70*(I*A - B)*a^3*c^4*tan(f*x + e)^6
 + (84*A - 168*I*B)*a^3*c^4*tan(f*x + e)^5 - 210*(I*A - B)*a^3*c^4*tan(f*x
+ e)^4 + (280*A - 140*I*B)*a^3*c^4*tan(f*x + e)^3 - 210*(I*A - B)*a^3*c^4*t
an(f*x + e)^2 + 420*A*a^3*c^4*tan(f*x + e))/f
```

Fricas [A] time = 1.28456, size = 506, normalized size = 3.83

$$\frac{(1680i\,A+1680\,B)a^3c^4e^{(6i\,fx+6i\,e)}+(2352i\,A-336\,B)a^3c^4e^{(4i\,fx+4i\,e)}+(784i\,A-112\,B)a^3c^4e^{(2i\,fx+2i\,e)}+(112i\,A-16\,B)}{105\left(fe^{(14i\,fx+14i\,e)}+7\,fe^{(12i\,fx+12i\,e)}+21\,fe^{(10i\,fx+10i\,e)}+35\,fe^{(8i\,fx+8i\,e)}+35\,fe^{(6i\,fx+6i\,e)}+21\,fe^{(4i\,fx+4i\,e)}+7\,fe^{(2i\,fx+2i\,e)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, alg
orithm="fricas")
```

```
[Out] 1/105*((1680*I*A + 1680*B)*a^3*c^4*e^(6*I*f*x + 6*I*e) + (2352*I*A - 336*B)
*a^3*c^4*e^(4*I*f*x + 4*I*e) + (784*I*A - 112*B)*a^3*c^4*e^(2*I*f*x + 2*I*e
) + (112*I*A - 16*B)*a^3*c^4)/(f*e^(14*I*f*x + 14*I*e) + 7*f*e^(12*I*f*x +
12*I*e) + 21*f*e^(10*I*f*x + 10*I*e) + 35*f*e^(8*I*f*x + 8*I*e) + 35*f*e^(6
*I*f*x + 6*I*e) + 21*f*e^(4*I*f*x + 4*I*e) + 7*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 107.986, size = 270, normalized size = 2.05

$$\frac{\frac{(16iAa^3c^4+16Ba^3c^4)e^{-8ie}e^{6ifx}}{f}+\frac{(112iAa^3c^4-16Ba^3c^4)e^{-10ie}e^{4ifx}}{5f}+\frac{(112iAa^3c^4-16Ba^3c^4)e^{-12ie}e^{2ifx}}{15f}+\frac{(112iAa^3c^4-16Ba^3c^4)e^{-14ie}}{105f}}{e^{14ifx}+7e^{-2ie}e^{12ifx}+21e^{-4ie}e^{10ifx}+35e^{-6ie}e^{8ifx}+35e^{-8ie}e^{6ifx}+21e^{-10ie}e^{4ifx}+7e^{-12ie}e^{2ifx}+e^{-14ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] ((16*I*A*a**3*c**4 + 16*B*a**3*c**4)*exp(-8*I*e)*exp(6*I*f*x)/f + (112*I*A*
a**3*c**4 - 16*B*a**3*c**4)*exp(-10*I*e)*exp(4*I*f*x)/(5*f) + (112*I*A*a**3
*c**4 - 16*B*a**3*c**4)*exp(-12*I*e)*exp(2*I*f*x)/(15*f) + (112*I*A*a**3*c*
*4 - 16*B*a**3*c**4)*exp(-14*I*e)/(105*f))/(exp(14*I*f*x) + 7*exp(-2*I*e)*e
xp(12*I*f*x) + 21*exp(-4*I*e)*exp(10*I*f*x) + 35*exp(-6*I*e)*exp(8*I*f*x) +
 35*exp(-8*I*e)*exp(6*I*f*x) + 21*exp(-10*I*e)*exp(4*I*f*x) + 7*exp(-12*I*e
)*exp(2*I*f*x) + exp(-14*I*e))
```

Giac [B] time = 2.08271, size = 309, normalized size = 2.34

$$\frac{1680i\,Aa^3c^4e^{(6i\,fx+6i\,e)}+1680\,Ba^3c^4e^{(6i\,fx+6i\,e)}+2352i\,Aa^3c^4e^{(4i\,fx+4i\,e)}-336\,Ba^3c^4e^{(4i\,fx+4i\,e)}+784i\,Aa^3c^4e^{(2i\,fx+2i\,e)}-}{105\left(fe^{(14i\,fx+14i\,e)}+7\,fe^{(12i\,fx+12i\,e)}+21\,fe^{(10i\,fx+10i\,e)}+35\,fe^{(8i\,fx+8i\,e)}+35\,fe^{(6i\,fx+6i\,e)}+21\,fe^{(4i\,fx}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4,x, alg
orithm="giac")
```

```
[Out] 1/105*(1680*I*A*a^3*c^4*e^(6*I*f*x + 6*I*e) + 1680*B*a^3*c^4*e^(6*I*f*x + 6
*I*e) + 2352*I*A*a^3*c^4*e^(4*I*f*x + 4*I*e) - 336*B*a^3*c^4*e^(4*I*f*x + 4
*I*e) + 784*I*A*a^3*c^4*e^(2*I*f*x + 2*I*e) - 112*B*a^3*c^4*e^(2*I*f*x + 2*
I*e) + 112*I*A*a^3*c^4 - 16*B*a^3*c^4)/(f*e^(14*I*f*x + 14*I*e) + 7*f*e^(12
*I*f*x + 12*I*e) + 21*f*e^(10*I*f*x + 10*I*e) + 35*f*e^(8*I*f*x + 8*I*e) +
35*f*e^(6*I*f*x + 6*I*e) + 21*f*e^(4*I*f*x + 4*I*e) + 7*f*e^(2*I*f*x + 2*I*
e) + f)
```

3.693 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^3\,dx$

Optimal. Leaf size=84

$$\frac{a^3Ac^3\tan^5(e+fx)}{5f}+\frac{2a^3Ac^3\tan^3(e+fx)}{3f}+\frac{a^3Ac^3\tan(e+fx)}{f}+\frac{a^3Bc^3\sec^6(e+fx)}{6f}$$

```
[Out] (a^3*B*c^3*Sec[e + f*x]^6)/(6*f) + (a^3*A*c^3*Tan[e + f*x])/f + (2*a^3*A*c^
3*Tan[e + f*x]^3)/(3*f) + (a^3*A*c^3*Tan[e + f*x]^5)/(5*f)
```

Rubi [A] time = 0.12589, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {3588, 73, 641, 194}

$$\frac{a^3Ac^3\tan^5(e+fx)}{5f}+\frac{2a^3Ac^3\tan^3(e+fx)}{3f}+\frac{a^3Ac^3\tan(e+fx)}{f}+\frac{a^3Bc^3\sec^6(e+fx)}{6f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3,
x]
```

```
[Out] (a^3*B*c^3*Sec[e + f*x]^6)/(6*f) + (a^3*A*c^3*Tan[e + f*x])/f + (2*a^3*A*c^
3*Tan[e + f*x]^3)/(3*f) + (a^3*A*c^3*Tan[e + f*x]^5)/(5*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^3\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^2\,dx,x,\text{t}\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int (A+Bx)\left(ac+acx^2\right)^2\,dx,x,\tan(e\right.}{f}$$

$$= \frac{a^3Bc^3\sec^6(e+fx)}{6f} + \frac{(aAc)\,\text{Subst}\left(\int \left(ac+acx^2\right)\right.}{f}$$

$$= \frac{a^3Bc^3\sec^6(e+fx)}{6f} + \frac{(aAc)\,\text{Subst}\left(\int \left(a^2c^2+2a^2\right.\right.}{}$$

$$= \frac{a^3Bc^3\sec^6(e+fx)}{6f} + \frac{a^3Ac^3\tan(e+fx)}{f} + \frac{2a^3Ac}{}$$

Mathematica [A] time = 0.259436, size = 65, normalized size = 0.77

$$\frac{a^3Ac^3\left(\frac{1}{5}\tan^5(e+fx)+\frac{2}{3}\tan^3(e+fx)+\tan(e+fx)\right)}{f}+\frac{a^3Bc^3\sec^6(e+fx)}{6f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^3,x]
```

```
[Out] (a^3*B*c^3*Sec[e + f*x]^6)/(6*f) + (a^3*A*c^3*(Tan[e + f*x] + (2*Tan[e + f*
x]^3)/3 + Tan[e + f*x]^5/5))/f
```

Maple [A] time = 0.012, size = 75, normalized size = 0.9

$$\frac{a^3c^3}{f}\left(\frac{B\left(\tan\left(fx+e\right)\right)^6}{6}+\frac{A\left(\tan\left(fx+e\right)\right)^5}{5}+\frac{B\left(\tan\left(fx+e\right)\right)^4}{2}+\frac{2A\left(\tan\left(fx+e\right)\right)^3}{3}+\frac{B\left(\tan\left(fx+e\right)\right)^2}{2}+A\tan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/f*a^3*c^3*(1/6*B*tan(f*x+e)^6+1/5*A*tan(f*x+e)^5+1/2*B*tan(f*x+e)^4+2/3*A
*tan(f*x+e)^3+1/2*B*tan(f*x+e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.67341, size = 143, normalized size = 1.7

$$\frac{5\,Ba^3c^3\tan\left(fx+e\right)^6+6\,Aa^3c^3\tan\left(fx+e\right)^5+15\,Ba^3c^3\tan\left(fx+e\right)^4+20\,Aa^3c^3\tan\left(fx+e\right)^3+15\,Ba^3c^3\tan\left(fx+e\right.}{30\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] 1/30*(5*B*a^3*c^3*tan(f*x + e)^6 + 6*A*a^3*c^3*tan(f*x + e)^5 + 15*B*a^3*c^
3*tan(f*x + e)^4 + 20*A*a^3*c^3*tan(f*x + e)^3 + 15*B*a^3*c^3*tan(f*x + e)^
2 + 30*A*a^3*c^3*tan(f*x + e))/f
```

Fricas [C] time = 1.35219, size = 420, normalized size = 5.

$$\frac{(160i\,A+160\,B)a^3c^3e^{\left(6i\,fx+6i\,e\right)}+240i\,Aa^3c^3e^{\left(4i\,fx+4i\,e\right)}+96i\,Aa^3c^3e^{\left(2i\,fx+2i\,e\right)}+16i\,Aa^3c^3}{15\left(fe^{\left(12i\,fx+12i\,e\right)}+6\,fe^{\left(10i\,fx+10i\,e\right)}+15\,fe^{\left(8i\,fx+8i\,e\right)}+20\,fe^{\left(6i\,fx+6i\,e\right)}+15\,fe^{\left(4i\,fx+4i\,e\right)}+6\,fe^{\left(2i\,fx+2i\,e\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/15*((160*I*A + 160*B)*a^3*c^3*e^(6*I*f*x + 6*I*e) + 240*I*A*a^3*c^3*e^(4*
I*f*x + 4*I*e) + 96*I*A*a^3*c^3*e^(2*I*f*x + 2*I*e) + 16*I*A*a^3*c^3)/(f*e^
(12*I*f*x + 12*I*e) + 6*f*e^(10*I*f*x + 10*I*e) + 15*f*e^(8*I*f*x + 8*I*e)
+ 20*f*e^(6*I*f*x + 6*I*e) + 15*f*e^(4*I*f*x + 4*I*e) + 6*f*e^(2*I*f*x + 2*
I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] Timed out
```

Giac [B] time = 2.64689, size = 1071, normalized size = 12.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] 1/30*(5*B*a^3*c^3*tan(f*x)^6*tan(e)^6 - 30*A*a^3*c^3*tan(f*x)^6*tan(e)^5 -
30*A*a^3*c^3*tan(f*x)^5*tan(e)^6 + 15*B*a^3*c^3*tan(f*x)^6*tan(e)^4 + 15*B*
a^3*c^3*tan(f*x)^4*tan(e)^6 - 20*A*a^3*c^3*tan(f*x)^6*tan(e)^3 + 90*A*a^3*c
^3*tan(f*x)^5*tan(e)^4 + 90*A*a^3*c^3*tan(f*x)^4*tan(e)^5 - 20*A*a^3*c^3*ta
n(f*x)^3*tan(e)^6 + 15*B*a^3*c^3*tan(f*x)^6*tan(e)^2 + 45*B*a^3*c^3*tan(f*x
)^4*tan(e)^4 + 15*B*a^3*c^3*tan(f*x)^2*tan(e)^6 - 6*A*a^3*c^3*tan(f*x)^6*ta
n(e) + 30*A*a^3*c^3*tan(f*x)^5*tan(e)^2 - 180*A*a^3*c^3*tan(f*x)^4*tan(e)^3
 - 180*A*a^3*c^3*tan(f*x)^3*tan(e)^4 + 30*A*a^3*c^3*tan(f*x)^2*tan(e)^5 - 6
*A*a^3*c^3*tan(f*x)*tan(e)^6 + 5*B*a^3*c^3*tan(f*x)^6 + 45*B*a^3*c^3*tan(f*
x)^4*tan(e)^2 + 45*B*a^3*c^3*tan(f*x)^2*tan(e)^4 + 5*B*a^3*c^3*tan(e)^6 + 6
*A*a^3*c^3*tan(f*x)^5 - 30*A*a^3*c^3*tan(f*x)^4*tan(e) + 180*A*a^3*c^3*tan(
f*x)^3*tan(e)^2 + 180*A*a^3*c^3*tan(f*x)^2*tan(e)^3 - 30*A*a^3*c^3*tan(f*x)
*tan(e)^4 + 6*A*a^3*c^3*tan(e)^5 + 15*B*a^3*c^3*tan(f*x)^4 + 45*B*a^3*c^3*t
an(f*x)^2*tan(e)^2 + 15*B*a^3*c^3*tan(e)^4 + 20*A*a^3*c^3*tan(f*x)^3 - 90*A
```

```
*a^3*c^3*tan(f*x)^2*tan(e) - 90*A*a^3*c^3*tan(f*x)*tan(e)^2 + 20*A*a^3*c^3*
tan(e)^3 + 15*B*a^3*c^3*tan(f*x)^2 + 15*B*a^3*c^3*tan(e)^2 + 30*A*a^3*c^3*t
an(f*x) + 30*A*a^3*c^3*tan(e) + 5*B*a^3*c^3)/(f*tan(f*x)^6*tan(e)^6 - 6*f*t
an(f*x)^5*tan(e)^5 + 15*f*tan(f*x)^4*tan(e)^4 - 20*f*tan(f*x)^3*tan(e)^3 +
15*f*tan(f*x)^2*tan(e)^2 - 6*f*tan(f*x)*tan(e) + f)
```

3.694 $\int (a + ia\tan(e + fx))^3 (A + B\tan(e + fx))(c - ic\tan(e + fx))^2 \, dx$

Optimal. Leaf size=101

$$\frac{a^3c^2(-3B + iA)(1 + i\tan(e + fx))^4}{4f} - \frac{2a^3c^2(-B + iA)(1 + i\tan(e + fx))^3}{3f} + \frac{a^3Bc^2(1 + i\tan(e + fx))^5}{5f}$$

```
[Out] (-2*a^3*(I*A - B)*c^2*(1 + I*Tan[e + f*x])^3)/(3*f) + (a^3*(I*A - 3*B)*c^2*
(1 + I*Tan[e + f*x])^4)/(4*f) + (a^3*B*c^2*(1 + I*Tan[e + f*x])^5)/(5*f)
```

Rubi [A] time = 0.148442, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3c^2(-3B + iA)(1 + i\tan(e + fx))^4}{4f} - \frac{2a^3c^2(-B + iA)(1 + i\tan(e + fx))^3}{3f} + \frac{a^3Bc^2(1 + i\tan(e + fx))^5}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2,
x]
```


```
[Out] (-2*a^3*(I*A - B)*c^2*(1 + I*Tan[e + f*x])^3)/(3*f) + (a^3*(I*A - 3*B)*c^2*
(1 + I*Tan[e + f*x])^4)/(4*f) + (a^3*B*c^2*(1 + I*Tan[e + f*x])^5)/(5*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^2\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)\,dx, x, \tan\right.}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(2(A+iB)c(a+iax)^2 - \frac{(A+3iB)c(a+iax}{a}\right.\right.}{f}$$

$$= -\frac{2a^3(iA-B)c^2(1+i\tan(e+fx))^3}{3f} + \frac{a^3(iA-3B)c}{}$$

Mathematica [A] time = 5.12569, size = 146, normalized size = 1.45

$$\frac{a^3c^2\sec(e)\sec^5(e+fx)(15(B+iA)\cos(2e+fx)+15(B+iA)\cos(fx)-15A\sin(2e+fx)+25A\sin(2e+3fx)+5A\sin}{120f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^2,x]
```

```
[Out] (a^3*c^2*Sec[e]*Sec[e + f*x]^5*(15*(I*A + B)*Cos[f*x] + 15*(I*A + B)*Cos[2*
e + f*x] + 35*A*Sin[f*x] + (5*I)*B*Sin[f*x] - 15*A*Sin[2*e + f*x] + (15*I)*
B*Sin[2*e + f*x] + 25*A*Sin[2*e + 3*f*x] - (5*I)*B*Sin[2*e + 3*f*x] + 5*A*S
in[4*e + 5*f*x] - I*B*Sin[4*e + 5*f*x]))/(120*f)
```

Maple [A] time = 0.011, size = 101, normalized size = 1.

$$\frac{c^2a^3}{f}\left(\frac{i}{5}B\left(\tan\left(fx+e\right)\right)^5+\frac{i}{4}A\left(\tan\left(fx+e\right)\right)^4+\frac{i}{3}B\left(\tan\left(fx+e\right)\right)^3+\frac{B\left(\tan\left(fx+e\right)\right)^4}{4}+\frac{i}{2}A\left(\tan\left(fx+e\right)\right)^2+\frac{A\left(t\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 1/f*c^2*a^3*(1/5*I*B*tan(f*x+e)^5+1/4*I*A*tan(f*x+e)^4+1/3*I*B*tan(f*x+e)^3
+1/4*B*tan(f*x+e)^4+1/2*I*A*tan(f*x+e)^2+1/3*A*tan(f*x+e)^3+1/2*B*tan(f*x+e
```

```
)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.61037, size = 143, normalized size = 1.42

$$\frac{12i Ba^3c^2 \tan\left(fx+e\right)^5 - 15\left(-iA-B\right)a^3c^2 \tan\left(fx+e\right)^4 + \left(20A+20iB\right)a^3c^2 \tan\left(fx+e\right)^3 - 30\left(-iA-B\right)a^3c^2 \tan\left(f\right.}{60f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] 1/60*(12*I*B*a^3*c^2*tan(f*x + e)^5 - 15*(-I*A - B)*a^3*c^2*tan(f*x + e)^4
+ (20*A + 20*I*B)*a^3*c^2*tan(f*x + e)^3 - 30*(-I*A - B)*a^3*c^2*tan(f*x +
e)^2 + 60*A*a^3*c^2*tan(f*x + e))/f
```

Fricas [A] time = 1.38261, size = 417, normalized size = 4.13

$$\frac{\left(120iA+120B\right)a^3c^2e^{\left(6ifx+6ie\right)} + \left(200iA+40B\right)a^3c^2e^{\left(4ifx+4ie\right)} + \left(100iA+20B\right)a^3c^2e^{\left(2ifx+2ie\right)} + \left(20iA+4B\right)a^3c^2}{15\left(fe^{\left(10ifx+10ie\right)} + 5fe^{\left(8ifx+8ie\right)} + 10fe^{\left(6ifx+6ie\right)} + 10fe^{\left(4ifx+4ie\right)} + 5fe^{\left(2ifx+2ie\right)} + f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/15*((120*I*A + 120*B)*a^3*c^2*e^(6*I*f*x + 6*I*e) + (200*I*A + 40*B)*a^3*
c^2*e^(4*I*f*x + 4*I*e) + (100*I*A + 20*B)*a^3*c^2*e^(2*I*f*x + 2*I*e) + (2
0*I*A + 4*B)*a^3*c^2)/(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) +
10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*
e) + f)
```

Sympy [B] time = 36.3931, size = 236, normalized size = 2.34

$$\frac{\frac{\left(8iAa^3c^2+8Ba^3c^2\right)e^{-4ie}e^{6ifx}}{f} + \frac{\left(20iAa^3c^2+4Ba^3c^2\right)e^{-8ie}e^{2ifx}}{3f} + \frac{\left(20iAa^3c^2+4Ba^3c^2\right)e^{-10ie}}{15f} + \frac{\left(40iAa^3c^2+8Ba^3c^2\right)e^{-6ie}e^{4ifx}}{3f}}{e^{10ifx} + 5e^{-2ie}e^{8ifx} + 10e^{-4ie}e^{6ifx} + 10e^{-6ie}e^{4ifx} + 5e^{-8ie}e^{2ifx} + e^{-10ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] ((8*I*A*a**3*c**2 + 8*B*a**3*c**2)*exp(-4*I*e)*exp(6*I*f*x)/f + (20*I*A*a**
3*c**2 + 4*B*a**3*c**2)*exp(-8*I*e)*exp(2*I*f*x)/(3*f) + (20*I*A*a**3*c**2
+ 4*B*a**3*c**2)*exp(-10*I*e)/(15*f) + (40*I*A*a**3*c**2 + 8*B*a**3*c**2)*e
xp(-6*I*e)*exp(4*I*f*x)/(3*f))/(exp(10*I*f*x) + 5*exp(-2*I*e)*exp(8*I*f*x)
+ 10*exp(-4*I*e)*exp(6*I*f*x) + 10*exp(-6*I*e)*exp(4*I*f*x) + 5*exp(-8*I*e)
*exp(2*I*f*x) + exp(-10*I*e))
```

Giac [B] time = 1.71265, size = 274, normalized size = 2.71

$$\frac{120i\,Aa^3c^2e^{\left(6i\,fx+6i\,e\right)}+120\,Ba^3c^2e^{\left(6i\,fx+6i\,e\right)}+200i\,Aa^3c^2e^{\left(4i\,fx+4i\,e\right)}+40\,Ba^3c^2e^{\left(4i\,fx+4i\,e\right)}+100i\,Aa^3c^2e^{\left(2i\,fx+2i\,e\right)}+20\,Ba^3}{15\left(fe^{\left(10i\,fx+10i\,e\right)}+5\,fe^{\left(8i\,fx+8i\,e\right)}+10\,fe^{\left(6i\,fx+6i\,e\right)}+10\,fe^{\left(4i\,fx+4i\,e\right)}+5\,fe^{\left(2i\,fx+2i\,e\right)}+f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/15*(120*I*A*a^3*c^2*e^(6*I*f*x + 6*I*e) + 120*B*a^3*c^2*e^(6*I*f*x + 6*I*
e) + 200*I*A*a^3*c^2*e^(4*I*f*x + 4*I*e) + 40*B*a^3*c^2*e^(4*I*f*x + 4*I*e)
 + 100*I*A*a^3*c^2*e^(2*I*f*x + 2*I*e) + 20*B*a^3*c^2*e^(2*I*f*x + 2*I*e) +
 20*I*A*a^3*c^2 + 4*B*a^3*c^2)/(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x +
8*I*e) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f
*x + 2*I*e) + f)
```

3.695 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))\,dx$

Optimal. Leaf size=61

$$-\frac{a^3c(-B+iA)(1+i\tan(e+fx))^3}{3f}-\frac{a^3Bc(1+i\tan(e+fx))^4}{4f}$$

```
[Out] -(a^3*(I*A - B)*c*(1 + I*Tan[e + f*x])^3)/(3*f) - (a^3*B*c*(1 + I*Tan[e + f
*x])^4)/(4*f)
```

Rubi [A] time = 0.0874857, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$-\frac{a^3c(-B+iA)(1+i\tan(e+fx))^3}{3f}-\frac{a^3Bc(1+i\tan(e+fx))^4}{4f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]),x]
```

```
[Out] -(a^3*(I*A - B)*c*(1 + I*Tan[e + f*x])^3)/(3*f) - (a^3*B*c*(1 + I*Tan[e + f
*x])^4)/(4*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (a+iax)^2(A+Bx)\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left((A+iB)(a+iax)^2 - \frac{iB(a+iax)^3}{a}\right) dx, x,}{f}$$

$$= -\frac{a^3(iA-B)c(1+i\tan(e+fx))^3}{3f} - \frac{a^3Bc(1+i\tan(e}{4f}$$

Mathematica [B] time = 3.61148, size = 161, normalized size = 2.64

$$\frac{a^3c\sec(e)\sec^4(e+fx)(3(B+iA)\cos(e+2fx)+3(B+2iA)\cos(e)+5A\sin(e+2fx)-3A\sin(3e+2fx)+2A\sin(3e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x]),x]
```

```
[Out] (a^3*c*Sec[e]*Sec[e + f*x]^4*(3*((2*I)*A + B)*Cos[e] + 3*(I*A + B)*Cos[e +
2*f*x] + (3*I)*A*Cos[3*e + 2*f*x] + 3*B*Cos[3*e + 2*f*x] - 6*A*Sin[e] + (3*
I)*B*Sin[e] + 5*A*Sin[e + 2*f*x] - I*B*Sin[e + 2*f*x] - 3*A*Sin[3*e + 2*f*x
] + (3*I)*B*Sin[3*e + 2*f*x] + 2*A*Sin[3*e + 4*f*x] - I*B*Sin[3*e + 4*f*x])
)/(12*f)
```

Maple [A] time = 0.012, size = 75, normalized size = 1.2

$$\frac{a^3c}{f}\left(\frac{2i}{3}B\left(\tan\left(fx+e\right)\right)^3 - \frac{B\left(\tan\left(fx+e\right)\right)^4}{4} + iA\left(\tan\left(fx+e\right)\right)^2 - \frac{A\left(\tan\left(fx+e\right)\right)^3}{3} + \frac{B\left(\tan\left(fx+e\right)\right)^2}{2} + A\tan\left(f\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x)
```

```
[Out] 1/f*a^3*c*(2/3*I*B*tan(f*x+e)^3-1/4*B*tan(f*x+e)^4+I*A*tan(f*x+e)^2-1/3*A*t
an(f*x+e)^3+1/2*B*tan(f*x+e)^2+A*tan(f*x+e))
```

Maxima [A] time = 1.65207, size = 99, normalized size = 1.62

$$-\frac{3\,Ba^3c\tan\left(fx+e\right)^4+(4\,A-8i\,B)a^3c\tan\left(fx+e\right)^3-6\,(2i\,A+B)a^3c\tan\left(fx+e\right)^2-12\,Aa^3c\tan\left(fx+e\right)}{12\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] -1/12*(3*B*a^3*c*tan(f*x + e)^4 + (4*A - 8*I*B)*a^3*c*tan(f*x + e)^3 - 6*(2
*I*A + B)*a^3*c*tan(f*x + e)^2 - 12*A*a^3*c*tan(f*x + e))/f
```

Fricas [B] time = 1.32911, size = 358, normalized size = 5.87

$$\frac{(24i\,A+24\,B)a^3ce^{(6i\,fx+6i\,e)}+(48i\,A+24\,B)a^3ce^{(4i\,fx+4i\,e)}+(32i\,A+16\,B)a^3ce^{(2i\,fx+2i\,e)}+(8i\,A+4\,B)a^3c}{3\left(fe^{(8i\,fx+8i\,e)}+4\,fe^{(6i\,fx+6i\,e)}+6\,fe^{(4i\,fx+4i\,e)}+4\,fe^{(2i\,fx+2i\,e)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] 1/3*((24*I*A + 24*B)*a^3*c*e^(6*I*f*x + 6*I*e) + (48*I*A + 24*B)*a^3*c*e^(4
*I*f*x + 4*I*e) + (32*I*A + 16*B)*a^3*c*e^(2*I*f*x + 2*I*e) + (8*I*A + 4*B)
*a^3*c)/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x +
 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [B] time = 50.1462, size = 204, normalized size = 3.34

$$\frac{\frac{\left(8iAa^3c+4Ba^3c\right)e^{-8ie}}{3f}+\frac{\left(8iAa^3c+8Ba^3c\right)e^{-2ie}e^{6ifx}}{f}+\frac{\left(16iAa^3c+8Ba^3c\right)e^{-4ie}e^{4ifx}}{f}+\frac{\left(32iAa^3c+16Ba^3c\right)e^{-6ie}e^{2ifx}}{3f}}{e^{8ifx}+4e^{-2ie}e^{6ifx}+6e^{-4ie}e^{4ifx}+4e^{-6ie}e^{2ifx}+e^{-8ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x)
```

```
[Out] ((8*I*A*a**3*c + 4*B*a**3*c)*exp(-8*I*e)/(3*f) + (8*I*A*a**3*c + 8*B*a**3*c
)*exp(-2*I*e)*exp(6*I*f*x)/f + (16*I*A*a**3*c + 8*B*a**3*c)*exp(-4*I*e)*exp
(4*I*f*x)/f + (32*I*A*a**3*c + 16*B*a**3*c)*exp(-6*I*e)*exp(2*I*f*x)/(3*f))
/(exp(8*I*f*x) + 4*exp(-2*I*e)*exp(6*I*f*x) + 6*exp(-4*I*e)*exp(4*I*f*x) +
4*exp(-6*I*e)*exp(2*I*f*x) + exp(-8*I*e))
```

Giac [B] time = 1.60286, size = 235, normalized size = 3.85

$$\frac{24i\,Aa^3ce^{(6i\,fx+6i\,e)} + 24\,Ba^3ce^{(6i\,fx+6i\,e)} + 48i\,Aa^3ce^{(4i\,fx+4i\,e)} + 24\,Ba^3ce^{(4i\,fx+4i\,e)} + 32i\,Aa^3ce^{(2i\,fx+2i\,e)} + 16\,Ba^3ce^{(2i\,fx+2i\,e)}}{3\left(fe^{(8i\,fx+8i\,e)} + 4\,fe^{(6i\,fx+6i\,e)} + 6\,fe^{(4i\,fx+4i\,e)} + 4\,fe^{(2i\,fx+2i\,e)} + f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] 1/3*(24*I*A*a^3*c*e^(6*I*f*x + 6*I*e) + 24*B*a^3*c*e^(6*I*f*x + 6*I*e) + 48
*I*A*a^3*c*e^(4*I*f*x + 4*I*e) + 24*B*a^3*c*e^(4*I*f*x + 4*I*e) + 32*I*A*a^
3*c*e^(2*I*f*x + 2*I*e) + 16*B*a^3*c*e^(2*I*f*x + 2*I*e) + 8*I*A*a^3*c + 4*
B*a^3*c)/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x
+ 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

3.696 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))\,dx$

Optimal. Leaf size=110

$$-\frac{2a^3(A-iB)\tan(e+fx)}{f}-\frac{4a^3(B+iA)\log(\cos(e+fx))}{f}+4a^3x(A-iB)+\frac{a(B+iA)(a+ia\tan(e+fx))^2}{2f}+\frac{B(a+ia}{}$$

```
[Out] 4*a^3*(A - I*B)*x - (4*a^3*(I*A + B)*Log[Cos[e + f*x]])/f - (2*a^3*(A - I*B
)*Tan[e + f*x])/f + (a*(I*A + B)*(a + I*a*Tan[e + f*x])^2)/(2*f) + (B*(a +
I*a*Tan[e + f*x])^3)/(3*f)
```

Rubi [A] time = 0.093102, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {3527, 3478, 3477, 3475}

$$-\frac{2a^3(A-iB)\tan(e+fx)}{f}-\frac{4a^3(B+iA)\log(\cos(e+fx))}{f}+4a^3x(A-iB)+\frac{a(B+iA)(a+ia\tan(e+fx))^2}{2f}+\frac{B(a+ia}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]),x]
```

```
[Out] 4*a^3*(A - I*B)*x - (4*a^3*(I*A + B)*Log[Cos[e + f*x]])/f - (2*a^3*(A - I*B
)*Tan[e + f*x])/f + (a*(I*A + B)*(a + I*a*Tan[e + f*x])^2)/(2*f) + (B*(a +
I*a*Tan[e + f*x])^3)/(3*f)
```

Rule 3527

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> Simp[(d*(a + b*Tan[e + f*x])^m)/(f*m), x] + Dist
[(b*c + a*d)/b, Int[(a + b*Tan[e + f*x])^m, x], x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0] &&  !LtQ[m, 0]
```

Rule 3478

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(a +
b*Tan[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[2*a, Int[(a + b*Tan[c + d*x
])^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && GtQ[n,
 1]
```

Rule 3477

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^2, x_Symbol] :> Simp[(a^2 - b^2)
*x, x] + (Dist[2*a*b, Int[Tan[c + d*x], x], x] + Simp[(b^2*Tan[c + d*x])/d,
 x]) /; FreeQ[{a, b, c, d}, x]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))\,dx = \frac{B(a+ia\tan(e+fx))^3}{3f} - (-A+iB)\int (a+ia\tan(e+fx))^3\,dx$$

$$= \frac{a(iA+B)(a+ia\tan(e+fx))^2}{2f} + \frac{B(a+ia\tan(e+fx))^3}{3f} + (2a(A-iB))$$

$$= 4a^3(A-iB)x - \frac{2a^3(A-iB)\tan(e+fx)}{f} + \frac{a(iA+B)(a+ia\tan(e+fx)}{2f}$$

$$= 4a^3(A-iB)x - \frac{4a^3(iA+B)\log(\cos(e+fx))}{f} - \frac{2a^3(A-iB)\tan(e+fx}{f}$$

Mathematica [B] time = 3.91998, size = 331, normalized size = 3.01

$$\frac{a^3\sec(e)\sec^3(e+fx)\left(3\cos(fx)\left((-3B-3iA)\log\left(\cos^2(e+fx)\right)+6Afx-iA-6iBfx-3B\right)+3\cos(2e+fx)\left((-3B-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]),x]
```

```
[Out] (a^3*Sec[e]*Sec[e + f*x]^3*(6*A*f*x*Cos[2*e + 3*f*x] - (6*I)*B*f*x*Cos[2*e
+ 3*f*x] + 6*A*f*x*Cos[4*e + 3*f*x] - (6*I)*B*f*x*Cos[4*e + 3*f*x] - (3*I)*
A*Cos[2*e + 3*f*x]*Log[Cos[e + f*x]^2] - 3*B*Cos[2*e + 3*f*x]*Log[Cos[e + f
*x]^2] - (3*I)*A*Cos[4*e + 3*f*x]*Log[Cos[e + f*x]^2] - 3*B*Cos[4*e + 3*f*x
]*Log[Cos[e + f*x]^2] + 3*Cos[f*x]*((-I)*A - 3*B + 6*A*f*x - (6*I)*B*f*x +
((-3*I)*A - 3*B)*Log[Cos[e + f*x]^2]) + 3*Cos[2*e + f*x]*((-I)*A - 3*B + 6*
A*f*x - (6*I)*B*f*x + ((-3*I)*A - 3*B)*Log[Cos[e + f*x]^2]) - 18*A*Sin[f*x]
 + (24*I)*B*Sin[f*x] + 9*A*Sin[2*e + f*x] - (15*I)*B*Sin[2*e + f*x] - 9*A*S
in[2*e + 3*f*x] + (13*I)*B*Sin[2*e + 3*f*x]))/(12*f)
```

Maple [A] time = 0.013, size = 160, normalized size = 1.5

$$\frac{-\frac{i}{3}a^3B\left(\tan\left(fx+e\right)\right)^3}{f}-\frac{\frac{i}{2}a^3A\left(\tan\left(fx+e\right)\right)^2}{f}+\frac{4\,ia^3B\tan\left(fx+e\right)}{f}-\frac{3\,Ba^3\left(\tan\left(fx+e\right)\right)^2}{2\,f}-3\,\frac{Aa^3\tan\left(fx+e\right)}{f}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x)
```

```
[Out] -1/3*I/f*a^3*B*tan(f*x+e)^3-1/2*I/f*a^3*A*tan(f*x+e)^2+4*I/f*a^3*B*tan(f*x+
e)-3/2/f*a^3*B*tan(f*x+e)^2-3/f*a^3*A*tan(f*x+e)+2*I/f*a^3*A*ln(1+tan(f*x+e
)^2)+2/f*a^3*B*ln(1+tan(f*x+e)^2)-4*I/f*a^3*B*arctan(tan(f*x+e))+4/f*a^3*A*
arctan(tan(f*x+e))
```

Maxima [A] time = 1.63728, size = 131, normalized size = 1.19

$$-\frac{2i\,Ba^3\tan\left(fx+e\right)^3+3\,(i\,A+3\,B)a^3\tan\left(fx+e\right)^2-6\left(fx+e\right)(4\,A-4i\,B)a^3+12\,(-i\,A-B)a^3\log\left(\tan\left(fx+e\right)^2+\right.}{6\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x, algorithm="maxima")
```

```
[Out] -1/6*(2*I*B*a^3*tan(f*x + e)^3 + 3*(I*A + 3*B)*a^3*tan(f*x + e)^2 - 6*(f*x
+ e)*(4*A - 4*I*B)*a^3 + 12*(-I*A - B)*a^3*log(tan(f*x + e)^2 + 1) + (18*A
- 24*I*B)*a^3*tan(f*x + e))/f
```

Fricas [A] time = 1.31866, size = 509, normalized size = 4.63

$$\frac{(-24i\,A-48\,B)a^3e^{\left(4i\,fx+4i\,e\right)}+(-42i\,A-66\,B)a^3e^{\left(2i\,fx+2i\,e\right)}+(-18i\,A-26\,B)a^3+\left((-12i\,A-12\,B)a^3e^{\left(6i\,fx+6i\,e\right)}+(-36i\right.}{3\left(fe^{\left(6i\,fx+6i\,e\right)}+3\,fe^{\left(4i\,fx+4i\,e\right)}+3\,fe^{(2\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/3*((-24*I*A - 48*B)*a^3*e^(4*I*f*x + 4*I*e) + (-42*I*A - 66*B)*a^3*e^(2*I
*f*x + 2*I*e) + (-18*I*A - 26*B)*a^3 + ((-12*I*A - 12*B)*a^3*e^(6*I*f*x + 6
*I*e) + (-36*I*A - 36*B)*a^3*e^(4*I*f*x + 4*I*e) + (-36*I*A - 36*B)*a^3*e^(
2*I*f*x + 2*I*e) + (-12*I*A - 12*B)*a^3)*log(e^(2*I*f*x + 2*I*e) + 1))/(f*e
^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [A] time = 10.5045, size = 172, normalized size = 1.56

$$-\frac{4a^3\left(iA+B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{f}+\frac{-\frac{\left(8iAa^3+16Ba^3\right)e^{-2ie}e^{4ifx}}{f}-\frac{\left(14iAa^3+22Ba^3\right)e^{-4ie}e^{2ifx}}{f}-\frac{\left(18iAa^3+26Ba^3\right)e^{-6ie}}{3f}}{e^{6ifx}+3e^{-2ie}e^{4ifx}+3e^{-4ie}e^{2ifx}+e^{-6ie}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e)),x)
```

```
[Out] -4*a**3*(I*A + B)*log(exp(2*I*f*x) + exp(-2*I*e))/f + (-(8*I*A*a**3 + 16*B*
a**3)*exp(-2*I*e)*exp(4*I*f*x)/f - (14*I*A*a**3 + 22*B*a**3)*exp(-4*I*e)*ex
p(2*I*f*x)/f - (18*I*A*a**3 + 26*B*a**3)*exp(-6*I*e)/(3*f))/(exp(6*I*f*x) +
 3*exp(-2*I*e)*exp(4*I*f*x) + 3*exp(-4*I*e)*exp(2*I*f*x) + exp(-6*I*e))
```

Giac [B] time = 1.47258, size = 450, normalized size = 4.09

$$\frac{-12i\,Aa^3e^{\left(6i\,fx+6i\,e\right)}\log\left(e^{\left(2i\,fx+2i\,e\right)}+1\right)-12\,Ba^3e^{\left(6i\,fx+6i\,e\right)}\log\left(e^{\left(2i\,fx+2i\,e\right)}+1\right)-36i\,Aa^3e^{\left(4i\,fx+4i\,e\right)}\log\left(e^{\left(2i\,fx+2i\,e\right)}+1\right)-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/3*(-12*I*A*a^3*e^(6*I*f*x + 6*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - 12*B*a^
3*e^(6*I*f*x + 6*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - 36*I*A*a^3*e^(4*I*f*x
+ 4*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - 36*B*a^3*e^(4*I*f*x + 4*I*e)*log(e^
(2*I*f*x + 2*I*e) + 1) - 36*I*A*a^3*e^(2*I*f*x + 2*I*e)*log(e^(2*I*f*x + 2*
I*e) + 1) - 36*B*a^3*e^(2*I*f*x + 2*I*e)*log(e^(2*I*f*x + 2*I*e) + 1) - 24*
I*A*a^3*e^(4*I*f*x + 4*I*e) - 48*B*a^3*e^(4*I*f*x + 4*I*e) - 42*I*A*a^3*e^(
2*I*f*x + 2*I*e) - 66*B*a^3*e^(2*I*f*x + 2*I*e) - 12*I*A*a^3*log(e^(2*I*f*x
 + 2*I*e) + 1) - 12*B*a^3*log(e^(2*I*f*x + 2*I*e) + 1) - 18*I*A*a^3 - 26*B*
```

```
a^3)/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*
I*e) + f)
```

3.697 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{c-ic\tan(e+fx)}\,dx$

Optimal. Leaf size=119

$$\frac{a^3(A-4iB)\tan(e+fx)}{cf}+\frac{4a^3(A-iB)}{cf(\tan(e+fx)+i)}+\frac{4a^3(2B+iA)\log(\cos(e+fx))}{cf}-\frac{4a^3x(A-2iB)}{c}+\frac{a^3B\tan^2(e+fx)}{2cf}$$

```
[Out] (-4*a^3*(A - (2*I)*B)*x)/c + (4*a^3*(I*A + 2*B)*Log[Cos[e + f*x]])/(c*f) +
(a^3*(A - (4*I)*B)*Tan[e + f*x])/(c*f) + (a^3*B*Tan[e + f*x]^2)/(2*c*f) + (
4*a^3*(A - I*B))/(c*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.17192, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3(A-4iB)\tan(e+fx)}{cf}+\frac{4a^3(A-iB)}{cf(\tan(e+fx)+i)}+\frac{4a^3(2B+iA)\log(\cos(e+fx))}{cf}-\frac{4a^3x(A-2iB)}{c}+\frac{a^3B\tan^2(e+fx)}{2cf}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x]),
x]
```

```
[Out] (-4*a^3*(A - (2*I)*B)*x)/c + (4*a^3*(I*A + 2*B)*Log[Cos[e + f*x]])/(c*f) +
(a^3*(A - (4*I)*B)*Tan[e + f*x])/(c*f) + (a^3*B*Tan[e + f*x]^2)/(2*c*f) + (
4*a^3*(A - I*B))/(c*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{a^2(A-4iB)}{c^2}+\frac{a^2Bx}{c^2}-\frac{4a^2(A-iB)}{c^2(i+x)^2}-\frac{4ia^2(A-2iB)}{c^2(i+x)}\right)dx, x, \tan(e\right.}{f}$$

$$= -\frac{4a^3(A-2iB)x}{c}+\frac{4a^3(iA+2B)\log(\cos(e+fx))}{cf}+\frac{a^3(A-4iB)\tan}{cf}$$

Mathematica [B] time = 9.46192, size = 944, normalized size = 7.93

$$\frac{x\left(-\frac{2A\cos^3(e)}{c}+\frac{4iB\cos^3(e)}{c}+\frac{8iA\sin(e)\cos^2(e)}{c}+\frac{16B\sin(e)\cos^2(e)}{c}+\frac{12A\sin^2(e)\cos(e)}{c}-\frac{24iB\sin^2(e)\cos(e)}{c}+\frac{2A\cos(e)}{c}-\frac{4iB\cos(e)}{c}-\frac{8iA\,s}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x]),x]
```

```
[Out] ((A - I*B)*Cos[2*f*x]*Cos[e + f*x]^4*(((-2*I)*Cos[e])/c - (2*Sin[e])/c)*(a
+ I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A
*Cos[e + f*x] + B*Sin[e + f*x])) + (Cos[e + f*x]^2*((B*Cos[3*e])/(2*c) - ((
I/2)*B*Sin[3*e])/c)*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[
f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x])) + ((A - (2*I)*B)*Co
s[e + f*x]^4*((-4*f*x*Cos[3*e])/c + ((4*I)*f*x*Sin[3*e])/c)*(a + I*a*Tan[e
+ f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x
] + B*Sin[e + f*x])) + ((I*A + 2*B)*Cos[e + f*x]^4*((2*Cos[3*e]*Log[Cos[e +
 f*x]^2])/c - ((2*I)*Log[Cos[e + f*x]^2]*Sin[3*e])/c)*(a + I*a*Tan[e + f*x]
)^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*
Sin[e + f*x])) + (Cos[e + f*x]^3*(Cos[3*e]/c - (I*Sin[3*e])/c)*(A*Sin[f*x]
- (4*I)*B*Sin[f*x])*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[
e/2] - Sin[e/2])*(Cos[e/2] + Sin[e/2])*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e +
 f*x] + B*Sin[e + f*x])) + ((A - I*B)*Cos[e + f*x]^4*((2*Cos[e])/c - ((2*I)
*Sin[e])/c)*Sin[2*f*x]*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(C
os[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x])) + (x*Cos[e + f*x
```

```
]^4*((2*A*Cos[e])/c - ((4*I)*B*Cos[e])/c - (2*A*Cos[e]^3)/c + ((4*I)*B*Cos[
e]^3)/c - ((4*I)*A*Sin[e])/c - (8*B*Sin[e])/c + ((8*I)*A*Cos[e]^2*Sin[e])/c
 + (16*B*Cos[e]^2*Sin[e])/c + (12*A*Cos[e]*Sin[e]^2)/c - ((24*I)*B*Cos[e]*S
in[e]^2)/c - ((8*I)*A*Sin[e]^3)/c - (16*B*Sin[e]^3)/c - (2*A*Sin[e]*Tan[e])
/c + ((4*I)*B*Sin[e]*Tan[e])/c - (2*A*Sin[e]^3*Tan[e])/c + ((4*I)*B*Sin[e]^
3*Tan[e])/c - I*(A - (2*I)*B)*((4*Cos[3*e])/c - ((4*I)*Sin[3*e])/c)*Tan[e])
*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/((Cos[f*x] + I*Sin[f*x])^3*
(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.044, size = 150, normalized size = 1.3

$$\frac{Aa^3\tan\left(fx+e\right)}{cf}-\frac{4\,iBa^3\tan\left(fx+e\right)}{cf}+\frac{Ba^3\left(\tan\left(fx+e\right)\right)^2}{2\,cf}-\frac{4\,iBa^3}{cf\left(\tan\left(fx+e\right)+i\right)}+4\,\frac{Aa^3}{cf\left(\tan\left(fx+e\right)+i\right)}-\frac{4\,ia^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] 1/f*a^3/c*A*tan(f*x+e)-4*I/f*a^3/c*B*tan(f*x+e)+1/2*a^3*B*tan(f*x+e)^2/c/f-
4*I/f*a^3/c/(tan(f*x+e)+I)*B+4/f*a^3/c/(tan(f*x+e)+I)*A-4*I/f*a^3/c*A*ln(ta
n(f*x+e)+I)-8/f*a^3/c*B*ln(tan(f*x+e)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.26026, size = 439, normalized size = 3.69

$$\frac{(-2i\,A-2\,B)a^3e^{\left(6i\,fx+6i\,e\right)}+(-4i\,A-4\,B)a^3e^{\left(4i\,fx+4i\,e\right)}+8\,Ba^3e^{\left(2i\,fx+2i\,e\right)}+(2i\,A+8\,B)a^3+\left((4i\,A+8\,B)a^3e^{\left(4i\,fx+4i\,e\right)}+(8\right.}{cfe^{\left(4i\,fx+4i\,e\right)}+2\,cfe^{\left(2i\,fx+2i\,e\right)}+cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] ((-2*I*A - 2*B)*a^3*e^(6*I*f*x + 6*I*e) + (-4*I*A - 4*B)*a^3*e^(4*I*f*x + 4
*I*e) + 8*B*a^3*e^(2*I*f*x + 2*I*e) + (2*I*A + 8*B)*a^3 + ((4*I*A + 8*B)*a^
3*e^(4*I*f*x + 4*I*e) + (8*I*A + 16*B)*a^3*e^(2*I*f*x + 2*I*e) + (4*I*A + 8
*B)*a^3)*log(e^(2*I*f*x + 2*I*e) + 1))/(c*f*e^(4*I*f*x + 4*I*e) + 2*c*f*e^(
2*I*f*x + 2*I*e) + c*f)
```

Sympy [A] time = 5.58664, size = 209, normalized size = 1.76

$$\frac{4a^3\left(iA+2B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{cf}+\frac{\frac{\left(2iAa^3+8Ba^3\right)e^{-4ie}}{cf}+\frac{\left(2iAa^3+10Ba^3\right)e^{-2ie}e^{2ifx}}{cf}}{e^{4ifx}+2e^{-2ie}e^{2ifx}+e^{-4ie}}+\frac{\begin{cases}-\frac{2iAa^3e^{2ie}e^{2ifx}}{f}-\frac{2Ba^3e^{2ie}e^{2ifx}}{f} & \text{for } f\neq 0\\ x\left(4Aa^3e^{2ie}-4iBa^3e^{2ie}\right) & \text{otherwise}\end{cases}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] 4*a**3*(I*A + 2*B)*log(exp(2*I*f*x) + exp(-2*I*e))/(c*f) + ((2*I*A*a**3 + 8
*B*a**3)*exp(-4*I*e)/(c*f) + (2*I*A*a**3 + 10*B*a**3)*exp(-2*I*e)*exp(2*I*f
*x)/(c*f))/(exp(4*I*f*x) + 2*exp(-2*I*e)*exp(2*I*f*x) + exp(-4*I*e)) + Piec
ewise((-2*I*A*a**3*exp(2*I*e)*exp(2*I*f*x)/f - 2*B*a**3*exp(2*I*e)*exp(2*I*
f*x)/f, Ne(f, 0)), (x*(4*A*a**3*exp(2*I*e) - 4*I*B*a**3*exp(2*I*e)), True))
/c
```

Giac [B] time = 1.68214, size = 437, normalized size = 3.67

$$-\frac{2\left(\frac{4\left(iAa^3+2Ba^3\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+i\right)}{c}-\frac{\left(2iAa^3+4Ba^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{c}+\frac{2\left(-iAa^3-2Ba^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{c}+\frac{5Aa^3\tan\left(\frac{1}{2}fx+\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] -2*(4*(I*A*a^3 + 2*B*a^3)*log(tan(1/2*f*x + 1/2*e) + I)/c - (2*I*A*a^3 + 4*
B*a^3)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/c + 2*(-I*A*a^3 - 2*B*a^3)*log(ab
s(tan(1/2*f*x + 1/2*e) - 1))/c + (5*A*a^3*tan(1/2*f*x + 1/2*e)^5 - 8*I*B*a^
3*tan(1/2*f*x + 1/2*e)^5 + 2*I*A*a^3*tan(1/2*f*x + 1/2*e)^4 + 7*B*a^3*tan(1
/2*f*x + 1/2*e)^4 - 10*A*a^3*tan(1/2*f*x + 1/2*e)^3 + 14*I*B*a^3*tan(1/2*f*
x + 1/2*e)^3 - 2*I*A*a^3*tan(1/2*f*x + 1/2*e)^2 - 7*B*a^3*tan(1/2*f*x + 1/2
*e)^2 + 5*A*a^3*tan(1/2*f*x + 1/2*e) - 8*I*B*a^3*tan(1/2*f*x + 1/2*e))/((ta
n(1/2*f*x + 1/2*e)^3 + I*tan(1/2*f*x + 1/2*e)^2 - tan(1/2*f*x + 1/2*e) - I)
^2*c))/f
```

3.698 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^2}\,dx$

Optimal. Leaf size=123

$$-\frac{4a^3(A-2iB)}{c^2f(\tan(e+fx)+i)}+\frac{2a^3(B+iA)}{c^2f(\tan(e+fx)+i)^2}-\frac{a^3(5B+iA)\log(\cos(e+fx))}{c^2f}+\frac{a^3x(A-5iB)}{c^2}+\frac{ia^3B\tan(e+fx)}{c^2f}$$

```
[Out] (a^3*(A - (5*I)*B)*x)/c^2 - (a^3*(I*A + 5*B)*Log[Cos[e + f*x]])/(c^2*f) + (
I*a^3*B*Tan[e + f*x])/(c^2*f) + (2*a^3*(I*A + B))/(c^2*f*(I + Tan[e + f*x])
^2) - (4*a^3*(A - (2*I)*B))/(c^2*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.178271, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{4a^3(A-2iB)}{c^2f(\tan(e+fx)+i)}+\frac{2a^3(B+iA)}{c^2f(\tan(e+fx)+i)^2}-\frac{a^3(5B+iA)\log(\cos(e+fx))}{c^2f}+\frac{a^3x(A-5iB)}{c^2}+\frac{ia^3B\tan(e+fx)}{c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
2,x]
```

```
[Out] (a^3*(A - (5*I)*B)*x)/c^2 - (a^3*(I*A + 5*B)*Log[Cos[e + f*x]])/(c^2*f) + (
I*a^3*B*Tan[e + f*x])/(c^2*f) + (2*a^3*(I*A + B))/(c^2*f*(I + Tan[e + f*x])
^2) - (4*a^3*(A - (2*I)*B))/(c^2*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^2}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{ia^2B}{c^3} - \frac{4ia^2(A-iB)}{c^3(i+x)^3} + \frac{4a^2(A-2iB)}{c^3(i+x)^2} + \frac{a^2(iA+5B)}{c^3(i+x)}\right) dx, x, \tan(e+\right.}{f}$$

$$= \frac{a^3(A-5iB)x}{c^2} - \frac{a^3(iA+5B)\log(\cos(e+fx))}{c^2f} + \frac{ia^3B\tan(e+fx)}{c^2f} + \frac{}{c^2}$$

Mathematica [B] time = 9.54447, size = 1063, normalized size = 8.64

$$x\left(\frac{A\cos^3(e)}{2c^2} - \frac{5iB\cos^3(e)}{2c^2} - \frac{2iA\sin(e)\cos^2(e)}{c^2} - \frac{10B\sin(e)\cos^2(e)}{c^2} - \frac{3A\sin^2(e)\cos(e)}{c^2} + \frac{15iB\sin^2(e)\cos(e)}{c^2} - \frac{A\cos(e)}{2c^2} + \frac{5iB\cos(e)}{2c^2} + \frac{2iA\sin^3(e)}{c^2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^2,x]
```

```
[Out] ((I*A + 3*B)*Cos[2*f*x]*Cos[e + f*x]^4*(Cos[e]/c^2 - (I*Sin[e])/c^2)*(a + I
*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Co
s[e + f*x] + B*Sin[e + f*x])) + ((A - I*B)*Cos[4*f*x]*Cos[e + f*x]^4*(((-I/
2)*Cos[e])/c^2 + Sin[e]/(2*c^2))*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*
x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x])) + ((A
- (5*I)*B)*Cos[e + f*x]^4*((f*x*Cos[3*e])/c^2 - (I*f*x*Sin[3*e])/c^2)*(a +
I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*C
os[e + f*x] + B*Sin[e + f*x])) + ((A - (5*I)*B)*Cos[e + f*x]^4*(((-I/2)*Cos
[3*e]*Log[Cos[e + f*x]^2])/c^2 - (Log[Cos[e + f*x]^2]*Sin[3*e])/(2*c^2))*(a
 + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(
A*Cos[e + f*x] + B*Sin[e + f*x])) + (I*B*Cos[e + f*x]^3*(Cos[3*e]/c^2 - (I*
Sin[3*e])/c^2)*Sin[f*x]*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(
Cos[e/2] - Sin[e/2])*(Cos[e/2] + Sin[e/2])*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos
[e + f*x] + B*Sin[e + f*x])) + ((A - (3*I)*B)*Cos[e + f*x]^4*(-(Cos[e]/c^2)
 + (I*Sin[e])/c^2)*Sin[2*f*x]*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])
)/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x])) + ((A - I
```

```
*B)*Cos[e + f*x]^4*(Cos[e]/(2*c^2) + ((I/2)*Sin[e])/c^2)*Sin[4*f*x]*(a + I*
a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos
[e + f*x] + B*Sin[e + f*x])) + (x*Cos[e + f*x]^4*(-(A*Cos[e])/(2*c^2) + (((
5*I)/2)*B*Cos[e])/c^2 + (A*Cos[e]^3)/(2*c^2) - (((5*I)/2)*B*Cos[e]^3)/c^2 +
 (I*A*Sin[e])/c^2 + (5*B*Sin[e])/c^2 - ((2*I)*A*Cos[e]^2*Sin[e])/c^2 - (10*
B*Cos[e]^2*Sin[e])/c^2 - (3*A*Cos[e]*Sin[e]^2)/c^2 + ((15*I)*B*Cos[e]*Sin[e
]^2)/c^2 + ((2*I)*A*Sin[e]^3)/c^2 + (10*B*Sin[e]^3)/c^2 + (A*Sin[e]*Tan[e])
/(2*c^2) - (((5*I)/2)*B*Sin[e]*Tan[e])/c^2 + (A*Sin[e]^3*Tan[e])/(2*c^2) -
(((5*I)/2)*B*Sin[e]^3*Tan[e])/c^2 + I*(A - (5*I)*B)*(Cos[3*e]/c^2 - (I*Sin[
3*e])/c^2)*Tan[e])*(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/((Cos[f*x
] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.043, size = 160, normalized size = 1.3

$$\frac{iBa^3\tan\left(fx+e\right)}{c^2f}+\frac{8\,ia^3B}{c^2f\left(\tan\left(fx+e\right)+i\right)}-4\,\frac{Aa^3}{c^2f\left(\tan\left(fx+e\right)+i\right)}+\frac{iAa^3\ln\left(\tan\left(fx+e\right)+i\right)}{c^2f}+5\,\frac{Ba^3\ln\left(\tan\left(fx\right.\right.}{c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] I*a^3*B*tan(f*x+e)/c^2/f+8*I/f*a^3/c^2/(tan(f*x+e)+I)*B-4/f*a^3/c^2/(tan(f*
x+e)+I)*A+I/f*a^3/c^2*A*ln(tan(f*x+e)+I)+5/f*a^3/c^2*B*ln(tan(f*x+e)+I)+2*I
/f*a^3/c^2/(tan(f*x+e)+I)^2*A+2/f*a^3/c^2/(tan(f*x+e)+I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.42335, size = 352, normalized size = 2.86

$$\frac{(-iA-B)a^3e^{(6ifx+6ie)}+(iA+5B)a^3e^{(4ifx+4ie)}+(2iA+6B)a^3e^{(2ifx+2ie)}-4Ba^3+\left((-2iA-10B)a^3e^{(2ifx+2ie)}+(-2i\right.}{2\left(c^2fe^{(2ifx+2ie)}+c^2f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/2*((-I*A - B)*a^3*e^(6*I*f*x + 6*I*e) + (I*A + 5*B)*a^3*e^(4*I*f*x + 4*I*
e) + (2*I*A + 6*B)*a^3*e^(2*I*f*x + 2*I*e) - 4*B*a^3 + ((-2*I*A - 10*B)*a^3
*e^(2*I*f*x + 2*I*e) + (-2*I*A - 10*B)*a^3)*log(e^(2*I*f*x + 2*I*e) + 1))/(
c^2*f*e^(2*I*f*x + 2*I*e) + c^2*f)
```

Sympy [A] time = 4.13402, size = 228, normalized size = 1.85

$$-\frac{2Ba^3e^{-2ie}}{c^2f\left(e^{2ifx}+e^{-2ie}\right)}-\frac{a^3\left(iA+5B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{c^2f}+\frac{\begin{cases}-\frac{iAa^3e^{4ie}e^{4ifx}}{2f}+\frac{iAa^3e^{2ie}e^{2ifx}}{f}-\frac{Ba^3e^{4ie}e^{4ifx}}{2f}+\frac{3Ba^3e^{2ie}e^{2ifx}}{f} & \text{for } f\neq 0\\ x\left(2Aa^3e^{4ie}-2Aa^3e^{2ie}-2iBa^3e^{4ie}+6iBa^3e^{2ie}\right) & \text{otherwise}\end{cases}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] -2*B*a**3*exp(-2*I*e)/(c**2*f*(exp(2*I*f*x) + exp(-2*I*e))) - a**3*(I*A + 5
*B)*log(exp(2*I*f*x) + exp(-2*I*e))/(c**2*f) + Piecewise((-I*A*a**3*exp(4*I
*e)*exp(4*I*f*x)/(2*f) + I*A*a**3*exp(2*I*e)*exp(2*I*f*x)/f - B*a**3*exp(4*
I*e)*exp(4*I*f*x)/(2*f) + 3*B*a**3*exp(2*I*e)*exp(2*I*f*x)/f, Ne(f, 0)), (x
*(2*A*a**3*exp(4*I*e) - 2*A*a**3*exp(2*I*e) - 2*I*B*a**3*exp(4*I*e) + 6*I*B
*a**3*exp(2*I*e)), True))/c**2
```

Giac [B] time = 1.5781, size = 485, normalized size = 3.94

$$\frac{\frac{12\left(iAa^3+5Ba^3\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+i\right)}{c^2}+\frac{6\left(-iAa^3-5Ba^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{c^2}-\frac{6\left(iAa^3+5Ba^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{c^2}-\frac{6\left(-iAa^3\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right.\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/6*(12*(I*A*a^3 + 5*B*a^3)*log(tan(1/2*f*x + 1/2*e) + I)/c^2 + 6*(-I*A*a^3
 - 5*B*a^3)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/c^2 - 6*(I*A*a^3 + 5*B*a^3)*
log(abs(tan(1/2*f*x + 1/2*e) - 1))/c^2 - 6*(-I*A*a^3*tan(1/2*f*x + 1/2*e)^2
 - 5*B*a^3*tan(1/2*f*x + 1/2*e)^2 + 2*I*B*a^3*tan(1/2*f*x + 1/2*e) + I*A*a^
3 + 5*B*a^3)/((tan(1/2*f*x + 1/2*e)^2 - 1)*c^2) - (25*I*A*a^3*tan(1/2*f*x +
 1/2*e)^4 + 125*B*a^3*tan(1/2*f*x + 1/2*e)^4 - 100*A*a^3*tan(1/2*f*x + 1/2*
e)^3 + 548*I*B*a^3*tan(1/2*f*x + 1/2*e)^3 - 198*I*A*a^3*tan(1/2*f*x + 1/2*e
)^2 - 894*B*a^3*tan(1/2*f*x + 1/2*e)^2 + 100*A*a^3*tan(1/2*f*x + 1/2*e) - 5
48*I*B*a^3*tan(1/2*f*x + 1/2*e) + 25*I*A*a^3 + 125*B*a^3)/(c^2*(tan(1/2*f*x
 + 1/2*e) + I)^4))/f
```

3.699 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^3}\,dx$

Optimal. Leaf size=129

$$-\frac{a^3(B+iA)(1+i\tan(e+fx))^3}{6c^3f(1-i\tan(e+fx))^3}-\frac{4ia^3B}{c^3f(\tan(e+fx)+i)}-\frac{2a^3B}{c^3f(\tan(e+fx)+i)^2}+\frac{a^3B\log(\cos(e+fx))}{c^3f}+\frac{ia^3Bx}{c^3}$$

```
[Out] (I*a^3*B*x)/c^3 + (a^3*B*Log[Cos[e + f*x]])/(c^3*f) - (a^3*(I*A + B)*(1 + I
*Tan[e + f*x])^3)/(6*c^3*f*(1 - I*Tan[e + f*x])^3) - (2*a^3*B)/(c^3*f*(I +
Tan[e + f*x])^2) - ((4*I)*a^3*B)/(c^3*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.153866, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 78, 43}

$$-\frac{a^3(B+iA)(1+i\tan(e+fx))^3}{6c^3f(1-i\tan(e+fx))^3}-\frac{4ia^3B}{c^3f(\tan(e+fx)+i)}-\frac{2a^3B}{c^3f(\tan(e+fx)+i)^2}+\frac{a^3B\log(\cos(e+fx))}{c^3f}+\frac{ia^3Bx}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
3,x]
```


```
[Out] (I*a^3*B*x)/c^3 + (a^3*B*Log[Cos[e + f*x]])/(c^3*f) - (a^3*(I*A + B)*(1 + I
*Tan[e + f*x])^3)/(6*c^3*f*(1 - I*Tan[e + f*x])^3) - (2*a^3*B)/(c^3*f*(I +
Tan[e + f*x])^2) - ((4*I)*a^3*B)/(c^3*f*(I + Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{a^3(iA+B)(1+i\tan(e+fx))^3}{6c^3f(1-i\tan(e+fx))^3} + \frac{(iaB)\,\text{Subst}\left(\int \frac{(a+iax)^2}{(c-icx)^3}\,dx, x, \tan(\right.}{f}$$

$$= -\frac{a^3(iA+B)(1+i\tan(e+fx))^3}{6c^3f(1-i\tan(e+fx))^3} + \frac{(iaB)\,\text{Subst}\left(\int \left(-\frac{4ia^2}{c^3(i+x)^3} + \frac{4a^2}{c^3(i+x)^2}\right.\right.}{f}$$

$$= \frac{ia^3Bx}{c^3} + \frac{a^3B\log(\cos(e+fx))}{c^3f} - \frac{a^3(iA+B)(1+i\tan(e+fx))^3}{6c^3f(1-i\tan(e+fx))^3} - \frac{}{c^3}$$

Mathematica [A] time = 4.28417, size = 167, normalized size = 1.29

$$\frac{a^3(\cos(3(e+2fx))+i\sin(3(e+2fx)))\left(\cos(3(e+fx))\left(-iA+3B\log\left(\cos^2(e+fx)\right)+6iBfx-B\right)+A\sin(3(e+fx))\right.}{6c^3f(\cos(fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^3,x]
```

```
[Out] (a^3*(-3*B*Cos[e + f*x] + Cos[3*(e + f*x)]*((-I)*A - B + (6*I)*B*f*x + 3*B*
Log[Cos[e + f*x]^2]) + (9*I)*B*Sin[e + f*x] + A*Sin[3*(e + f*x)] - I*B*Sin[
3*(e + f*x)] + 6*B*f*x*Sin[3*(e + f*x)] - (3*I)*B*Log[Cos[e + f*x]^2]*Sin[3
*(e + f*x)])*(Cos[3*(e + 2*f*x)] + I*Sin[3*(e + 2*f*x)]))/(6*c^3*f*(Cos[f*x
] + I*Sin[f*x])^3)
```

Maple [A] time = 0.052, size = 164, normalized size = 1.3

$$\frac{\frac{4i}{3}a^3B}{fc^3\left(\tan\left(fx+e\right)+i\right)^3}-\frac{4\,Aa^3}{3\,fc^3\left(\tan\left(fx+e\right)+i\right)^3}-\frac{5\,iBa^3}{fc^3\left(\tan\left(fx+e\right)+i\right)}+\frac{Aa^3}{fc^3\left(\tan\left(fx+e\right)+i\right)}-\frac{Ba^3\ln\left(\tan\left(fx\right.\right.}{fc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 4/3*I/f*a^3/c^3/(tan(f*x+e)+I)^3*B-4/3/f*a^3/c^3/(tan(f*x+e)+I)^3*A-5*I/f*a
^3/c^3/(tan(f*x+e)+I)*B+1/f*a^3/c^3/(tan(f*x+e)+I)*A-1/f*a^3/c^3*B*ln(tan(f
*x+e)+I)-2*I/f*a^3/c^3/(tan(f*x+e)+I)^2*A-4*a^3*B/c^3/f/(tan(f*x+e)+I)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.454, size = 201, normalized size = 1.56

$$\frac{(-iA-B)a^3e^{(6ifx+6ie)}+3\,Ba^3e^{(4ifx+4ie)}-6\,Ba^3e^{(2ifx+2ie)}+6\,Ba^3\log\left(e^{(2ifx+2ie)}+1\right)}{6\,c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/6*((-I*A - B)*a^3*e^(6*I*f*x + 6*I*e) + 3*B*a^3*e^(4*I*f*x + 4*I*e) - 6*B
*a^3*e^(2*I*f*x + 2*I*e) + 6*B*a^3*log(e^(2*I*f*x + 2*I*e) + 1))/(c^3*f)
```

Sympy [A] time = 2.66081, size = 214, normalized size = 1.66

$$\frac{Ba^3\log\left(e^{2ifx}+e^{-2ie}\right)}{c^3f}+\begin{cases}\frac{6Ba^3c^6f^2e^{4ie}e^{4ifx}-12Ba^3c^6f^2e^{2ie}e^{2ifx}+\left(-2iAa^3c^6f^2e^{6ie}-2Ba^3c^6f^2e^{6ie}\right)e^{6ifx}}{12c^9f^3} & \text{for } 12c^9f^3\neq 0\\ \frac{x\left(Aa^3e^{6ie}-iBa^3e^{6ie}+2iBa^3e^{4ie}-2iBa^3e^{2ie}\right)}{c^3} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] B*a**3*log(exp(2*I*f*x) + exp(-2*I*e))/(c**3*f) + Piecewise(((6*B*a**3*c**6
*f**2*exp(4*I*e)*exp(4*I*f*x) - 12*B*a**3*c**6*f**2*exp(2*I*e)*exp(2*I*f*x)
 + (-2*I*A*a**3*c**6*f**2*exp(6*I*e) - 2*B*a**3*c**6*f**2*exp(6*I*e))*exp(6
*I*f*x))/(12*c**9*f**3), Ne(12*c**9*f**3, 0)), (x*(A*a**3*exp(6*I*e) - I*B*
a**3*exp(6*I*e) + 2*I*B*a**3*exp(4*I*e) - 2*I*B*a**3*exp(2*I*e))/c**3, True
))
```

Giac [B] time = 1.63729, size = 348, normalized size = 2.7

$$-\frac{\frac{60\,Ba^3\log\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+i\right)}{c^3}-\frac{30\,Ba^3\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+1\right|\right)}{c^3}-\frac{30\,Ba^3\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-1\right|\right)}{c^3}-\frac{147\,Ba^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6-60\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] -1/30*(60*B*a^3*log(tan(1/2*f*x + 1/2*e) + I)/c^3 - 30*B*a^3*log(abs(tan(1/
2*f*x + 1/2*e) + 1))/c^3 - 30*B*a^3*log(abs(tan(1/2*f*x + 1/2*e) - 1))/c^3
- (147*B*a^3*tan(1/2*f*x + 1/2*e)^6 - 60*A*a^3*tan(1/2*f*x + 1/2*e)^5 + 942
*I*B*a^3*tan(1/2*f*x + 1/2*e)^5 - 2445*B*a^3*tan(1/2*f*x + 1/2*e)^4 + 200*A
*a^3*tan(1/2*f*x + 1/2*e)^3 - 3620*I*B*a^3*tan(1/2*f*x + 1/2*e)^3 + 2445*B*
a^3*tan(1/2*f*x + 1/2*e)^2 - 60*A*a^3*tan(1/2*f*x + 1/2*e) + 942*I*B*a^3*ta
n(1/2*f*x + 1/2*e) - 147*B*a^3)/(c^3*(tan(1/2*f*x + 1/2*e) + I)^6))/f
```

3.700 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^4}\,dx$

Optimal. Leaf size=99

$$-\frac{a^3(-7B+iA)(1+i\tan(e+fx))^3}{48c^4f(1-i\tan(e+fx))^3}-\frac{a^3(B+iA)(1+i\tan(e+fx))^3}{8c^4f(1-i\tan(e+fx))^4}$$

```
[Out] -(a^3*(I*A + B)*(1 + I*Tan[e + f*x])^3)/(8*c^4*f*(1 - I*Tan[e + f*x])^4) -
(a^3*(I*A - 7*B)*(1 + I*Tan[e + f*x])^3)/(48*c^4*f*(1 - I*Tan[e + f*x])^3)
```

Rubi [A] time = 0.138471, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 78, 37}

$$-\frac{a^3(-7B+iA)(1+i\tan(e+fx))^3}{48c^4f(1-i\tan(e+fx))^3}-\frac{a^3(B+iA)(1+i\tan(e+fx))^3}{8c^4f(1-i\tan(e+fx))^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
4,x]
```

```
[Out] -(a^3*(I*A + B)*(1 + I*Tan[e + f*x])^3)/(8*c^4*f*(1 - I*Tan[e + f*x])^4) -
(a^3*(I*A - 7*B)*(1 + I*Tan[e + f*x])^3)/(48*c^4*f*(1 - I*Tan[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^4}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^5}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{a^3(iA+B)(1+i\tan(e+fx))^3}{8c^4f(1-i\tan(e+fx))^4} + \frac{(a(A+7iB))\,\text{Subst}\left(\int \frac{(a+iax)^2}{(c-icx)^4}\,dx,\right.}{8f}$$
$$= -\frac{a^3(iA+B)(1+i\tan(e+fx))^3}{8c^4f(1-i\tan(e+fx))^4} - \frac{a^3(iA-7B)(1+i\tan(e+fx))^3}{48c^4f(1-i\tan(e+fx))^3}$$

Mathematica [A] time = 3.24733, size = 81, normalized size = 0.82

$$\frac{a^3(\cos(7e+10fx)+i\sin(7e+10fx))((B-7iA)\cos(e+fx)-(A+7iB)\sin(e+fx))}{48c^4f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^4,x]
```

```
[Out] (a^3*(((-7*I)*A + B)*Cos[e + f*x] - (A + (7*I)*B)*Sin[e + f*x])*(Cos[7*e +
10*f*x] + I*Sin[7*e + 10*f*x]))/(48*c^4*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.056, size = 90, normalized size = 0.9

$$\frac{a^3}{fc^4}\left(-\frac{8\,iB-4\,A}{3\left(\tan\left(fx+e\right)+i\right)^3}-\frac{4\,iA+4\,B}{4\left(\tan\left(fx+e\right)+i\right)^4}+\frac{iB}{\tan\left(fx+e\right)+i}-\frac{-5\,B-iA}{2\left(\tan\left(fx+e\right)+i\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/f*a^3/c^4*(-1/3*(8*I*B-4*A)/(tan(f*x+e)+I)^3-1/4*(4*I*A+4*B)/(tan(f*x+e)+
I)^4+I*B/(tan(f*x+e)+I)-1/2*(-5*B-I*A)/(tan(f*x+e)+I)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.32667, size = 130, normalized size = 1.31

$$\frac{(-3i\,A - 3\,B)a^3e^{(8i\,fx+8i\,e)} + (-4i\,A + 4\,B)a^3e^{(6i\,fx+6i\,e)}}{48\,c^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, alg
orithm="fricas")
```

```
[Out] 1/48*((-3*I*A - 3*B)*a^3*e^(8*I*f*x + 8*I*e) + (-4*I*A + 4*B)*a^3*e^(6*I*f*
x + 6*I*e))/(c^4*f)
```

Sympy [A] time = 2.02219, size = 168, normalized size = 1.7

$$\begin{cases} \frac{\left(-16iAa^3c^4fe^{6ie}+16Ba^3c^4fe^{6ie}\right)e^{6ifx}+\left(-12iAa^3c^4fe^{8ie}-12Ba^3c^4fe^{8ie}\right)e^{8ifx}}{192c^8f^2} & \text{for}\: 192c^8f^2 \neq 0 \\ \frac{x\left(Aa^3e^{8ie}+Aa^3e^{6ie}-iBa^3e^{8ie}+iBa^3e^{6ie}\right)}{2c^4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] Piecewise((((-16*I*A*a**3*c**4*f*exp(6*I*e) + 16*B*a**3*c**4*f*exp(6*I*e))*
exp(6*I*f*x) + (-12*I*A*a**3*c**4*f*exp(8*I*e) - 12*B*a**3*c**4*f*exp(8*I*e
))*exp(8*I*f*x))/(192*c**8*f**2), Ne(192*c**8*f**2, 0)), (x*(A*a**3*exp(8*I
*e) + A*a**3*exp(6*I*e) - I*B*a**3*exp(8*I*e) + I*B*a**3*exp(6*I*e))/(2*c**
4), True))
```

Giac [B] time = 1.6331, size = 320, normalized size = 3.23

$$-\frac{2\left(3\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^7+3i\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6-3\,Ba^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6-17\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5+4i\,Ba^3\,\mathrm{ta}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, alg
orithm="giac")
```

```
[Out] -2/3*(3*A*a^3*tan(1/2*f*x + 1/2*e)^7 + 3*I*A*a^3*tan(1/2*f*x + 1/2*e)^6 - 3
*B*a^3*tan(1/2*f*x + 1/2*e)^6 - 17*A*a^3*tan(1/2*f*x + 1/2*e)^5 + 4*I*B*a^3
*tan(1/2*f*x + 1/2*e)^5 - 10*I*A*a^3*tan(1/2*f*x + 1/2*e)^4 + 10*B*a^3*tan(
1/2*f*x + 1/2*e)^4 + 17*A*a^3*tan(1/2*f*x + 1/2*e)^3 - 4*I*B*a^3*tan(1/2*f*
x + 1/2*e)^3 + 3*I*A*a^3*tan(1/2*f*x + 1/2*e)^2 - 3*B*a^3*tan(1/2*f*x + 1/2
*e)^2 - 3*A*a^3*tan(1/2*f*x + 1/2*e))/(c^4*f*(tan(1/2*f*x + 1/2*e) + I)^8)
```

3.701 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^5}\,dx$

Optimal. Leaf size=122

$$-\frac{a^3(A-5iB)}{3c^5f(\tan(e+fx)+i)^3}+\frac{a^3(2B+iA)}{c^5f(\tan(e+fx)+i)^4}+\frac{4a^3(A-iB)}{5c^5f(\tan(e+fx)+i)^5}-\frac{a^3B}{2c^5f(\tan(e+fx)+i)^2}$$

```
[Out] (4*a^3*(A - I*B))/(5*c^5*f*(I + Tan[e + f*x])^5) + (a^3*(I*A + 2*B))/(c^5*f
*(I + Tan[e + f*x])^4) - (a^3*(A - (5*I)*B))/(3*c^5*f*(I + Tan[e + f*x])^3)
 - (a^3*B)/(2*c^5*f*(I + Tan[e + f*x])^2)
```

Rubi [A] time = 0.175211, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^3(A-5iB)}{3c^5f(\tan(e+fx)+i)^3}+\frac{a^3(2B+iA)}{c^5f(\tan(e+fx)+i)^4}+\frac{4a^3(A-iB)}{5c^5f(\tan(e+fx)+i)^5}-\frac{a^3B}{2c^5f(\tan(e+fx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
5,x]
```

```
[Out] (4*a^3*(A - I*B))/(5*c^5*f*(I + Tan[e + f*x])^5) + (a^3*(I*A + 2*B))/(c^5*f
*(I + Tan[e + f*x])^4) - (a^3*(A - (5*I)*B))/(3*c^5*f*(I + Tan[e + f*x])^3)
 - (a^3*B)/(2*c^5*f*(I + Tan[e + f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^5}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^6}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{4a^2(A-iB)}{c^6(i+x)^6}-\frac{4ia^2(A-2iB)}{c^6(i+x)^5}+\frac{a^2(A-5iB)}{c^6(i+x)^4}+\frac{a^2B}{c^6(i+x)^3}\right)dx,x,\text{ta}\right.}{f}$$
$$= \frac{4a^3(A-iB)}{5c^5f(i+\tan(e+fx))^5}+\frac{a^3(iA+2B)}{c^5f(i+\tan(e+fx))^4}-\frac{a^3(A-5iB)}{3c^5f(i+\tan(e+}$$

Mathematica [A] time = 3.91606, size = 91, normalized size = 0.75

$$\frac{a^3(\cos(8e+11fx)+i\sin(8e+11fx))(-4(A+4iB)\sin(2(e+fx))+4(B-4iA)\cos(2(e+fx))-15iA)}{240c^5f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^5,x]
```

```
[Out] (a^3*((-15*I)*A + 4*((-4*I)*A + B)*Cos[2*(e + f*x)] - 4*(A + (4*I)*B)*Sin[2
*(e + f*x)])*(Cos[8*e + 11*f*x] + I*Sin[8*e + 11*f*x]))/(240*c^5*f*(Cos[f*x
] + I*Sin[f*x])^3)
```

Maple [A] time = 0.052, size = 87, normalized size = 0.7

$$\frac{a^3}{fc^5}\left(-\frac{-4\,iA-8\,B}{4\,\left(\tan\left(fx+e\right)+i\right)^4}-\frac{A-5\,iB}{3\,\left(\tan\left(fx+e\right)+i\right)^3}-\frac{B}{2\,\left(\tan\left(fx+e\right)+i\right)^2}-\frac{4\,iB-4\,A}{5\,\left(\tan\left(fx+e\right)+i\right)^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] 1/f*a^3/c^5*(-1/4*(-4*I*A-8*B)/(tan(f*x+e)+I)^4-1/3*(A-5*I*B)/(tan(f*x+e)+I
)^3-1/2*B/(tan(f*x+e)+I)^2-1/5*(4*I*B-4*A)/(tan(f*x+e)+I)^5)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.27815, size = 181, normalized size = 1.48

$$\frac{(-6i\,A-6\,B)a^3e^{(10i\,fx+10i\,e)}-15i\,Aa^3e^{(8i\,fx+8i\,e)}+(-10i\,A+10\,B)a^3e^{(6i\,fx+6i\,e)}}{240\,c^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, alg
orithm="fricas")
```

```
[Out] 1/240*((-6*I*A - 6*B)*a^3*e^(10*I*f*x + 10*I*e) - 15*I*A*a^3*e^(8*I*f*x + 8
*I*e) + (-10*I*A + 10*B)*a^3*e^(6*I*f*x + 6*I*e))/(c^5*f)
```

Sympy [A] time = 2.51532, size = 219, normalized size = 1.8

$$\begin{cases}\frac{-960iAa^3c^{10}f^2e^{8ie}e^{8ifx}+\left(-640iAa^3c^{10}f^2e^{6ie}+640Ba^3c^{10}f^2e^{6ie}\right)e^{6ifx}+\left(-384iAa^3c^{10}f^2e^{10ie}-384Ba^3c^{10}f^2e^{10ie}\right)e^{10ifx}}{15360c^{15}f^3} & \text{for}\ 15360c^{15}f^3\neq 0\\ \frac{x\left(Aa^3e^{10ie}+2Aa^3e^{8ie}+Aa^3e^{6ie}-iBa^3e^{10ie}+iBa^3e^{6ie}\right)}{4c^5} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] Piecewise(((-960*I*A*a**3*c**10*f**2*exp(8*I*e)*exp(8*I*f*x) + (-640*I*A*a*
*3*c**10*f**2*exp(6*I*e) + 640*B*a**3*c**10*f**2*exp(6*I*e))*exp(6*I*f*x) +
 (-384*I*A*a**3*c**10*f**2*exp(10*I*e) - 384*B*a**3*c**10*f**2*exp(10*I*e))
*exp(10*I*f*x))/(15360*c**15*f**3), Ne(15360*c**15*f**3, 0)), (x*(A*a**3*ex
p(10*I*e) + 2*A*a**3*exp(8*I*e) + A*a**3*exp(6*I*e) - I*B*a**3*exp(10*I*e)
+ I*B*a**3*exp(6*I*e))/(4*c**5), True))
```

Giac [B] time = 1.67002, size = 417, normalized size = 3.42

$$-\frac{2\left(15\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^9+30i\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^8-15\,Ba^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^8-140\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^7+10i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^5,x, alg
orithm="giac")
```

```
[Out] -2/15*(15*A*a^3*tan(1/2*f*x + 1/2*e)^9 + 30*I*A*a^3*tan(1/2*f*x + 1/2*e)^8
- 15*B*a^3*tan(1/2*f*x + 1/2*e)^8 - 140*A*a^3*tan(1/2*f*x + 1/2*e)^7 + 10*I
*B*a^3*tan(1/2*f*x + 1/2*e)^7 - 170*I*A*a^3*tan(1/2*f*x + 1/2*e)^6 + 65*B*a
^3*tan(1/2*f*x + 1/2*e)^6 + 282*A*a^3*tan(1/2*f*x + 1/2*e)^5 - 12*I*B*a^3*t
an(1/2*f*x + 1/2*e)^5 + 170*I*A*a^3*tan(1/2*f*x + 1/2*e)^4 - 65*B*a^3*tan(1
/2*f*x + 1/2*e)^4 - 140*A*a^3*tan(1/2*f*x + 1/2*e)^3 + 10*I*B*a^3*tan(1/2*f
*x + 1/2*e)^3 - 30*I*A*a^3*tan(1/2*f*x + 1/2*e)^2 + 15*B*a^3*tan(1/2*f*x +
1/2*e)^2 + 15*A*a^3*tan(1/2*f*x + 1/2*e))/(c^5*f*(tan(1/2*f*x + 1/2*e) + I)
^10)
```

3.702 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^6}\,dx$

Optimal. Leaf size=127

$$-\frac{a^3(5B+iA)}{4c^6f(\tan(e+fx)+i)^4}-\frac{4a^3(A-2iB)}{5c^6f(\tan(e+fx)+i)^5}+\frac{2a^3(B+iA)}{3c^6f(\tan(e+fx)+i)^6}-\frac{ia^3B}{3c^6f(\tan(e+fx)+i)^3}$$

```
[Out] (2*a^3*(I*A + B))/(3*c^6*f*(I + Tan[e + f*x])^6) - (4*a^3*(A - (2*I)*B))/(5
*c^6*f*(I + Tan[e + f*x])^5) - (a^3*(I*A + 5*B))/(4*c^6*f*(I + Tan[e + f*x]
)^4) - ((I/3)*a^3*B)/(c^6*f*(I + Tan[e + f*x])^3)
```

Rubi [A] time = 0.176473, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{a^3(5B+iA)}{4c^6f(\tan(e+fx)+i)^4}-\frac{4a^3(A-2iB)}{5c^6f(\tan(e+fx)+i)^5}+\frac{2a^3(B+iA)}{3c^6f(\tan(e+fx)+i)^6}-\frac{ia^3B}{3c^6f(\tan(e+fx)+i)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
6,x]
```

```
[Out] (2*a^3*(I*A + B))/(3*c^6*f*(I + Tan[e + f*x])^6) - (4*a^3*(A - (2*I)*B))/(5
*c^6*f*(I + Tan[e + f*x])^5) - (a^3*(I*A + 5*B))/(4*c^6*f*(I + Tan[e + f*x]
)^4) - ((I/3)*a^3*B)/(c^6*f*(I + Tan[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^6}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^7}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{4ia^2(A-iB)}{c^7(i+x)^7}+\frac{4a^2(A-2iB)}{c^7(i+x)^6}+\frac{a^2(iA+5B)}{c^7(i+x)^5}+\frac{ia^2B}{c^7(i+x)^4}\right)dx,x,\text{ta}\right.}{f}$$
$$= \frac{2a^3(iA+B)}{3c^6f(i+\tan(e+fx))^6}-\frac{4a^3(A-2iB)}{5c^6f(i+\tan(e+fx))^5}-\frac{a^3(iA+5B)}{4c^6f(i+\tan(e+}$$

Mathematica [A] time = 6.05873, size = 112, normalized size = 0.88

$$\frac{a^3(\cos(9e+12fx)+i\sin(9e+12fx))(-(A+3iB)(9\sin(e+fx)+10\sin(3(e+fx)))+3(B-27iA)\cos(e+fx)+10(B}{960c^6f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^6,x]
```

```
[Out] (a^3*(3*((-27*I)*A + B)*Cos[e + f*x] + 10*((-3*I)*A + B)*Cos[3*(e + f*x)] -
 (A + (3*I)*B)*(9*Sin[e + f*x] + 10*Sin[3*(e + f*x)]))*(Cos[9*e + 12*f*x] +
 I*Sin[9*e + 12*f*x]))/(960*c^6*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.052, size = 90, normalized size = 0.7

$$\frac{a^3}{fc^6}\left(\frac{-\frac{i}{3}B}{\left(\tan\left(fx+e\right)+i\right)^3}-\frac{-4\,iA-4\,B}{6\left(\tan\left(fx+e\right)+i\right)^6}-\frac{iA+5\,B}{4\left(\tan\left(fx+e\right)+i\right)^4}-\frac{-8\,iB+4\,A}{5\left(\tan\left(fx+e\right)+i\right)^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x)
```

```
[Out] 1/f*a^3/c^6*(-1/3*I*B/(tan(f*x+e)+I)^3-1/6*(-4*I*A-4*B)/(tan(f*x+e)+I)^6-1/
4*(I*A+5*B)/(tan(f*x+e)+I)^4-1/5*(-8*I*B+4*A)/(tan(f*x+e)+I)^5)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.38637, size = 258, normalized size = 2.03

$$\frac{(-10i\,A - 10\,B)a^3 e^{\left(12i\,fx + 12i\,e\right)} + (-36i\,A - 12\,B)a^3 e^{\left(10i\,fx + 10i\,e\right)} + (-45i\,A + 15\,B)a^3 e^{\left(8i\,fx + 8i\,e\right)} + (-20i\,A + 20\,B)a^3 e^{\left(6i\,fx + 6i\right.}}{960\,c^6 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x, alg
orithm="fricas")
```

```
[Out] 1/960*((-10*I*A - 10*B)*a^3*e^(12*I*f*x + 12*I*e) + (-36*I*A - 12*B)*a^3*e^
(10*I*f*x + 10*I*e) + (-45*I*A + 15*B)*a^3*e^(8*I*f*x + 8*I*e) + (-20*I*A +
 20*B)*a^3*e^(6*I*f*x + 6*I*e))/(c^6*f)
```

Sympy [A] time = 3.60087, size = 333, normalized size = 2.62

$$\begin{cases} \frac{\left(-491520iAa^3c^{18}f^3e^{6ie}+491520Ba^3c^{18}f^3e^{6ie}\right)e^{6ifx}+\left(-1105920iAa^3c^{18}f^3e^{8ie}+368640Ba^3c^{18}f^3e^{8ie}\right)e^{8ifx}+\left(-884736iAa^3c^{18}f^3e^{10ie}-294912Ba^3c^{18}f^3e^{10ie}\right)e^{10ifx}}{23592960c^{24}f^4} \\ \frac{x\left(Aa^3e^{12ie}+3Aa^3e^{10ie}+3Aa^3e^{8ie}+Aa^3e^{6ie}-iBa^3e^{12ie}-iBa^3e^{10ie}+iBa^3e^{8ie}+iBa^3e^{6ie}\right)}{8c^6} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**6,x)
```

```
[Out] Piecewise((((-491520*I*A*a**3*c**18*f**3*exp(6*I*e) + 491520*B*a**3*c**18*f
**3*exp(6*I*e))*exp(6*I*f*x) + (-1105920*I*A*a**3*c**18*f**3*exp(8*I*e) + 3
68640*B*a**3*c**18*f**3*exp(8*I*e))*exp(8*I*f*x) + (-884736*I*A*a**3*c**18*
f**3*exp(10*I*e) - 294912*B*a**3*c**18*f**3*exp(10*I*e))*exp(10*I*f*x) + (-
245760*I*A*a**3*c**18*f**3*exp(12*I*e) - 245760*B*a**3*c**18*f**3*exp(12*I*
e))*exp(12*I*f*x))/(23592960*c**24*f**4), Ne(23592960*c**24*f**4, 0)), (x*(
A*a**3*exp(12*I*e) + 3*A*a**3*exp(10*I*e) + 3*A*a**3*exp(8*I*e) + A*a**3*ex
p(6*I*e) - I*B*a**3*exp(12*I*e) - I*B*a**3*exp(10*I*e) + I*B*a**3*exp(8*I*e
) + I*B*a**3*exp(6*I*e))/(8*c**6), True))
```

Giac [B] time = 1.64067, size = 466, normalized size = 3.67

$$-\frac{2\left(15\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{11}+45i\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{10}-15\,Ba^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{10}-215\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{9}-3\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^6,x, alg
orithm="giac")
```

```
[Out] -2/15*(15*A*a^3*tan(1/2*f*x + 1/2*e)^11 + 45*I*A*a^3*tan(1/2*f*x + 1/2*e)^1
0 - 15*B*a^3*tan(1/2*f*x + 1/2*e)^10 - 215*A*a^3*tan(1/2*f*x + 1/2*e)^9 - 3
90*I*A*a^3*tan(1/2*f*x + 1/2*e)^8 + 90*B*a^3*tan(1/2*f*x + 1/2*e)^8 + 738*A
*a^3*tan(1/2*f*x + 1/2*e)^7 + 24*I*B*a^3*tan(1/2*f*x + 1/2*e)^7 + 746*I*A*a
^3*tan(1/2*f*x + 1/2*e)^6 - 158*B*a^3*tan(1/2*f*x + 1/2*e)^6 - 738*A*a^3*ta
n(1/2*f*x + 1/2*e)^5 - 24*I*B*a^3*tan(1/2*f*x + 1/2*e)^5 - 390*I*A*a^3*tan(
1/2*f*x + 1/2*e)^4 + 90*B*a^3*tan(1/2*f*x + 1/2*e)^4 + 215*A*a^3*tan(1/2*f*
x + 1/2*e)^3 + 45*I*A*a^3*tan(1/2*f*x + 1/2*e)^2 - 15*B*a^3*tan(1/2*f*x + 1
/2*e)^2 - 15*A*a^3*tan(1/2*f*x + 1/2*e))/(c^6*f*(tan(1/2*f*x + 1/2*e) + I)^
12)
```

3.703 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^7}\,dx$

Optimal. Leaf size=125

$$\frac{a^3(A-5iB)}{5c^7f(\tan(e+fx)+i)^5}-\frac{2a^3(2B+iA)}{3c^7f(\tan(e+fx)+i)^6}-\frac{4a^3(A-iB)}{7c^7f(\tan(e+fx)+i)^7}+\frac{a^3B}{4c^7f(\tan(e+fx)+i)^4}$$

```
[Out] (-4*a^3*(A - I*B))/(7*c^7*f*(I + Tan[e + f*x])^7) - (2*a^3*(I*A + 2*B))/(3*
c^7*f*(I + Tan[e + f*x])^6) + (a^3*(A - (5*I)*B))/(5*c^7*f*(I + Tan[e + f*x
])^5) + (a^3*B)/(4*c^7*f*(I + Tan[e + f*x])^4)
```

Rubi [A] time = 0.174468, antiderivative size = 125, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3(A-5iB)}{5c^7f(\tan(e+fx)+i)^5}-\frac{2a^3(2B+iA)}{3c^7f(\tan(e+fx)+i)^6}-\frac{4a^3(A-iB)}{7c^7f(\tan(e+fx)+i)^7}+\frac{a^3B}{4c^7f(\tan(e+fx)+i)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
7,x]
```

```
[Out] (-4*a^3*(A - I*B))/(7*c^7*f*(I + Tan[e + f*x])^7) - (2*a^3*(I*A + 2*B))/(3*
c^7*f*(I + Tan[e + f*x])^6) + (a^3*(A - (5*I)*B))/(5*c^7*f*(I + Tan[e + f*x
])^5) + (a^3*B)/(4*c^7*f*(I + Tan[e + f*x])^4)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^7}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^8}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int \left(\frac{4a^2(A-iB)}{c^8(i+x)^8} + \frac{4a^2(iA+2B)}{c^8(i+x)^7} - \frac{a^2(A-5iB)}{c^8(i+x)^6} - \frac{a^2B}{c^8(i+x)^5}\right) dx, x, \tan(\right.}{f}$$

$$= -\frac{4a^3(A-iB)}{7c^7f(i+\tan(e+fx))^7} - \frac{2a^3(iA+2B)}{3c^7f(i+\tan(e+fx))^6} + \frac{a^3(A-5i}{5c^7f(i+\tan(e}$$

Mathematica [A] time = 7.54606, size = 143, normalized size = 1.14

$$-\frac{ia^3(\cos(10e+13fx)+i\sin(10e+13fx))(35(10A+iB)\cos(2(e+fx))+20(5A+2iB)\cos(4(e+fx))-70iA\sin(2(e}{6720c^7f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^7,x]
```

```
[Out] ((-I/6720)*a^3*(252*A + 35*(10*A + I*B)*Cos[2*(e + f*x)] + 20*(5*A + (2*I)*
B)*Cos[4*(e + f*x)] - (70*I)*A*Sin[2*(e + f*x)] + 175*B*Sin[2*(e + f*x)] -
(40*I)*A*Sin[4*(e + f*x)] + 100*B*Sin[4*(e + f*x)])*(Cos[10*e + 13*f*x] + I
*Sin[10*e + 13*f*x]))/(c^7*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.053, size = 89, normalized size = 0.7

$$\frac{a^3}{fc^7}\left(-\frac{-A+5\,iB}{5\left(\tan\left(fx+e\right)+i\right)^5} - \frac{-4\,iB+4\,A}{7\left(\tan\left(fx+e\right)+i\right)^7} - \frac{4\,iA+8\,B}{6\left(\tan\left(fx+e\right)+i\right)^6} + \frac{B}{4\left(\tan\left(fx+e\right)+i\right)^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^7,x)
```

```
[Out] 1/f*a^3/c^7*(-1/5*(-A+5*I*B)/(tan(f*x+e)+I)^5-1/7*(-4*I*B+4*A)/(tan(f*x+e)+
I)^7-1/6*(4*I*A+8*B)/(tan(f*x+e)+I)^6+1/4*B/(tan(f*x+e)+I)^4)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^7,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.38774, size = 312, normalized size = 2.5

$$\frac{(-30i\,A-30\,B)a^3e^{\left(14i\,fx+14i\,e\right)}+(-140i\,A-70\,B)a^3e^{\left(12i\,fx+12i\,e\right)}-252i\,Aa^3e^{\left(10i\,fx+10i\,e\right)}+(-210i\,A+105\,B)a^3e^{\left(8i\,fx+8i\,e\right)}+}{6720\,c^7 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^7,x, alg
orithm="fricas")
```

```
[Out] 1/6720*((-30*I*A - 30*B)*a^3*e^(14*I*f*x + 14*I*e) + (-140*I*A - 70*B)*a^3*
e^(12*I*f*x + 12*I*e) - 252*I*A*a^3*e^(10*I*f*x + 10*I*e) + (-210*I*A + 105
*B)*a^3*e^(8*I*f*x + 8*I*e) + (-70*I*A + 70*B)*a^3*e^(6*I*f*x + 6*I*e))/(c^
7*f)
```

Sympy [A] time = 4.88956, size = 381, normalized size = 3.05

$$\begin{cases} \frac{-396361728iAa^3c^{28}f^4e^{10ie}e^{10ifx}+\left(-110100480iAa^3c^{28}f^4e^{6ie}+110100480Ba^3c^{28}f^4e^{6ie}\right)e^{6ifx}+\left(-330301440iAa^3c^{28}f^4e^{8ie}+165150720Ba^3c^{28}f^4e^{8ie}\right)e^{8ifx}+\left(-220\right.}{10569646080c^{35}f^5} \\ \frac{x\left(Aa^3e^{14ie}+4Aa^3e^{12ie}+6Aa^3e^{10ie}+4Aa^3e^{8ie}+Aa^3e^{6ie}-iBa^3e^{14ie}-2iBa^3e^{12ie}+2iBa^3e^{8ie}+iBa^3e^{6ie}\right)}{16c^7} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**7,x)
```

```
[Out] Piecewise(((-396361728*I*A*a**3*c**28*f**4*exp(10*I*e)*exp(10*I*f*x) + (-11
0100480*I*A*a**3*c**28*f**4*exp(6*I*e) + 110100480*B*a**3*c**28*f**4*exp(6*
I*e))*exp(6*I*f*x) + (-330301440*I*A*a**3*c**28*f**4*exp(8*I*e) + 165150720
*B*a**3*c**28*f**4*exp(8*I*e))*exp(8*I*f*x) + (-220200960*I*A*a**3*c**28*f*
*4*exp(12*I*e) - 110100480*B*a**3*c**28*f**4*exp(12*I*e))*exp(12*I*f*x) + (
-47185920*I*A*a**3*c**28*f**4*exp(14*I*e) - 47185920*B*a**3*c**28*f**4*exp(
14*I*e))*exp(14*I*f*x))/(10569646080*c**35*f**5), Ne(10569646080*c**35*f**5
, 0)), (x*(A*a**3*exp(14*I*e) + 4*A*a**3*exp(12*I*e) + 6*A*a**3*exp(10*I*e)
 + 4*A*a**3*exp(8*I*e) + A*a**3*exp(6*I*e) - I*B*a**3*exp(14*I*e) - 2*I*B*a
**3*exp(12*I*e) + 2*I*B*a**3*exp(8*I*e) + I*B*a**3*exp(6*I*e))/(16*c**7), T
rue))
```

Giac [B] time = 1.65522, size = 612, normalized size = 4.9

$$-\frac{2\left(105\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{13}+420i\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{12}-105\,Ba^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{12}-2170\,Aa^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^7,x, alg
orithm="giac")
```

```
[Out] -2/105*(105*A*a^3*tan(1/2*f*x + 1/2*e)^13 + 420*I*A*a^3*tan(1/2*f*x + 1/2*e
)^12 - 105*B*a^3*tan(1/2*f*x + 1/2*e)^12 - 2170*A*a^3*tan(1/2*f*x + 1/2*e)^
11 - 70*I*B*a^3*tan(1/2*f*x + 1/2*e)^11 - 5180*I*A*a^3*tan(1/2*f*x + 1/2*e)
^10 + 875*B*a^3*tan(1/2*f*x + 1/2*e)^10 + 11431*A*a^3*tan(1/2*f*x + 1/2*e)^
9 + 700*I*B*a^3*tan(1/2*f*x + 1/2*e)^9 + 15904*I*A*a^3*tan(1/2*f*x + 1/2*e)
^8 - 2380*B*a^3*tan(1/2*f*x + 1/2*e)^8 - 19436*A*a^3*tan(1/2*f*x + 1/2*e)^7
 - 1340*I*B*a^3*tan(1/2*f*x + 1/2*e)^7 - 15904*I*A*a^3*tan(1/2*f*x + 1/2*e)
^6 + 2380*B*a^3*tan(1/2*f*x + 1/2*e)^6 + 11431*A*a^3*tan(1/2*f*x + 1/2*e)^5
 + 700*I*B*a^3*tan(1/2*f*x + 1/2*e)^5 + 5180*I*A*a^3*tan(1/2*f*x + 1/2*e)^4
 - 875*B*a^3*tan(1/2*f*x + 1/2*e)^4 - 2170*A*a^3*tan(1/2*f*x + 1/2*e)^3 - 7
0*I*B*a^3*tan(1/2*f*x + 1/2*e)^3 - 420*I*A*a^3*tan(1/2*f*x + 1/2*e)^2 + 105
*B*a^3*tan(1/2*f*x + 1/2*e)^2 + 105*A*a^3*tan(1/2*f*x + 1/2*e))/(c^7*f*(tan
(1/2*f*x + 1/2*e) + I)^14)
```

3.704 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^8}\,dx$

Optimal. Leaf size=127

$$\frac{a^3(5B+iA)}{6c^8f(\tan(e+fx)+i)^6}+\frac{4a^3(A-2iB)}{7c^8f(\tan(e+fx)+i)^7}-\frac{a^3(B+iA)}{2c^8f(\tan(e+fx)+i)^8}+\frac{ia^3B}{5c^8f(\tan(e+fx)+i)^5}$$

```
[Out] -(a^3*(I*A + B))/(2*c^8*f*(I + Tan[e + f*x])^8) + (4*a^3*(A - (2*I)*B))/(7*
c^8*f*(I + Tan[e + f*x])^7) + (a^3*(I*A + 5*B))/(6*c^8*f*(I + Tan[e + f*x])
^6) + ((I/5)*a^3*B)/(c^8*f*(I + Tan[e + f*x])^5)
```

Rubi [A] time = 0.182177, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{a^3(5B+iA)}{6c^8f(\tan(e+fx)+i)^6}+\frac{4a^3(A-2iB)}{7c^8f(\tan(e+fx)+i)^7}-\frac{a^3(B+iA)}{2c^8f(\tan(e+fx)+i)^8}+\frac{ia^3B}{5c^8f(\tan(e+fx)+i)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
8,x]
```

```
[Out] -(a^3*(I*A + B))/(2*c^8*f*(I + Tan[e + f*x])^8) + (4*a^3*(A - (2*I)*B))/(7*
c^8*f*(I + Tan[e + f*x])^7) + (a^3*(I*A + 5*B))/(6*c^8*f*(I + Tan[e + f*x])
^6) + ((I/5)*a^3*B)/(c^8*f*(I + Tan[e + f*x])^5)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^8}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^9}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{4a^2(iA+B)}{c^9(i+x)^9} - \frac{4a^2(A-2iB)}{c^9(i+x)^8} - \frac{ia^2(A-5iB)}{c^9(i+x)^7} - \frac{ia^2B}{c^9(i+x)^6}\right) dx, x, \tan(\right.}{f}$$
$$= -\frac{a^3(iA+B)}{2c^8f(i+\tan(e+fx))^8} + \frac{4a^3(A-2iB)}{7c^8f(i+\tan(e+fx))^7} + \frac{a^3(iA+5}{6c^8f(i+\tan(e}$$

Mathematica [A] time = 9.59929, size = 182, normalized size = 1.43

$$-\frac{ia^3(\cos(11e+14fx)+i\sin(11e+14fx))(56(55A+iB)\cos(e+fx)+30(55A+9iB)\cos(3(e+fx))-280iA\sin(e+f}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^8,x]
```

```
[Out] ((-I/53760)*a^3*(56*(55*A + I*B)*Cos[e + f*x] + 30*(55*A + (9*I)*B)*Cos[3*(
e + f*x)] + 385*A*Cos[5*(e + f*x)] + (175*I)*B*Cos[5*(e + f*x)] - (280*I)*A
*Sin[e + f*x] + 616*B*Sin[e + f*x] - (450*I)*A*Sin[3*(e + f*x)] + 990*B*Sin
[3*(e + f*x)] - (175*I)*A*Sin[5*(e + f*x)] + 385*B*Sin[5*(e + f*x)])*(Cos[1
1*e + 14*f*x] + I*Sin[11*e + 14*f*x]))/(c^8*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.051, size = 90, normalized size = 0.7

$$\frac{a^3}{fc^8}\left(\frac{\frac{i}{5}B}{\left(\tan\left(fx+e\right)+i\right)^5} - \frac{8\,iB-4\,A}{7\,\left(\tan\left(fx+e\right)+i\right)^7} - \frac{-5\,B-iA}{6\,\left(\tan\left(fx+e\right)+i\right)^6} - \frac{4\,iA+4\,B}{8\,\left(\tan\left(fx+e\right)+i\right)^8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^8,x)
```

```
[Out] 1/f*a^3/c^8*(1/5*I*B/(tan(f*x+e)+I)^5-1/7*(8*I*B-4*A)/(tan(f*x+e)+I)^7-1/6*
(-5*B-I*A)/(tan(f*x+e)+I)^6-1/8*(4*I*A+4*B)/(tan(f*x+e)+I)^8)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^8,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.42378, size = 402, normalized size = 3.17

$$\frac{(-105iA-105B)a^3e^{(16ifx+16ie)}+(-600iA-360B)a^3e^{(14ifx+14ie)}+(-1400iA-280B)a^3e^{(12ifx+12ie)}+(-1680iA+33}{53760c^8f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^8,x, alg
orithm="fricas")
```

```
[Out] 1/53760*((-105*I*A - 105*B)*a^3*e^(16*I*f*x + 16*I*e) + (-600*I*A - 360*B)*
a^3*e^(14*I*f*x + 14*I*e) + (-1400*I*A - 280*B)*a^3*e^(12*I*f*x + 12*I*e) +
 (-1680*I*A + 336*B)*a^3*e^(10*I*f*x + 10*I*e) + (-1050*I*A + 630*B)*a^3*e^
(8*I*f*x + 8*I*e) + (-280*I*A + 280*B)*a^3*e^(6*I*f*x + 6*I*e))/(c^8*f)
```

Sympy [A] time = 6.14805, size = 498, normalized size = 3.92

$$\begin{cases} \frac{\left(-1803886264320iAa^3c^{40}f^5e^{6ie}+1803886264320Ba^3c^{40}f^5e^{6ie}\right)e^{6ifx}+\left(-6764573491200iAa^3c^{40}f^5e^{8ie}+4058744094720Ba^3c^{40}f^5e^{8ie}\right)e^{8ifx}+\left(-10823317585920i\right.}{} \\ \frac{x\left(Aa^3e^{16ie}+5Aa^3e^{14ie}+10Aa^3e^{12ie}+10Aa^3e^{10ie}+5Aa^3e^{8ie}+Aa^3e^{6ie}-iBa^3e^{16ie}-3iBa^3e^{14ie}-2iBa^3e^{12ie}+2iBa^3e^{10ie}+3iBa^3e^{8ie}+iBa^3e^{6ie}\right)}{32c^8} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**8,x)
```

```
[Out] Piecewise((((-1803886264320*I*A*a**3*c**40*f**5*exp(6*I*e) + 1803886264320*
B*a**3*c**40*f**5*exp(6*I*e))*exp(6*I*f*x) + (-6764573491200*I*A*a**3*c**40
*f**5*exp(8*I*e) + 4058744094720*B*a**3*c**40*f**5*exp(8*I*e))*exp(8*I*f*x)
 + (-10823317585920*I*A*a**3*c**40*f**5*exp(10*I*e) + 2164663517184*B*a**3*
c**40*f**5*exp(10*I*e))*exp(10*I*f*x) + (-9019431321600*I*A*a**3*c**40*f**5
*exp(12*I*e) - 1803886264320*B*a**3*c**40*f**5*exp(12*I*e))*exp(12*I*f*x) +
 (-3865470566400*I*A*a**3*c**40*f**5*exp(14*I*e) - 2319282339840*B*a**3*c**
40*f**5*exp(14*I*e))*exp(14*I*f*x) + (-676457349120*I*A*a**3*c**40*f**5*exp
(16*I*e) - 676457349120*B*a**3*c**40*f**5*exp(16*I*e))*exp(16*I*f*x))/(3463
46162749440*c**48*f**6), Ne(346346162749440*c**48*f**6, 0)), (x*(A*a**3*exp
(16*I*e) + 5*A*a**3*exp(14*I*e) + 10*A*a**3*exp(12*I*e) + 10*A*a**3*exp(10*
I*e) + 5*A*a**3*exp(8*I*e) + A*a**3*exp(6*I*e) - I*B*a**3*exp(16*I*e) - 3*I
*B*a**3*exp(14*I*e) - 2*I*B*a**3*exp(12*I*e) + 2*I*B*a**3*exp(10*I*e) + 3*I
*B*a**3*exp(8*I*e) + I*B*a**3*exp(6*I*e))/(32*c**8), True))
```

Giac [B] time = 1.66941, size = 709, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^8,x, alg
orithm="giac")
```

```
[Out] -2/105*(105*A*a^3*tan(1/2*f*x + 1/2*e)^15 + 525*I*A*a^3*tan(1/2*f*x + 1/2*e
)^14 - 105*B*a^3*tan(1/2*f*x + 1/2*e)^14 - 2975*A*a^3*tan(1/2*f*x + 1/2*e)^
13 - 140*I*B*a^3*tan(1/2*f*x + 1/2*e)^13 - 8750*I*A*a^3*tan(1/2*f*x + 1/2*e
)^12 + 1190*B*a^3*tan(1/2*f*x + 1/2*e)^12 + 22365*A*a^3*tan(1/2*f*x + 1/2*e
)^11 + 1596*I*B*a^3*tan(1/2*f*x + 1/2*e)^11 + 39235*I*A*a^3*tan(1/2*f*x + 1
/2*e)^10 - 4711*B*a^3*tan(1/2*f*x + 1/2*e)^10 - 58075*A*a^3*tan(1/2*f*x + 1
/2*e)^9 - 4600*I*B*a^3*tan(1/2*f*x + 1/2*e)^9 - 63300*I*A*a^3*tan(1/2*f*x +
 1/2*e)^8 + 7380*B*a^3*tan(1/2*f*x + 1/2*e)^8 + 58075*A*a^3*tan(1/2*f*x + 1
/2*e)^7 + 4600*I*B*a^3*tan(1/2*f*x + 1/2*e)^7 + 39235*I*A*a^3*tan(1/2*f*x +
 1/2*e)^6 - 4711*B*a^3*tan(1/2*f*x + 1/2*e)^6 - 22365*A*a^3*tan(1/2*f*x + 1
/2*e)^5 - 1596*I*B*a^3*tan(1/2*f*x + 1/2*e)^5 - 8750*I*A*a^3*tan(1/2*f*x +
1/2*e)^4 + 1190*B*a^3*tan(1/2*f*x + 1/2*e)^4 + 2975*A*a^3*tan(1/2*f*x + 1/2
*e)^3 + 140*I*B*a^3*tan(1/2*f*x + 1/2*e)^3 + 525*I*A*a^3*tan(1/2*f*x + 1/2*
e)^2 - 105*B*a^3*tan(1/2*f*x + 1/2*e)^2 - 105*A*a^3*tan(1/2*f*x + 1/2*e))/(
c^8*f*(tan(1/2*f*x + 1/2*e) + I)^16)
```

3.705 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^n}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=115

$$\frac{(B(n+1)+iA(1-n))(c-ic\tan(e+fx))^n\text{Hypergeometric2F1}\left(1,n,n+1,\frac{1}{2}(1-i\tan(e+fx))\right)}{4afn}+\frac{(-B+iA)(c-ic\tan(e+fx))^n}{2af(1+i\tan(e+fx))}$$

```
[Out] ((I*A*(1 - n) + B*(1 + n))*Hypergeometric2F1[1, n, 1 + n, (1 - I*Tan[e + f*
x])/2]*(c - I*c*Tan[e + f*x])^n)/(4*a*f*n) + ((I*A - B)*(c - I*c*Tan[e + f*
x])^n)/(2*a*f*(1 + I*Tan[e + f*x]))
```

Rubi [A] time = 0.17909, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 78, 68}

$$\frac{(B(n+1)+iA(1-n))(c-ic\tan(e+fx))^n\,{}_2F_1\left(1,n;n+1;\frac{1}{2}(1-i\tan(e+fx))\right)}{4afn}+\frac{(-B+iA)(c-ic\tan(e+fx))^n}{2af(1+i\tan(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n)/(a + I*a*Tan[e + f*x]),
x]
```

```
[Out] ((I*A*(1 - n) + B*(1 + n))*Hypergeometric2F1[1, n, 1 + n, (1 - I*Tan[e + f*
x])/2]*(c - I*c*Tan[e + f*x])^n)/(4*a*f*n) + ((I*A - B)*(c - I*c*Tan[e + f*
x])^n)/(2*a*f*(1 + I*Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
```

```
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^n}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{-1+n}}{(a+iax)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^n}{2af(1+i\tan(e+fx))} + \frac{(c(A(1-n)-iB(1+n)))\,\text{Subst}\left(\int \frac{(c\cdots}{\cdots}\right.}{2f}$$

$$= \frac{(iA(1-n)+B(1+n))\,{}_2F_1\left(1,n;1+n;\frac{1}{2}(1-i\tan(e+fx))\right)(c-ic\tan\cdots}{4afn}$$

Mathematica [A] time = 63.2637, size = 111, normalized size = 0.97

$$\frac{2^{n-1}\left(\frac{c}{1+e^{2i(e+fx)}}\right)^n\left((A(n-1)+iB(n+1))e^{2i(e+fx)}\text{Hypergeometric2F1}\left(1,1-n,2-n,1+e^{2i(e+fx)}\right)+(n-1)(A+iB)\right)}{af(n-1)(\tan(e+fx)-i)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n)/(a + I*a*Tan[e +
f*x]),x]
```

```
[Out] (2^(-1 + n)*(c/(1 + E^((2*I)*(e + f*x))))^n*((A + I*B)*(-1 + n) + E^((2*I)*
(e + f*x))*(A*(-1 + n) + I*B*(1 + n))*Hypergeometric2F1[1, 1 - n, 2 - n, 1
+ E^((2*I)*(e + f*x))]))/(a*f*(-1 + n)*(-I + Tan[e + f*x]))
```

Maple [F] time = 0.823, size = 0, normalized size = 0.

$$\int \frac{\left(A+B\tan\left(fx+e\right)\right)\left(c-ic\tan\left(fx+e\right)\right)^{n}}{a+ia\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e)),x)
```

```
[Out] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{\left(2ifx+2ie\right)}+A+iB\right)\left(\frac{2c}{e^{\left(2ifx+2ie\right)}+1}\right)^{n}e^{\left(-2ifx-2ie\right)}}{2a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] integral(1/2*((A - I*B)*e^(2*I*f*x + 2*I*e) + A + I*B)*(2*c/(e^(2*I*f*x + 2
*I*e) + 1))^n*e^(-2*I*f*x - 2*I*e)/a, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{n}}{ia\tan\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^n/(I*a*tan(f*x + e)
+ a), x)
```

3.706 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^4}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=157

$$-\frac{c^4(-5B+iA)\tan^2(e+fx)}{2af}+\frac{c^4(5A+12iB)\tan(e+fx)}{af}-\frac{8c^4(A+iB)}{af(-\tan(e+fx)+i)}-\frac{4c^4(-5B+3iA)\log(\cos(e+fx))}{af}-$$

```
[Out] (-4*(3*A + (5*I)*B)*c^4*x)/a - (4*((3*I)*A - 5*B)*c^4*Log[Cos[e + f*x]])/(a
*f) - (8*(A + I*B)*c^4)/(a*f*(I - Tan[e + f*x])) + ((5*A + (12*I)*B)*c^4*Ta
n[e + f*x])/(a*f) - ((I*A - 5*B)*c^4*Tan[e + f*x]^2)/(2*a*f) - ((I/3)*B*c^4
*Tan[e + f*x]^3)/(a*f)
```

Rubi [A] time = 0.215932, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{c^4(-5B+iA)\tan^2(e+fx)}{2af}+\frac{c^4(5A+12iB)\tan(e+fx)}{af}-\frac{8c^4(A+iB)}{af(-\tan(e+fx)+i)}-\frac{4c^4(-5B+3iA)\log(\cos(e+fx))}{af}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4)/(a + I*a*Tan[e + f*x]),
x]
```


```
[Out] (-4*(3*A + (5*I)*B)*c^4*x)/a - (4*((3*I)*A - 5*B)*c^4*Log[Cos[e + f*x]])/(a
*f) - (8*(A + I*B)*c^4)/(a*f*(I - Tan[e + f*x])) + ((5*A + (12*I)*B)*c^4*Ta
n[e + f*x])/(a*f) - ((I*A - 5*B)*c^4*Tan[e + f*x]^2)/(2*a*f) - ((I/3)*B*c^4
*Tan[e + f*x]^3)/(a*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^4}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^3}{(a+iax)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{(5A+12iB)c^3}{a^2} + \frac{(-iA+5B)c^3x}{a^2} - \frac{iBc^3x^2}{a^2} - \frac{8(A+iB)c^3}{a^2(-i+x)^2} + \frac{4i(3A+5iB)}{a^2(-i+x)}\right.\right.}{f}$$

$$= -\frac{4(3A+5iB)c^4x}{a} - \frac{4(3iA-5B)c^4\log(\cos(e+fx))}{af} - \frac{8(A+iB)c}{af(i-\tan(e+}$$

Mathematica [A] time = 3.76031, size = 260, normalized size = 1.66

$$\frac{c^4(\cos(fx)+i\sin(fx))(A+B\tan(e+fx))\left(24(A+iB)(\sin(e)+i\cos(e))\cos(2fx)+24(A+iB)(\cos(e)-i\sin(e))\sin(2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4)/(a + I*a*Tan[e +
f*x]),x]
```

```
[Out] (c^4*(Cos[f*x] + I*Sin[f*x])*(12*((-3*I)*A + 5*B)*Log[Cos[e + f*x]^2]*(Cos[
e/2] + I*Sin[e/2])^2 - 24*(3*A + (5*I)*B)*ArcTan[Tan[f*x]]*(Cos[e] + I*Sin[
e]) + 24*(A + I*B)*Cos[2*f*x]*(I*Cos[e] + Sin[e]) + 24*(A + I*B)*(Cos[e] -
I*Sin[e])*Sin[2*f*x] + 2*(15*A + (37*I)*B)*Sec[e + f*x]*Sin[f*x]*(1 + I*Tan
[e]) + 2*B*Sec[e + f*x]^3*Sin[f*x]*(-I + Tan[e]) + Cos[e]*Sec[e + f*x]^2*(-
I + Tan[e])*(3*(A + (5*I)*B) + 2*B*Tan[e]))*(A + B*Tan[e + f*x]))/(6*f*(A*C
os[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x]))
```

Maple [A] time = 0.046, size = 193, normalized size = 1.2

$$\frac{5Bc^4\left(\tan\left(fx+e\right)\right)^2}{2af} - \frac{\frac{i}{3}Bc^4\left(\tan\left(fx+e\right)\right)^3}{af} + 5\frac{Ac^4\tan\left(fx+e\right)}{af} - \frac{\frac{i}{2}c^4A\left(\tan\left(fx+e\right)\right)^2}{af} + \frac{12ic^4B\tan\left(fx+e\right)}{af} + \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 5/2/f*c^4/a*B*tan(f*x+e)^2-1/3*I*B*c^4*tan(f*x+e)^3/a/f+5/f*c^4/a*A*tan(f*x
+e)-1/2*I/f*c^4/a*A*tan(f*x+e)^2+12*I/f*c^4/a*B*tan(f*x+e)+8*I/f*c^4/a/(tan
(f*x+e)-I)*B+8/f*c^4/a/(tan(f*x+e)-I)*A+12*I/f*c^4/a*A*ln(tan(f*x+e)-I)-20/
f*c^4/a*B*ln(tan(f*x+e)-I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.44351, size = 817, normalized size = 5.2

$$-\frac{24\,(3\,A+5i\,B)c^4fxe^{\left(8i\,fx+8i\,e\right)}-(12i\,A-12\,B)c^4+\left(72\,(3\,A+5i\,B)c^4fx-(36i\,A-60\,B)c^4\right)e^{\left(6i\,fx+6i\,e\right)}+\left(72\,(3\,A+5i\,B)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] -1/3*(24*(3*A + 5*I*B)*c^4*f*x*e^(8*I*f*x + 8*I*e) - (12*I*A - 12*B)*c^4 +
(72*(3*A + 5*I*B)*c^4*f*x - (36*I*A - 60*B)*c^4)*e^(6*I*f*x + 6*I*e) + (72*
(3*A + 5*I*B)*c^4*f*x - (90*I*A - 150*B)*c^4)*e^(4*I*f*x + 4*I*e) + (24*(3*
A + 5*I*B)*c^4*f*x - (66*I*A - 110*B)*c^4)*e^(2*I*f*x + 2*I*e) - ((-36*I*A
+ 60*B)*c^4*e^(8*I*f*x + 8*I*e) + (-108*I*A + 180*B)*c^4*e^(6*I*f*x + 6*I*e
) + (-108*I*A + 180*B)*c^4*e^(4*I*f*x + 4*I*e) + (-36*I*A + 60*B)*c^4*e^(2*
I*f*x + 2*I*e))*log(e^(2*I*f*x + 2*I*e) + 1))/(a*f*e^(8*I*f*x + 8*I*e) + 3*
a*f*e^(6*I*f*x + 6*I*e) + 3*a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*
```

```
e))
```

Sympy [A] time = 11.4177, size = 301, normalized size = 1.92

$$\frac{\frac{(8iAc^4-16Bc^4)e^{-2ie}e^{4ifx}}{af}+\frac{(18iAc^4-38Bc^4)e^{-4ie}e^{2ifx}}{af}+\frac{(30iAc^4-74Bc^4)e^{-6ie}}{3af}}{e^{6ifx}+3e^{-2ie}e^{4ifx}+3e^{-4ie}e^{2ifx}+e^{-6ie}}+\frac{c^4(-12iA+20B)\log\left(e^{2ifx}+e^{-2ie}\right)}{af}-\frac{\left(\begin{cases}24Ac^4xe^{2ie}-\ldots\\ x\left(24Ac^4e^{2ie}-\ldots\right.\end{cases}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**4/(a+I*a*tan(f*x+e)),x)
```

```
[Out] ((8*I*A*c**4 - 16*B*c**4)*exp(-2*I*e)*exp(4*I*f*x)/(a*f) + (18*I*A*c**4 - 3
8*B*c**4)*exp(-4*I*e)*exp(2*I*f*x)/(a*f) + (30*I*A*c**4 - 74*B*c**4)*exp(-6
*I*e)/(3*a*f))/(exp(6*I*f*x) + 3*exp(-2*I*e)*exp(4*I*f*x) + 3*exp(-4*I*e)*e
xp(2*I*f*x) + exp(-6*I*e)) + c**4*(-12*I*A + 20*B)*log(exp(2*I*f*x) + exp(-
2*I*e))/(a*f) - Piecewise((24*A*c**4*x*exp(2*I*e) - 4*I*A*c**4*exp(-2*I*f*x
)/f + 40*I*B*c**4*x*exp(2*I*e) + 4*B*c**4*exp(-2*I*f*x)/f, Ne(f, 0)), (x*(2
4*A*c**4*exp(2*I*e) - 8*A*c**4 + 40*I*B*c**4*exp(2*I*e) - 8*I*B*c**4), True
))*exp(-2*I*e)/a
```

Giac [B] time = 1.53566, size = 602, normalized size = 3.83

$$-\frac{2\left(\frac{12\left(-3iAc^4+5Bc^4\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)}{a}-\frac{6\left(-3iAc^4+5Bc^4\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{a}+\frac{6\left(3iAc^4-5Bc^4\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{a}-\frac{3\left(-18iAc^4\ldots\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] -2/3*(12*(-3*I*A*c^4 + 5*B*c^4)*log(tan(1/2*f*x + 1/2*e) - I)/a - 6*(-3*I*A
*c^4 + 5*B*c^4)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a + 6*(3*I*A*c^4 - 5*B*c
^4)*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a - 3*(-18*I*A*c^4*tan(1/2*f*x + 1/2
*e)^2 + 30*B*c^4*tan(1/2*f*x + 1/2*e)^2 - 44*A*c^4*tan(1/2*f*x + 1/2*e) - 6
8*I*B*c^4*tan(1/2*f*x + 1/2*e) + 18*I*A*c^4 - 30*B*c^4)/(a*(tan(1/2*f*x + 1
```

```
/2*e) - I)^2) + (-33*I*A*c^4*tan(1/2*f*x + 1/2*e)^6 + 55*B*c^4*tan(1/2*f*x
+ 1/2*e)^6 + 15*A*c^4*tan(1/2*f*x + 1/2*e)^5 + 36*I*B*c^4*tan(1/2*f*x + 1/2
*e)^5 + 102*I*A*c^4*tan(1/2*f*x + 1/2*e)^4 - 180*B*c^4*tan(1/2*f*x + 1/2*e)
^4 - 30*A*c^4*tan(1/2*f*x + 1/2*e)^3 - 76*I*B*c^4*tan(1/2*f*x + 1/2*e)^3 -
102*I*A*c^4*tan(1/2*f*x + 1/2*e)^2 + 180*B*c^4*tan(1/2*f*x + 1/2*e)^2 + 15*
A*c^4*tan(1/2*f*x + 1/2*e) + 36*I*B*c^4*tan(1/2*f*x + 1/2*e) + 33*I*A*c^4 -
 55*B*c^4)/((tan(1/2*f*x + 1/2*e)^2 - 1)^3*a))/f
```

3.707 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^3}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=121

$$\frac{c^3(A+4iB)\tan(e+fx)}{af}-\frac{4c^3(A+iB)}{af(-\tan(e+fx)+i)}-\frac{4c^3(-2B+iA)\log(\cos(e+fx))}{af}-\frac{4c^3x(A+2iB)}{a}+\frac{Bc^3\tan^2(e+f}{2af}$$

```
[Out] (-4*(A + (2*I)*B)*c^3*x)/a - (4*(I*A - 2*B)*c^3*Log[Cos[e + f*x]])/(a*f) -
(4*(A + I*B)*c^3)/(a*f*(I - Tan[e + f*x])) + ((A + (4*I)*B)*c^3*Tan[e + f*x
])/(a*f) + (B*c^3*Tan[e + f*x]^2)/(2*a*f)
```

Rubi [A] time = 0.18277, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{c^3(A+4iB)\tan(e+fx)}{af}-\frac{4c^3(A+iB)}{af(-\tan(e+fx)+i)}-\frac{4c^3(-2B+iA)\log(\cos(e+fx))}{af}-\frac{4c^3x(A+2iB)}{a}+\frac{Bc^3\tan^2(e+f}{2af}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3)/(a + I*a*Tan[e + f*x]),
x]
```

```
[Out] (-4*(A + (2*I)*B)*c^3*x)/a - (4*(I*A - 2*B)*c^3*Log[Cos[e + f*x]])/(a*f) -
(4*(A + I*B)*c^3)/(a*f*(I - Tan[e + f*x])) + ((A + (4*I)*B)*c^3*Tan[e + f*x
])/(a*f) + (B*c^3*Tan[e + f*x]^2)/(2*a*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^3}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^2}{(a+iax)^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{(A+4iB)c^2}{a^2}+\frac{Bc^2x}{a^2}-\frac{4(A+iB)c^2}{a^2(-i+x)^2}+\frac{4i(A+2iB)c^2}{a^2(-i+x)}\right)dx, x, \tan(e+\right.}{f}$$
$$= -\frac{4(A+2iB)c^3x}{a}-\frac{4(iA-2B)c^3\log(\cos(e+fx))}{af}-\frac{4(A+iB)c^3}{af(i-\tan(e+fx)}$$

Mathematica [A] time = 5.75274, size = 212, normalized size = 1.75

$$\frac{c^3(\cos(fx)+i\sin(fx))(A+B\tan(e+fx))\left(4(A+iB)(\sin(e)+i\cos(e))\cos(2fx)+4(A+iB)(\cos(e)-i\sin(e))\sin(2fx)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3)/(a + I*a*Tan[e +
f*x]),x]
```

```
[Out] (c^3*(Cos[f*x] + I*Sin[f*x])*(-8*(A + (2*I)*B)*ArcTan[Tan[f*x]]*(Cos[e] + I
*Sin[e]) + 4*((-I)*A + 2*B)*Log[Cos[e + f*x]^2]*(Cos[e] + I*Sin[e]) + B*Sec
[e + f*x]^2*(Cos[e] + I*Sin[e]) + 4*(A + I*B)*Cos[2*f*x]*(I*Cos[e] + Sin[e]
) + 4*(A + I*B)*(Cos[e] - I*Sin[e])*Sin[2*f*x] + 2*(A + (4*I)*B)*Sec[e + f*
x]*Sin[f*x]*(1 + I*Tan[e]))*(A + B*Tan[e + f*x]))/(2*f*(A*Cos[e + f*x] + B*
Sin[e + f*x])*(a + I*a*Tan[e + f*x]))
```

Maple [A] time = 0.042, size = 150, normalized size = 1.2

$$\frac{Ac^3\tan(fx+e)}{af}+\frac{4\,iBc^3\tan(fx+e)}{af}+\frac{Bc^3(\tan(fx+e))^2}{2\,af}+\frac{4\,iBc^3}{af(\tan(fx+e)-i)}+4\,\frac{Ac^3}{af(\tan(fx+e)-i)}+\frac{4\,ic^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 1/f*c^3/a*A*tan(f*x+e)+4*I/f*c^3/a*B*tan(f*x+e)+1/2*B*c^3*tan(f*x+e)^2/a/f+
4*I/f*c^3/a/(tan(f*x+e)-I)*B+4/f*c^3/a/(tan(f*x+e)-I)*A+4*I/f*c^3/a*A*ln(ta
n(f*x+e)-I)-8/f*c^3/a*B*ln(tan(f*x+e)-I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.41752, size = 587, normalized size = 4.85

$$-\frac{8\,(A+2i\,B)c^3fxe^{\left(6i\,fx+6i\,e\right)}-(2i\,A-2\,B)c^3+\left(16\,(A+2i\,B)c^3fx-(4i\,A-8\,B)c^3\right)e^{\left(4i\,fx+4i\,e\right)}+\left(8\,(A+2i\,B)c^3fx-(6i\right.}{afe^{\left(6i\,fx+6i\,e\right)}+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] -(8*(A + 2*I*B)*c^3*f*x*e^(6*I*f*x + 6*I*e) - (2*I*A - 2*B)*c^3 + (16*(A +
2*I*B)*c^3*f*x - (4*I*A - 8*B)*c^3)*e^(4*I*f*x + 4*I*e) + (8*(A + 2*I*B)*c^
3*f*x - (6*I*A - 12*B)*c^3)*e^(2*I*f*x + 2*I*e) - ((-4*I*A + 8*B)*c^3*e^(6*
I*f*x + 6*I*e) + (-8*I*A + 16*B)*c^3*e^(4*I*f*x + 4*I*e) + (-4*I*A + 8*B)*c
^3*e^(2*I*f*x + 2*I*e))*log(e^(2*I*f*x + 2*I*e) + 1))/(a*f*e^(6*I*f*x + 6*I
*e) + 2*a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))
```

Sympy [A] time = 6.18212, size = 248, normalized size = 2.05

$$\frac{\frac{(2iAc^3-8Bc^3)e^{-4ie}}{af}+\frac{(2iAc^3-6Bc^3)e^{-2ie}e^{2ifx}}{af}}{e^{4ifx}+2e^{-2ie}e^{2ifx}+e^{-4ie}}+\frac{4c^3(-iA+2B)\log\left(e^{2ifx}+e^{-2ie}\right)}{af}-\frac{\left(\begin{cases}8Ac^3xe^{2ie}-\frac{2iAc^3e^{-2ifx}}{f}+16iBc^3xe^{2ie}+\frac{2Bc^3e^{-}}{f}\\x\left(8Ac^3e^{2ie}-4Ac^3+16iBc^3e^{2ie}-4iBc^3\right)\end{cases}\right.}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**3/(a+I*a*tan(f*x+e)),x)
```

```
[Out] ((2*I*A*c**3 - 8*B*c**3)*exp(-4*I*e)/(a*f) + (2*I*A*c**3 - 6*B*c**3)*exp(-2
*I*e)*exp(2*I*f*x)/(a*f))/(exp(4*I*f*x) + 2*exp(-2*I*e)*exp(2*I*f*x) + exp(
-4*I*e)) + 4*c**3*(-I*A + 2*B)*log(exp(2*I*f*x) + exp(-2*I*e))/(a*f) - Piec
ewise((8*A*c**3*x*exp(2*I*e) - 2*I*A*c**3*exp(-2*I*f*x)/f + 16*I*B*c**3*x*e
xp(2*I*e) + 2*B*c**3*exp(-2*I*f*x)/f, Ne(f, 0)), (x*(8*A*c**3*exp(2*I*e) -
4*A*c**3 + 16*I*B*c**3*exp(2*I*e) - 4*I*B*c**3), True))*exp(-2*I*e)/a
```

Giac [B] time = 1.52244, size = 437, normalized size = 3.61

$$-\frac{2\left(\frac{4\left(-iAc^3+2Bc^3\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)}{a}-\frac{2\left(-iAc^3+2Bc^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{a}-\frac{\left(-2iAc^3+4Bc^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{a}+\frac{5Ac^3\tan\left(\frac{1}{2}fx+\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] -2*(4*(-I*A*c^3 + 2*B*c^3)*log(tan(1/2*f*x + 1/2*e) - I)/a - 2*(-I*A*c^3 +
2*B*c^3)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a - (-2*I*A*c^3 + 4*B*c^3)*log(
abs(tan(1/2*f*x + 1/2*e) - 1))/a + (5*A*c^3*tan(1/2*f*x + 1/2*e)^5 + 8*I*B*
c^3*tan(1/2*f*x + 1/2*e)^5 - 2*I*A*c^3*tan(1/2*f*x + 1/2*e)^4 + 7*B*c^3*tan
(1/2*f*x + 1/2*e)^4 - 10*A*c^3*tan(1/2*f*x + 1/2*e)^3 - 14*I*B*c^3*tan(1/2*
f*x + 1/2*e)^3 + 2*I*A*c^3*tan(1/2*f*x + 1/2*e)^2 - 7*B*c^3*tan(1/2*f*x + 1
/2*e)^2 + 5*A*c^3*tan(1/2*f*x + 1/2*e) + 8*I*B*c^3*tan(1/2*f*x + 1/2*e))/((
tan(1/2*f*x + 1/2*e)^3 - I*tan(1/2*f*x + 1/2*e)^2 - tan(1/2*f*x + 1/2*e) +
I)^2*a))/f
```

3.708 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^2}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=96

$$-\frac{2c^2(A+iB)}{af(-\tan(e+fx)+i)}-\frac{c^2(-3B+iA)\log(\cos(e+fx))}{af}-\frac{c^2x(A+3iB)}{a}+\frac{iBc^2\tan(e+fx)}{af}$$

```
[Out] -(((A + (3*I)*B)*c^2*x)/a) - ((I*A - 3*B)*c^2*Log[Cos[e + f*x]])/(a*f) - (2
*(A + I*B)*c^2)/(a*f*(I - Tan[e + f*x])) + (I*B*c^2*Tan[e + f*x])/(a*f)
```

Rubi [A] time = 0.159317, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{2c^2(A+iB)}{af(-\tan(e+fx)+i)}-\frac{c^2(-3B+iA)\log(\cos(e+fx))}{af}-\frac{c^2x(A+3iB)}{a}+\frac{iBc^2\tan(e+fx)}{af}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2)/(a + I*a*Tan[e + f*x]),
x]
```

```
[Out] -(((A + (3*I)*B)*c^2*x)/a) - ((I*A - 3*B)*c^2*Log[Cos[e + f*x]])/(a*f) - (2
*(A + I*B)*c^2)/(a*f*(I - Tan[e + f*x])) + (I*B*c^2*Tan[e + f*x])/(a*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^2}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)}{(a+iax)^2}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{iBc}{a^2}-\frac{2(A+iB)c}{a^2(-i+x)^2}+\frac{i(A+3iB)c}{a^2(-i+x)}\right)dx,x,\tan(e+fx)\right)}{f}$$
$$= -\frac{(A+3iB)c^2x}{a}-\frac{(iA-3B)c^2\log(\cos(e+fx))}{af}-\frac{2(A+iB)c^2}{af(i-\tan(e+fx))}+$$

Mathematica [A] time = 3.61088, size = 184, normalized size = 1.92

$$\frac{c^2(\cos(fx)+i\sin(fx))(A+B\tan(e+fx))\left(2(A+iB)(\sin(e)+i\cos(e))\cos(2fx)+2(A+iB)(\cos(e)-i\sin(e))\sin(2fx)\right.}{2f(a+ia\tan(e+fx}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2)/(a + I*a*Tan[e +
f*x]),x]
```

```
[Out] (c^2*(Cos[f*x] + I*Sin[f*x])*(-2*(A + (3*I)*B)*ArcTan[Tan[f*x]]*(Cos[e] + I
*Sin[e]) + ((-I)*A + 3*B)*Log[Cos[e + f*x]^2]*(Cos[e] + I*Sin[e]) + 2*(A +
I*B)*Cos[2*f*x]*(I*Cos[e] + Sin[e]) + 2*(A + I*B)*(Cos[e] - I*Sin[e])*Sin[2
*f*x] - 2*B*Sec[e + f*x]*Sin[f*x]*(-I + Tan[e]))*(A + B*Tan[e + f*x]))/(2*f
*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x]))
```

Maple [A] time = 0.04, size = 113, normalized size = 1.2

$$\frac{iBc^2\tan\left(fx+e\right)}{af}+\frac{2\,iBc^2}{af\left(\tan\left(fx+e\right)-i\right)}+2\,\frac{Ac^2}{af\left(\tan\left(fx+e\right)-i\right)}+\frac{iAc^2\ln\left(\tan\left(fx+e\right)-i\right)}{af}-3\,\frac{Bc^2\ln\left(\tan\left(fx+e\right.\right.}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e)),x)
```

```
[Out] I*B*c^2*tan(f*x+e)/a/f+2*I/f*c^2/a/(tan(f*x+e)-I)*B+2/f*c^2/a/(tan(f*x+e)-I
)*A+I/f*c^2/a*A*ln(tan(f*x+e)-I)-3/f*c^2/a*B*ln(tan(f*x+e)-I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.74628, size = 387, normalized size = 4.03

$$-\frac{2\,(A+3i\,B)c^2fxe^{(4i\,fx+4i\,e)}-(i\,A-B)c^2+\left(2\,(A+3i\,B)c^2fx-(i\,A-3\,B)c^2\right)e^{(2i\,fx+2i\,e)}-\left((-i\,A+3\,B)c^2e^{(4i\,fx+4i\,e)}+(\cdots\right.}{afe^{(4i\,fx+4i\,e)}+afe^{(2i\,fx+2i\,e)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] -(2*(A + 3*I*B)*c^2*f*x*e^(4*I*f*x + 4*I*e) - (I*A - B)*c^2 + (2*(A + 3*I*B
)*c^2*f*x - (I*A - 3*B)*c^2)*e^(2*I*f*x + 2*I*e) - ((-I*A + 3*B)*c^2*e^(4*I
*f*x + 4*I*e) + (-I*A + 3*B)*c^2*e^(2*I*f*x + 2*I*e))*log(e^(2*I*f*x + 2*I*
e) + 1))/(a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))
```

Sympy [A] time = 5.1859, size = 184, normalized size = 1.92

$$-\frac{2Bc^2e^{-2ie}}{af\left(e^{2ifx}+e^{-2ie}\right)}+\frac{c^2\,(-iA+3B)\log\left(e^{2ifx}+e^{-2ie}\right)}{af}-\frac{\left(\begin{cases}2Ac^2xe^{2ie}-\frac{iAc^2e^{-2ifx}}{f}+6iBc^2xe^{2ie}+\frac{Bc^2e^{-2ifx}}{f} & \text{for } f\neq 0\\ x\left(2Ac^2e^{2ie}-2Ac^2+6iBc^2e^{2ie}-2iBc^2\right) & \text{otherwise}\end{cases}\right)e^{\cdots}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**2/(a+I*a*tan(f*x+e)),x)
```

```
[Out] -2*B*c**2*exp(-2*I*e)/(a*f*(exp(2*I*f*x) + exp(-2*I*e))) + c**2*(-I*A + 3*B
)*log(exp(2*I*f*x) + exp(-2*I*e))/(a*f) - Piecewise((2*A*c**2*x*exp(2*I*e)
- I*A*c**2*exp(-2*I*f*x)/f + 6*I*B*c**2*x*exp(2*I*e) + B*c**2*exp(-2*I*f*x)
/f, Ne(f, 0)), (x*(2*A*c**2*exp(2*I*e) - 2*A*c**2 + 6*I*B*c**2*exp(2*I*e) -
 2*I*B*c**2), True))*exp(-2*I*e)/a
```

Giac [B] time = 1.33605, size = 385, normalized size = 4.01

$$\frac{2\left(iAc^2-3Bc^2\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)}{a}+\frac{\left(-iAc^2+3Bc^2\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{a}-\frac{\left(iAc^2-3Bc^2\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{a}-\frac{-iAc^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2+3Bc^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] (2*(I*A*c^2 - 3*B*c^2)*log(tan(1/2*f*x + 1/2*e) - I)/a + (-I*A*c^2 + 3*B*c^
2)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a - (I*A*c^2 - 3*B*c^2)*log(abs(tan(1
/2*f*x + 1/2*e) - 1))/a - (-I*A*c^2*tan(1/2*f*x + 1/2*e)^2 + 3*B*c^2*tan(1/
2*f*x + 1/2*e)^2 + 2*I*B*c^2*tan(1/2*f*x + 1/2*e) + I*A*c^2 - 3*B*c^2)/((ta
n(1/2*f*x + 1/2*e)^2 - 1)*a) - (3*I*A*c^2*tan(1/2*f*x + 1/2*e)^2 - 9*B*c^2*
tan(1/2*f*x + 1/2*e)^2 + 10*A*c^2*tan(1/2*f*x + 1/2*e) + 22*I*B*c^2*tan(1/2
*f*x + 1/2*e) - 3*I*A*c^2 + 9*B*c^2)/(a*(tan(1/2*f*x + 1/2*e) - I)^2))/f
```

3.709 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=57

$$-\frac{c(A+iB)}{af(-\tan(e+fx)+i)}+\frac{Bc\log(\cos(e+fx))}{af}-\frac{iBcx}{a}$$

```
[Out] ((-I)*B*c*x)/a + (B*c*Log[Cos[e + f*x]])/(a*f) - ((A + I*B)*c)/(a*f*(I - Ta
n[e + f*x]))
```

Rubi [A] time = 0.090516, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$-\frac{c(A+iB)}{af(-\tan(e+fx)+i)}+\frac{Bc\log(\cos(e+fx))}{af}-\frac{iBcx}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(a + I*a*Tan[e + f*x]),x]
```


```
[Out] ((-I)*B*c*x)/a + (B*c*Log[Cos[e + f*x]])/(a*f) - ((A + I*B)*c)/(a*f*(I - Ta
n[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{-A-iB}{a^2(-i+x)^2}-\frac{B}{a^2(-i+x)}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{iBcx}{a}+\frac{Bc\log(\cos(e+fx))}{af}-\frac{(A+iB)c}{af(i-\tan(e+fx))}$$

Mathematica [B] time = 1.39471, size = 124, normalized size = 2.18

$$\frac{c\cos(e+fx)(A+B\tan(e+fx))\left(\tan(e+fx)\left(-iA+B\log\left(\cos^2(e+fx)\right)+B\right)+A-2iB\tan^{-1}(\tan(fx))(\tan(e+fx)\right.}{2af(\tan(e+fx)-i)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(a + I*a*Tan[e + f*
x]),x]
```

```
[Out] (c*Cos[e + f*x]*(A + B*Tan[e + f*x])*(A + I*B - I*B*Log[Cos[e + f*x]^2] + (
(-I)*A + B + B*Log[Cos[e + f*x]^2])*Tan[e + f*x] - (2*I)*B*ArcTan[Tan[f*x]]
*(-I + Tan[e + f*x])))/(2*a*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(-I + Tan[e
 + f*x]))
```

Maple [A] time = 0.042, size = 64, normalized size = 1.1

$$\frac{iBc}{af\left(\tan\left(fx+e\right)-i\right)}+\frac{Ac}{af\left(\tan\left(fx+e\right)-i\right)}-\frac{Bc\ln\left(\tan\left(fx+e\right)-i\right)}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e)),x)
```

```
[Out] I/f*c/a/(tan(f*x+e)-I)*B+1/f*c/a/(tan(f*x+e)-I)*A-1/f*c/a*B*ln(tan(f*x+e)-I
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.72784, size = 186, normalized size = 3.26

$$\frac{\left(-4 i Bcfxe^{\left(2 i fx+2 i e\right)}+2 Bce^{\left(2 i fx+2 i e\right)}\log\left(e^{\left(2 i fx+2 i e\right)}+1\right)+(i A-B)c\right)e^{\left(-2 i fx-2 i e\right)}}{2 af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, algorit
hm="fricas")
```

```
[Out] 1/2*(-4*I*B*c*f*x*e^(2*I*f*x + 2*I*e) + 2*B*c*e^(2*I*f*x + 2*I*e)*log(e^(2*
I*f*x + 2*I*e) + 1) + (I*A - B)*c)*e^(-2*I*f*x - 2*I*e)/(a*f)
```

Sympy [A] time = 1.4868, size = 114, normalized size = 2.

$$-\frac{2iBcx}{a}+\frac{Bc\log\left(e^{2ifx}+e^{-2ie}\right)}{af}+\begin{cases}\frac{(iAc-Bc)e^{-2ie}e^{-2ifx}}{2af} & \text{for } 2afe^{2ie}\neq 0\\ x\left(\frac{2iBc}{a}+\frac{\left(Ac-2iBce^{2ie}+iBc\right)e^{-2ie}}{a}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e)),x)
```

```
[Out] -2*I*B*c*x/a + B*c*log(exp(2*I*f*x) + exp(-2*I*e))/(a*f) + Piecewise(((I*A*
c - B*c)*exp(-2*I*e)*exp(-2*I*f*x)/(2*a*f), Ne(2*a*f*exp(2*I*e), 0)), (x*(2
*I*B*c/a + (A*c - 2*I*B*c*exp(2*I*e) + I*B*c)*exp(-2*I*e)/a), True))
```

Giac [B] time = 1.38725, size = 184, normalized size = 3.23

$$-\frac{\frac{2\,Bc\log\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-i\right)}{a}-\frac{Bc\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+1\right|\right)}{a}-\frac{Bc\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-1\right|\right)}{a}-\frac{3\,Bc\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{2}-2\,Ac\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-8i\,Bc\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right.}{a\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-i\right)^{2}}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, algorit
hm="giac")
```

```
[Out] -(2*B*c*log(tan(1/2*f*x + 1/2*e) - I)/a - B*c*log(abs(tan(1/2*f*x + 1/2*e)
+ 1))/a - B*c*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a - (3*B*c*tan(1/2*f*x + 1
/2*e)^2 - 2*A*c*tan(1/2*f*x + 1/2*e) - 8*I*B*c*tan(1/2*f*x + 1/2*e) - 3*B*c
)/(a*(tan(1/2*f*x + 1/2*e) - I)^2))/f
```

3.710 $\int \frac{A+B\tan(e+fx)}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=47

$$\frac{-B+iA}{2f(a+ia\tan(e+fx))}+\frac{x(A-iB)}{2a}$$

```
[Out] ((A - I*B)*x)/(2*a) + (I*A - B)/(2*f*(a + I*a*Tan[e + f*x]))
```

Rubi [A] time = 0.0451566, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {3526, 8}

$$\frac{-B+iA}{2f(a+ia\tan(e+fx))}+\frac{x(A-iB)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/(a + I*a*Tan[e + f*x]),x]
```

```
[Out] ((A - I*B)*x)/(2*a) + (I*A - B)/(2*f*(a + I*a*Tan[e + f*x]))
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\begin{aligned}\int \frac{A+B\tan(e+fx)}{a+ia\tan(e+fx)}\,dx &= \frac{iA-B}{2f(a+ia\tan(e+fx))}+\frac{(A-iB)\int 1\,dx}{2a}\\ &= \frac{(A-iB)x}{2a}+\frac{iA-B}{2f(a+ia\tan(e+fx))}\end{aligned}$$

Mathematica [B] time = 0.453828, size = 102, normalized size = 2.17

$$\frac{\cos(e+fx)(A+B\tan(e+fx))((A(2fx-i)-2iBfx+B)\tan(e+fx)-2iAfx+A+B(-2fx+i))}{4af(\tan(e+fx)-i)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/(a + I*a*Tan[e + f*x]),x]
```

```
[Out] (Cos[e + f*x]*(A + B*Tan[e + f*x])*(A - (2*I)*A*f*x + B*(I - 2*f*x) + (B -
(2*I)*B*f*x + A*(-I + 2*f*x))*Tan[e + f*x]))/(4*a*f*(A*Cos[e + f*x] + B*Sin
[e + f*x])*(-I + Tan[e + f*x]))
```

Maple [B] time = 0.04, size = 121, normalized size = 2.6

$$\frac{A}{2af\left(\tan\left(fx+e\right)-i\right)}+\frac{\frac{i}{2}B}{af\left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{i}{4}\ln\left(\tan\left(fx+e\right)-i\right)A}{af}-\frac{\ln\left(\tan\left(fx+e\right)-i\right)B}{4af}+\frac{B\ln\left(\tan\left(fx+e\right.\right.}{4af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 1/2/f/a/(tan(f*x+e)-I)*A+1/2*I/f/a/(tan(f*x+e)-I)*B-1/4*I/f/a*ln(tan(f*x+e)
-I)*A-1/4/f/a*ln(tan(f*x+e)-I)*B+1/4/f/a*B*ln(tan(f*x+e)+I)+1/4*I/f/a*A*ln(
tan(f*x+e)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.57428, size = 108, normalized size = 2.3

$$\frac{\left(2\,(A-i\,B)fxe^{(2i\,fx+2i\,e)}+i\,A-B\right)e^{(-2i\,fx-2i\,e)}}{4\,af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(A - I*B)*f*x*e^(2*I*f*x + 2*I*e) + I*A - B)*e^(-2*I*f*x - 2*I*e)/(a
*f)
```

Sympy [A] time = 0.732325, size = 88, normalized size = 1.87

$$\begin{cases} \frac{(iA-B)e^{-2ie}e^{-2ifx}}{4af} & \text{for } 4afe^{2ie}\neq 0 \\ x\left(-\frac{A-iB}{2a}+\frac{\left(Ae^{2ie}+A-iBe^{2ie}+iB\right)e^{-2ie}}{2a}\right) & \text{otherwise} \end{cases} + \frac{x\,(A-iB)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Piecewise(((I*A - B)*exp(-2*I*e)*exp(-2*I*f*x)/(4*a*f), Ne(4*a*f*exp(2*I*e)
, 0)), (x*(-(A - I*B)/(2*a) + (A*exp(2*I*e) + A - I*B*exp(2*I*e) + I*B)*exp
(-2*I*e)/(2*a)), True)) + x*(A - I*B)/(2*a)
```

Giac [B] time = 1.35319, size = 122, normalized size = 2.6

$$-\frac{\frac{(i\,A+B)\log\left(\tan\left(fx+e\right)-i\right)}{a}+\frac{(-i\,A-B)\log\left(-i\,\tan\left(fx+e\right)+1\right)}{a}+\frac{-i\,A\tan\left(fx+e\right)-B\tan\left(fx+e\right)-3\,A-i\,B}{a\left(\tan\left(fx+e\right)-i\right)}}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, algorithm="giac")
```

```
[Out] -1/4*((I*A + B)*log(tan(f*x + e) - I)/a + (-I*A - B)*log(-I*tan(f*x + e) +
1)/a + (-I*A*tan(f*x + e) - B*tan(f*x + e) - 3*A - I*B)/(a*(tan(f*x + e) -
I)))/f
```

3.711 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))}\,dx$

Optimal. Leaf size=45

$$\frac{Ax}{2ac}-\frac{\cos^2(e+fx)(B-A\tan(e+fx))}{2acf}$$

```
[Out] (A*x)/(2*a*c) - (Cos[e + f*x]^2*(B - A*Tan[e + f*x]))/(2*a*c*f)
```

Rubi [A] time = 0.127554, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {3588, 73, 639, 205}

$$\frac{Ax}{2ac}-\frac{\cos^2(e+fx)(B-A\tan(e+fx))}{2acf}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x])),x]
```

```
[Out] (A*x)/(2*a*c) - (Cos[e + f*x]^2*(B - A*Tan[e + f*x]))/(2*a*c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
```

```
Q[p, -1] && NeQ[p, -3/2]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\left(ac+acx^2\right)^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{\cos^2(e+fx)(B-A\tan(e+fx))}{2acf} + \frac{A\,\text{Subst}\left(\int \frac{1}{ac+acx^2}\,dx, x, \tan(e+\right.}{2f}$$
$$= \frac{Ax}{2ac} - \frac{\cos^2(e+fx)(B-A\tan(e+fx))}{2acf}$$

Mathematica [A] time = 0.0813218, size = 43, normalized size = 0.96

$$\frac{A(2(e+fx)+\sin(2(e+fx)))-2B\cos^2(e+fx)}{4acf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])),x]
```

```
[Out] (-2*B*Cos[e + f*x]^2 + A*(2*(e + f*x) + Sin[2*(e + f*x)]))/(4*a*c*f)
```

Maple [C] time = 0.062, size = 142, normalized size = 3.2

$$\frac{-\frac{i}{4}A\ln\left(\tan\left(fx+e\right)-i\right)}{afc} + \frac{A}{4\,afc\left(\tan\left(fx+e\right)-i\right)} + \frac{\frac{i}{4}B}{afc\left(\tan\left(fx+e\right)-i\right)} + \frac{\frac{i}{4}A\ln\left(\tan\left(fx+e\right)+i\right)}{afc} + \frac{}{4\,afc\left(\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] -1/4*I/f/a/c*A*ln(tan(f*x+e)-I)+1/4/f/a/c/(tan(f*x+e)-I)*A+1/4*I/f/a/c/(tan
(f*x+e)-I)*B+1/4*I/f/a/c*A*ln(tan(f*x+e)+I)+1/4/f/a/c/(tan(f*x+e)+I)*A-1/4*
I/f/a/c/(tan(f*x+e)+I)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [C] time = 1.69623, size = 144, normalized size = 3.2

$$\frac{\left(4\,Afxe^{\left(2i\,fx+2i\,e\right)}+\left(-i\,A-B\right)e^{\left(4i\,fx+4i\,e\right)}+i\,A-B\right)e^{\left(-2i\,fx-2i\,e\right)}}{8\,acf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algorit
hm="fricas")
```

```
[Out] 1/8*(4*A*f*x*e^(2*I*f*x + 2*I*e) + (-I*A - B)*e^(4*I*f*x + 4*I*e) + I*A - B
)*e^(-2*I*f*x - 2*I*e)/(a*c*f)
```

Sympy [A] time = 0.933316, size = 167, normalized size = 3.71

$$\frac{Ax}{2ac}+\begin{cases}\frac{\left(\left(8iAacf-8Bacf\right)e^{-2ifx}+\left(-8iAacfe^{4ie}-8Bacfe^{4ie}\right)e^{2ifx}\right)e^{-2ie}}{64a^2c^2f^2} & \text{for } 64a^2c^2f^2e^{2ie}\neq 0\\ x\left(-\frac{A}{2ac}+\frac{\left(Ae^{4ie}+2Ae^{2ie}+A-iBe^{4ie}+iB\right)e^{-2ie}}{4ac}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e)),x)
```

```
[Out] A*x/(2*a*c) + Piecewise((((8*I*A*a*c*f - 8*B*a*c*f)*exp(-2*I*f*x) + (-8*I*A
*a*c*f*exp(4*I*e) - 8*B*a*c*f*exp(4*I*e))*exp(2*I*f*x))*exp(-2*I*e)/(64*a**
2*c**2*f**2), Ne(64*a**2*c**2*f**2*exp(2*I*e), 0)), (x*(-A/(2*a*c) + (A*exp
(4*I*e) + 2*A*exp(2*I*e) + A - I*B*exp(4*I*e) + I*B)*exp(-2*I*e)/(4*a*c)),
True))
```

Giac [A] time = 1.45036, size = 72, normalized size = 1.6

$$\frac{\frac{(fx+e)A}{ac} + \frac{A\tan(fx+e) - B}{\left(\tan(fx+e)^2+1\right)ac}}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e)),x, algorit
hm="giac")
```

```
[Out] 1/2*((f*x + e)*A/(a*c) + (A*tan(f*x + e) - B)/((tan(f*x + e)^2 + 1)*a*c))/f
```

3.712 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^2}\,dx$

Optimal. Leaf size=113

$$-\frac{A+iB}{8ac^2f(-\tan(e+fx)+i)}+\frac{B+iA}{8ac^2f(\tan(e+fx)+i)^2}+\frac{x(3A+iB)}{8ac^2}+\frac{A}{4ac^2f(\tan(e+fx)+i)}$$

```
[Out] ((3*A + I*B)*x)/(8*a*c^2) - (A + I*B)/(8*a*c^2*f*(I - Tan[e + f*x])) + (I*A
 + B)/(8*a*c^2*f*(I + Tan[e + f*x])^2) + A/(4*a*c^2*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.189822, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{A+iB}{8ac^2f(-\tan(e+fx)+i)}+\frac{B+iA}{8ac^2f(\tan(e+fx)+i)^2}+\frac{x(3A+iB)}{8ac^2}+\frac{A}{4ac^2f(\tan(e+fx)+i)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2),
x]
```

```
[Out] ((3*A + I*B)*x)/(8*a*c^2) - (A + I*B)/(8*a*c^2*f*(I - Tan[e + f*x])) + (I*A
 + B)/(8*a*c^2*f*(I + Tan[e + f*x])^2) + A/(4*a*c^2*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{-A-iB}{8a^2c^3(-i+x)^2} - \frac{i(A-iB)}{4a^2c^3(i+x)^3} - \frac{A}{4a^2c^3(i+x)^2} + \frac{3A+iB}{8a^2c^3(1+x^2)}\right) dx, x\right.}{f}$$

$$= -\frac{A+iB}{8ac^2f(i-\tan(e+fx))} + \frac{iA+B}{8ac^2f(i+\tan(e+fx))^2} + \frac{A}{4ac^2f(i+\tan(}$$

$$= \frac{(3A+iB)x}{8ac^2} - \frac{A+iB}{8ac^2f(i-\tan(e+fx))} + \frac{iA+B}{8ac^2f(i+\tan(e+fx))^2} + \frac{}{4a}$$

Mathematica [A] time = 2.23363, size = 166, normalized size = 1.47

$$\frac{(\cos(2(e+fx))+i\sin(2(e+fx)))(A+B\tan(e+fx))(2(A(-3-6ifx)+B(2fx+i))\cos(e+fx)+(A+3iB)\cos(3(e+}{32ac^2f(\tan(e+fx)-i)(A\cos(e+fx)+B\sin(e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^2),x]
```

```
[Out] ((2*(A*(-3 - (6*I)*f*x) + B*(I + 2*f*x))*Cos[e + f*x] + (A + (3*I)*B)*Cos[3
*(e + f*x)] - ((9*I)*A + B + 12*A*f*x + (4*I)*B*f*x + ((6*I)*A - 2*B)*Cos[2
*(e + f*x)])*Sin[e + f*x])*(Cos[2*(e + f*x)] + I*Sin[2*(e + f*x)])*(A + B*T
an[e + f*x]))/(32*a*c^2*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(-I + Tan[e + f
*x]))
```

Maple [B] time = 0.07, size = 209, normalized size = 1.9

$$\frac{A}{8afc^2\left(\tan\left(fx+e\right)-i\right)} + \frac{\frac{i}{8}B}{afc^2\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{3i}{16}\ln\left(\tan\left(fx+e\right)-i\right)A}{afc^2} + \frac{\ln\left(\tan\left(fx+e\right)-i\right)B}{16afc^2} + \frac{}{4afc^2\left(\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 1/8/f/a/c^2/(tan(f*x+e)-I)*A+1/8*I/f/a/c^2/(tan(f*x+e)-I)*B-3/16*I/f/a/c^2*
ln(tan(f*x+e)-I)*A+1/16/f/a/c^2*ln(tan(f*x+e)-I)*B+1/4*A/a/c^2/f/(tan(f*x+e
)+I)+3/16*I/f/a/c^2*ln(tan(f*x+e)+I)*A-1/16/f/a/c^2*ln(tan(f*x+e)+I)*B+1/8*
I/f/a/c^2/(tan(f*x+e)+I)^2*A+1/8/f/a/c^2/(tan(f*x+e)+I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.72389, size = 217, normalized size = 1.92

$$\frac{\left(4\,(3\,A + i\,B)fxe^{\left(2i\,fx+2i\,e\right)} + (-i\,A - B)e^{\left(6i\,fx+6i\,e\right)} + (-6i\,A - 2\,B)e^{\left(4i\,fx+4i\,e\right)} + 2i\,A - 2\,B\right)e^{\left(-2i\,fx-2i\,e\right)}}{32\,ac^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, algor
ithm="fricas")
```

```
[Out] 1/32*(4*(3*A + I*B)*f*x*e^(2*I*f*x + 2*I*e) + (-I*A - B)*e^(6*I*f*x + 6*I*e
) + (-6*I*A - 2*B)*e^(4*I*f*x + 4*I*e) + 2*I*A - 2*B)*e^(-2*I*f*x - 2*I*e)/
(a*c^2*f)
```

Sympy [A] time = 1.63348, size = 286, normalized size = 2.53

$$\begin{cases} \frac{\left(\left(512iAa^2c^4f^2-512Ba^2c^4f^2\right)e^{-2ifx}+\left(-1536iAa^2c^4f^2e^{4ie}-512Ba^2c^4f^2e^{4ie}\right)e^{2ifx}+\left(-256iAa^2c^4f^2e^{6ie}-256Ba^2c^4f^2e^{6ie}\right)e^{4ifx}\right)e^{-2ie}}{8192a^3c^6f^3} & \text{for } 8192a^3c^6f^3e^{2ie} \\ x\left(-\frac{3A+iB}{8ac^2}+\frac{\left(Ae^{6ie}+3Ae^{4ie}+3Ae^{2ie}+A-iBe^{6ie}-iBe^{4ie}+iBe^{2ie}+iB\right)e^{-2ie}}{8ac^2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] Piecewise((((512*I*A*a**2*c**4*f**2 - 512*B*a**2*c**4*f**2)*exp(-2*I*f*x) +
 (-1536*I*A*a**2*c**4*f**2*exp(4*I*e) - 512*B*a**2*c**4*f**2*exp(4*I*e))*ex
p(2*I*f*x) + (-256*I*A*a**2*c**4*f**2*exp(6*I*e) - 256*B*a**2*c**4*f**2*exp
(6*I*e))*exp(4*I*f*x))*exp(-2*I*e)/(8192*a**3*c**6*f**3), Ne(8192*a**3*c**6
*f**3*exp(2*I*e), 0)), (x*(-(3*A + I*B)/(8*a*c**2) + (A*exp(6*I*e) + 3*A*ex
p(4*I*e) + 3*A*exp(2*I*e) + A - I*B*exp(6*I*e) - I*B*exp(4*I*e) + I*B*exp(2
*I*e) + I*B)*exp(-2*I*e)/(8*a*c**2)), True)) + x*(3*A + I*B)/(8*a*c**2)
```

Giac [A] time = 1.43216, size = 228, normalized size = 2.02

$$\frac{\frac{2\,(3i\,A-B)\log\left(\tan\left(fx+e\right)+i\right)}{ac^2}+\frac{2\,(-3i\,A+B)\log\left(\tan\left(fx+e\right)-i\right)}{ac^2}-\frac{2\left(3\,A\tan\left(fx+e\right)+i\,B\tan\left(fx+e\right)-5i\,A+3\,B\right)}{ac^2\left(i\tan\left(fx+e\right)+1\right)}+\frac{-9i\,A\tan\left(fx+e\right)^2+3\,B\tan\left(fx+e\right)^2+26\,A\ldots}{ac^2\left(\tan\left(f\ldots\right.\right.}}{32\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^2,x, algor
ithm="giac")
```

```
[Out] 1/32*(2*(3*I*A - B)*log(tan(f*x + e) + I)/(a*c^2) + 2*(-3*I*A + B)*log(tan(
f*x + e) - I)/(a*c^2) - 2*(3*A*tan(f*x + e) + I*B*tan(f*x + e) - 5*I*A + 3*
B)/(a*c^2*(I*tan(f*x + e) + 1)) + (-9*I*A*tan(f*x + e)^2 + 3*B*tan(f*x + e)
^2 + 26*A*tan(f*x + e) + 6*I*B*tan(f*x + e) + 21*I*A + B)/(a*c^2*(tan(f*x +
 e) + I)^2))/f
```

3.713 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^3}\,dx$

Optimal. Leaf size=149

$$-\frac{A+iB}{16ac^3f(-\tan(e+fx)+i)}+\frac{3A+iB}{16ac^3f(\tan(e+fx)+i)}-\frac{A-iB}{12ac^3f(\tan(e+fx)+i)^3}+\frac{x(2A+iB)}{8ac^3}+\frac{iA}{8ac^3f(\tan(e+fx)+$$

```
[Out] ((2*A + I*B)*x)/(8*a*c^3) - (A + I*B)/(16*a*c^3*f*(I - Tan[e + f*x])) - (A
- I*B)/(12*a*c^3*f*(I + Tan[e + f*x])^3) + ((I/8)*A)/(a*c^3*f*(I + Tan[e +
f*x])^2) + (3*A + I*B)/(16*a*c^3*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.215936, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{A+iB}{16ac^3f(-\tan(e+fx)+i)}+\frac{3A+iB}{16ac^3f(\tan(e+fx)+i)}-\frac{A-iB}{12ac^3f(\tan(e+fx)+i)^3}+\frac{x(2A+iB)}{8ac^3}+\frac{iA}{8ac^3f(\tan(e+fx)+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3),
x]
```


```
[Out] ((2*A + I*B)*x)/(8*a*c^3) - (A + I*B)/(16*a*c^3*f*(I - Tan[e + f*x])) - (A
- I*B)/(12*a*c^3*f*(I + Tan[e + f*x])^3) + ((I/8)*A)/(a*c^3*f*(I + Tan[e +
f*x])^2) + (3*A + I*B)/(16*a*c^3*f*(I + Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int\left(\frac{-A-iB}{16a^2c^4(-i+x)^2}+\frac{A-iB}{4a^2c^4(i+x)^4}-\frac{iA}{4a^2c^4(i+x)^3}+\frac{-3A-iB}{16a^2c^4(i+x)^2}+\frac{2}{8a^2\cdots}\right.\right.}{f}$$

$$= -\frac{A+iB}{16ac^3f(i-\tan(e+fx))}-\frac{A-iB}{12ac^3f(i+\tan(e+fx))^3}+\frac{iA}{8ac^3f(i+\tan\cdots}$$

$$= \frac{(2A+iB)x}{8ac^3}-\frac{A+iB}{16ac^3f(i-\tan(e+fx))}-\frac{A-iB}{12ac^3f(i+\tan(e+fx))^3}+\cdots$$

Mathematica [A] time = 2.4001, size = 203, normalized size = 1.36

$$\frac{(\cos(3(e+fx))+i\sin(3(e+fx)))(A+B\tan(e+fx))(3(A(-2-8ifx)+B(4fx+i))\cos(2(e+fx))+2(A+2iB)\cos(4\cdots}{96ac^3f(\tan(e\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^3),x]
```

```
[Out] ((Cos[3*(e + f*x)] + I*Sin[3*(e + f*x)])*(-18*A + 3*(A*(-2 - (8*I)*f*x) + B
*(I + 4*f*x))*Cos[2*(e + f*x)] + 2*(A + (2*I)*B)*Cos[4*(e + f*x)] - (6*I)*A
*Sin[2*(e + f*x)] - 3*B*Sin[2*(e + f*x)] - 24*A*f*x*Sin[2*(e + f*x)] - (12*
I)*B*f*x*Sin[2*(e + f*x)] - (4*I)*A*Sin[4*(e + f*x)] + 2*B*Sin[4*(e + f*x)]
)*(A + B*Tan[e + f*x]))/(96*a*c^3*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(-I +
 Tan[e + f*x]))
```

Maple [A] time = 0.068, size = 257, normalized size = 1.7

$$\frac{\frac{i}{16}B}{afc^3\left(\tan\left(fx+e\right)-i\right)}+\frac{A}{16\,afc^3\left(\tan\left(fx+e\right)-i\right)}+\frac{\ln\left(\tan\left(fx+e\right)-i\right)B}{16\,afc^3}-\frac{\frac{i}{8}\ln\left(\tan\left(fx+e\right)-i\right)A}{afc^3}+\frac{\frac{i}{8}}{afc^3\left(\tan\left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/16*I/f/a/c^3/(tan(f*x+e)-I)*B+1/16/f/a/c^3/(tan(f*x+e)-I)*A+1/16/f/a/c^3*
ln(tan(f*x+e)-I)*B-1/8*I/f/a/c^3*ln(tan(f*x+e)-I)*A+1/8*I*A/a/c^3/f/(tan(f*
x+e)+I)^2-1/12/f/a/c^3/(tan(f*x+e)+I)^3*A+1/12*I/f/a/c^3/(tan(f*x+e)+I)^3*B
+3/16/f/a/c^3/(tan(f*x+e)+I)*A+1/16*I/f/a/c^3/(tan(f*x+e)+I)*B-1/16/f/a/c^3
*ln(tan(f*x+e)+I)*B+1/8*I/f/a/c^3*ln(tan(f*x+e)+I)*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.1169, size = 258, normalized size = 1.73

$$\frac{\left(12\,(2\,A+i\,B)fxe^{\left(2i\,fx+2i\,e\right)}+(-i\,A-B)e^{\left(8i\,fx+8i\,e\right)}+(-6i\,A-3\,B)e^{\left(6i\,fx+6i\,e\right)}-18i\,Ae^{\left(4i\,fx+4i\,e\right)}+3i\,A-3\,B\right)e^{\left(-2i\,fx-2i\,e\right)}}{96\,ac^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, algor
ithm="fricas")
```

```
[Out] 1/96*(12*(2*A + I*B)*f*x*e^(2*I*f*x + 2*I*e) + (-I*A - B)*e^(8*I*f*x + 8*I*
e) + (-6*I*A - 3*B)*e^(6*I*f*x + 6*I*e) - 18*I*A*e^(4*I*f*x + 4*I*e) + 3*I*
```

```
A - 3*B)*e^(-2*I*f*x - 2*I*e)/(a*c^3*f)
```

Sympy [A] time = 2.75076, size = 330, normalized size = 2.21

$$\begin{cases} \frac{\left(-294912iAa^3c^9f^3e^{4ie}e^{2ifx}+\left(49152iAa^3c^9f^3-49152Ba^3c^9f^3\right)e^{-2ifx}+\left(-98304iAa^3c^9f^3e^{6ie}-49152Ba^3c^9f^3e^{6ie}\right)e^{4ifx}+\left(-16384iAa^3c^9f^3e^{8ie}-16384Ba^3c^9f^3e^{8i}\right.}{1572864a^4c^{12}f^4} \\ x\left(-\frac{2A+iB}{8ac^3}+\frac{\left(Ae^{8ie}+4Ae^{6ie}+6Ae^{4ie}+4Ae^{2ie}+A-iBe^{8ie}-2iBe^{6ie}+2iBe^{2ie}+iB\right)e^{-2ie}}{16ac^3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] Piecewise((((-294912*I*A*a**3*c**9*f**3*exp(4*I*e)*exp(2*I*f*x) + (49152*I*A
*a**3*c**9*f**3 - 49152*B*a**3*c**9*f**3)*exp(-2*I*f*x) + (-98304*I*A*a**3*
c**9*f**3*exp(6*I*e) - 49152*B*a**3*c**9*f**3*exp(6*I*e))*exp(4*I*f*x) + (-
16384*I*A*a**3*c**9*f**3*exp(8*I*e) - 16384*B*a**3*c**9*f**3*exp(8*I*e))*ex
p(6*I*f*x))*exp(-2*I*e)/(1572864*a**4*c**12*f**4), Ne(1572864*a**4*c**12*f*
*4*exp(2*I*e), 0)), (x*(-(2*A + I*B)/(8*a*c**3) + (A*exp(8*I*e) + 4*A*exp(6
*I*e) + 6*A*exp(4*I*e) + 4*A*exp(2*I*e) + A - I*B*exp(8*I*e) - 2*I*B*exp(6*
I*e) + 2*I*B*exp(2*I*e) + I*B)*exp(-2*I*e)/(16*a*c**3)), True)) + x*(2*A +
I*B)/(8*a*c**3)
```

Giac [A] time = 1.50393, size = 259, normalized size = 1.74

$$-\frac{\frac{6\,(-2i\,A+B)\log\left(\tan\left(fx+e\right)+i\right)}{ac^3}+\frac{6\,(2i\,A-B)\log\left(\tan\left(fx+e\right)-i\right)}{ac^3}+\frac{6\left(-2i\,A\tan\left(fx+e\right)+B\tan\left(fx+e\right)-3\,A-2i\,B\right)}{ac^3\left(\tan\left(fx+e\right)-i\right)}+\frac{22i\,A\tan\left(fx+e\right)^3-11\,B\tan\left(fx+e\right)^3-\cdots}{\cdots}}{96\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^3,x, algor
ithm="giac")
```

```
[Out] -1/96*(6*(-2*I*A + B)*log(tan(f*x + e) + I)/(a*c^3) + 6*(2*I*A - B)*log(tan
(f*x + e) - I)/(a*c^3) + 6*(-2*I*A*tan(f*x + e) + B*tan(f*x + e) - 3*A - 2*
I*B)/(a*c^3*(tan(f*x + e) - I)) + (22*I*A*tan(f*x + e)^3 - 11*B*tan(f*x + e
)^3 - 84*A*tan(f*x + e)^2 - 39*I*B*tan(f*x + e)^2 - 114*I*A*tan(f*x + e) +
45*B*tan(f*x + e) + 60*A + 9*I*B)/(a*c^3*(tan(f*x + e) + I)^3))/f
```

3.714 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^4}\,dx$

Optimal. Leaf size=181

$$-\frac{A+iB}{32ac^4f(-\tan(e+fx)+i)}+\frac{2A+iB}{16ac^4f(\tan(e+fx)+i)}+\frac{-B+3iA}{32ac^4f(\tan(e+fx)+i)^2}-\frac{B+iA}{16ac^4f(\tan(e+fx)+i)^4}+\frac{x(5A}{32}$$

```
[Out] ((5*A + (3*I)*B)*x)/(32*a*c^4) - (A + I*B)/(32*a*c^4*f*(I - Tan[e + f*x]))
- (I*A + B)/(16*a*c^4*f*(I + Tan[e + f*x])^4) - A/(12*a*c^4*f*(I + Tan[e +
f*x])^3) + ((3*I)*A - B)/(32*a*c^4*f*(I + Tan[e + f*x])^2) + (2*A + I*B)/(1
6*a*c^4*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.240197, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{A+iB}{32ac^4f(-\tan(e+fx)+i)}+\frac{2A+iB}{16ac^4f(\tan(e+fx)+i)}+\frac{-B+3iA}{32ac^4f(\tan(e+fx)+i)^2}-\frac{B+iA}{16ac^4f(\tan(e+fx)+i)^4}+\frac{x(5A}{32}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4),
x]
```



```
[Out] ((5*A + (3*I)*B)*x)/(32*a*c^4) - (A + I*B)/(32*a*c^4*f*(I - Tan[e + f*x]))
- (I*A + B)/(16*a*c^4*f*(I + Tan[e + f*x])^4) - A/(12*a*c^4*f*(I + Tan[e +
f*x])^3) + ((3*I)*A - B)/(32*a*c^4*f*(I + Tan[e + f*x])^2) + (2*A + I*B)/(1
6*a*c^4*f*(I + Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^4}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^5}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{-A-iB}{32a^2c^5(-i+x)^2} + \frac{iA+B}{4a^2c^5(i+x)^5} + \frac{A}{4a^2c^5(i+x)^4} + \frac{-3iA+B}{16a^2c^5(i+x)^3} + \frac{-}{16a}\right.\right.}{f}$$

$$= -\frac{A+iB}{32ac^4f(i-\tan(e+fx))} - \frac{iA+B}{16ac^4f(i+\tan(e+fx))^4} - \frac{A}{12ac^4f(i+\text{ta}}$$

$$= \frac{(5A+3iB)x}{32ac^4} - \frac{A+iB}{32ac^4f(i-\tan(e+fx))} - \frac{iA+B}{16ac^4f(i+\tan(e+fx))^4} -$$

Mathematica [A] time = 2.60032, size = 221, normalized size = 1.22

$$\frac{\sec(e+fx)(\cos(4(e+fx))+i\sin(4(e+fx)))(-12(15A+iB)\cos(e+fx)+4(-30iAfx-5A+18Bfx+3iB)\cos(3(e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^4),x]
```

```
[Out] (Sec[e + f*x]*(Cos[4*(e + f*x)] + I*Sin[4*(e + f*x)])*(-12*(15*A + I*B)*Cos
[e + f*x] + 4*(-5*A + (3*I)*B - (30*I)*A*f*x + 18*B*f*x)*Cos[3*(e + f*x)] +
 9*A*Cos[5*(e + f*x)] + (15*I)*B*Cos[5*(e + f*x)] + (60*I)*A*Sin[e + f*x] -
 36*B*Sin[e + f*x] - (20*I)*A*Sin[3*(e + f*x)] - 12*B*Sin[3*(e + f*x)] - 12
0*A*f*x*Sin[3*(e + f*x)] - (72*I)*B*f*x*Sin[3*(e + f*x)] - (15*I)*A*Sin[5*(
e + f*x)] + 9*B*Sin[5*(e + f*x)]))/(768*a*c^4*f*(-I + Tan[e + f*x]))
```

Maple [A] time = 0.073, size = 303, normalized size = 1.7

$$\frac{A}{32\,afc^4\left(\tan\left(fx+e\right)-i\right)}+\frac{\frac{i}{32}B}{afc^4\left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{5\,i}{64}\ln\left(\tan\left(fx+e\right)-i\right)A}{afc^4}+\frac{3\,\ln\left(\tan\left(fx+e\right)-i\right)B}{64\,afc^4}+\frac{}{afc^4\left(\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 1/32/f/a/c^4/(tan(f*x+e)-I)*A+1/32*I/f/a/c^4/(tan(f*x+e)-I)*B-5/64*I/f/a/c^
4*ln(tan(f*x+e)-I)*A+3/64/f/a/c^4*ln(tan(f*x+e)-I)*B+1/16*I/f/a/c^4/(tan(f*
x+e)+I)*B+1/8/f/a/c^4/(tan(f*x+e)+I)*A+5/64*I/f/a/c^4*ln(tan(f*x+e)+I)*A-3/
64/f/a/c^4*ln(tan(f*x+e)+I)*B-1/12*A/a/c^4/f/(tan(f*x+e)+I)^3+3/32*I/f/a/c^
4/(tan(f*x+e)+I)^2*A-1/32/f/a/c^4/(tan(f*x+e)+I)^2*B-1/16*I/f/a/c^4/(tan(f*
x+e)+I)^4*A-1/16/f/a/c^4/(tan(f*x+e)+I)^4*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.05957, size = 343, normalized size = 1.9

$$\frac{\left(24\,(5\,A+3i\,B)fxe^{\left(2i\,fx+2i\,e\right)}+(-3i\,A-3\,B)e^{\left(10i\,fx+10i\,e\right)}+(-20i\,A-12\,B)e^{\left(8i\,fx+8i\,e\right)}+(-60i\,A-12\,B)e^{\left(6i\,fx+6i\,e\right)}+(-120\right.}{768\,ac^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, algor
ithm="fricas")
```

```
[Out] 1/768*(24*(5*A + 3*I*B)*f*x*e^(2*I*f*x + 2*I*e) + (-3*I*A - 3*B)*e^(10*I*f*
x + 10*I*e) + (-20*I*A - 12*B)*e^(8*I*f*x + 8*I*e) + (-60*I*A - 12*B)*e^(6*
I*f*x + 6*I*e) + (-120*I*A + 24*B)*e^(4*I*f*x + 4*I*e) + 12*I*A - 12*B)*e^(
-2*I*f*x - 2*I*e)/(a*c^4*f)
```

Sympy [A] time = 3.73697, size = 440, normalized size = 2.43

$$\begin{cases} \frac{\left(\left(100663296iAa^4c^{16}f^4-100663296Ba^4c^{16}f^4\right)e^{-2ifx}+\left(-1006632960iAa^4c^{16}f^4e^{4ie}+201326592Ba^4c^{16}f^4e^{4ie}\right)e^{2ifx}+\left(-503316480iAa^4c^{16}f^4e^{6ie}-100663296Ba^4\right.\right.}{6442450944a^5c^{20}f} \\ x\left(-\frac{5A+3iB}{32ac^4}+\frac{\left(Ae^{10ie}+5Ae^{8ie}+10Ae^{6ie}+10Ae^{4ie}+5Ae^{2ie}+A-iBe^{10ie}-3iBe^{8ie}-2iBe^{6ie}+2iBe^{4ie}+3iBe^{2ie}+iB\right)e^{-2ie}}{32ac^4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] Piecewise((((100663296*I*A*a**4*c**16*f**4 - 100663296*B*a**4*c**16*f**4)*e
xp(-2*I*f*x) + (-1006632960*I*A*a**4*c**16*f**4*exp(4*I*e) + 201326592*B*a*
*4*c**16*f**4*exp(4*I*e))*exp(2*I*f*x) + (-503316480*I*A*a**4*c**16*f**4*ex
p(6*I*e) - 100663296*B*a**4*c**16*f**4*exp(6*I*e))*exp(4*I*f*x) + (-1677721
60*I*A*a**4*c**16*f**4*exp(8*I*e) - 100663296*B*a**4*c**16*f**4*exp(8*I*e))
*exp(6*I*f*x) + (-25165824*I*A*a**4*c**16*f**4*exp(10*I*e) - 25165824*B*a**
4*c**16*f**4*exp(10*I*e))*exp(8*I*f*x))*exp(-2*I*e)/(6442450944*a**5*c**20*
f**5), Ne(6442450944*a**5*c**20*f**5*exp(2*I*e), 0)), (x*(-(5*A + 3*I*B)/(3
2*a*c**4) + (A*exp(10*I*e) + 5*A*exp(8*I*e) + 10*A*exp(6*I*e) + 10*A*exp(4*
I*e) + 5*A*exp(2*I*e) + A - I*B*exp(10*I*e) - 3*I*B*exp(8*I*e) - 2*I*B*exp(
6*I*e) + 2*I*B*exp(4*I*e) + 3*I*B*exp(2*I*e) + I*B)*exp(-2*I*e)/(32*a*c**4)
), True)) + x*(5*A + 3*I*B)/(32*a*c**4)
```

Giac [A] time = 1.43888, size = 298, normalized size = 1.65

$$\frac{\frac{12\,(5i\,A-3\,B)\log\left(\tan\left(fx+e\right)+i\right)}{ac^4}+\frac{12\,(-5i\,A+3\,B)\log\left(\tan\left(fx+e\right)-i\right)}{ac^4}+\frac{12\left(5\,A\tan\left(fx+e\right)+3i\,B\tan\left(fx+e\right)-7i\,A+5\,B\right)}{ac^4\left(-i\,\tan\left(fx+e\right)-1\right)}+\frac{-125i\,A\tan\left(fx+e\right)^4+75\,B\tan\left(f\right.}{}}{768\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^4,x, algor
ithm="giac")
```

```
[Out] 1/768*(12*(5*I*A - 3*B)*log(tan(f*x + e) + I)/(a*c^4) + 12*(-5*I*A + 3*B)*l
og(tan(f*x + e) - I)/(a*c^4) + 12*(5*A*tan(f*x + e) + 3*I*B*tan(f*x + e) -
7*I*A + 5*B)/(a*c^4*(-I*tan(f*x + e) - 1)) + (-125*I*A*tan(f*x + e)^4 + 75*
B*tan(f*x + e)^4 + 596*A*tan(f*x + e)^3 + 348*I*B*tan(f*x + e)^3 + 1110*I*A
*tan(f*x + e)^2 - 618*B*tan(f*x + e)^2 - 996*A*tan(f*x + e) - 492*I*B*tan(f
*x + e) - 405*I*A + 99*B)/(a*c^4*(tan(f*x + e) + I)^4))/f
```

3.715 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^n}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=115

$$\frac{(B(n+2)+iA(2-n))(c-ic\tan(e+fx))^n\text{Hypergeometric2F1}\left(2,n,n+1,\frac{1}{2}(1-i\tan(e+fx))\right)}{16a^2fn}+\frac{(-B+iA)(c-ic}{4a^2f(1+i\tan}$$

```
[Out] ((I*A*(2 - n) + B*(2 + n))*Hypergeometric2F1[2, n, 1 + n, (1 - I*Tan[e + f*
x])/2]*(c - I*c*Tan[e + f*x])^n)/(16*a^2*f*n) + ((I*A - B)*(c - I*c*Tan[e +
 f*x])^n)/(4*a^2*f*(1 + I*Tan[e + f*x])^2)
```

Rubi [A] time = 0.17342, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 78, 68}

$$\frac{(B(n+2)+iA(2-n))(c-ic\tan(e+fx))^n\,{}_2F_1\left(2,n;n+1;\frac{1}{2}(1-i\tan(e+fx))\right)}{16a^2fn}+\frac{(-B+iA)(c-ic\tan(e+fx))^n}{4a^2f(1+i\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n)/(a + I*a*Tan[e + f*x])^
2,x]
```


```
[Out] ((I*A*(2 - n) + B*(2 + n))*Hypergeometric2F1[2, n, 1 + n, (1 - I*Tan[e + f*
x])/2]*(c - I*c*Tan[e + f*x])^n)/(16*a^2*f*n) + ((I*A - B)*(c - I*c*Tan[e +
 f*x])^n)/(4*a^2*f*(1 + I*Tan[e + f*x])^2)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
```

```
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^n}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{-1+n}}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(iA-B)(c-ic\tan(e+fx))^n}{4a^2f(1+i\tan(e+fx))^2} + \frac{(c(A(2-n)-iB(2+n)))\,\text{Subst}\left(\int \frac{(c-i}{(a}\right.}{4f}$$
$$= \frac{(iA(2-n)+B(2+n))\,{}_2F_1\left(2,n;1+n;\frac{1}{2}(1-i\tan(e+fx))\right)(c-ic\tan}{16a^2fn}$$

Mathematica [F] time = 180.002, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n)/(a + I*a*Tan[e +
f*x])^2,x]
```

```
[Out] $Aborted
```

Maple [F] time = 1.252, size = 0, normalized size = 0.

$$\int \frac{\left(A+B\tan\left(fx+e\right)\right)\left(c-ic\tan\left(fx+e\right)\right)^{n}}{\left(a+ia\tan\left(fx+e\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(4i\,fx+4i\,e)}+2\,Ae^{(2i\,fx+2i\,e)}+A+i\,B\right)\left(\frac{2\,c}{e^{(2i\,fx+2i\,e)}+1}\right)^{n}e^{(-4i\,fx-4i\,e)}}{4\,a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] integral(1/4*((A - I*B)*e^(4*I*f*x + 4*I*e) + 2*A*e^(2*I*f*x + 2*I*e) + A +
 I*B)*(2*c/(e^(2*I*f*x + 2*I*e) + 1))^n*e^(-4*I*f*x - 4*I*e)/a^2, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{n}}{\left(ia\tan\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^n/(I*a*tan(f*x + e)
+ a)^2, x)
```

3.716 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^5}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=194

$$\frac{c^5(-7B+iA)\tan^2(e+fx)}{2a^2f}-\frac{c^5(7A+24iB)\tan(e+fx)}{a^2f}+\frac{16c^5(2A+3iB)}{a^2f(-\tan(e+fx)+i)}-\frac{8c^5(-B+iA)}{a^2f(-\tan(e+fx)+i)^2}+\frac{8c^5(-7}{}$$

```
[Out] (8*(3*A + (7*I)*B)*c^5*x)/a^2 + (8*((3*I)*A - 7*B)*c^5*Log[Cos[e + f*x]])/(
a^2*f) - (8*(I*A - B)*c^5)/(a^2*f*(I - Tan[e + f*x])^2) + (16*(2*A + (3*I)*
B)*c^5)/(a^2*f*(I - Tan[e + f*x])) - ((7*A + (24*I)*B)*c^5*Tan[e + f*x])/(a
^2*f) + ((I*A - 7*B)*c^5*Tan[e + f*x]^2)/(2*a^2*f) + ((I/3)*B*c^5*Tan[e + f
*x]^3)/(a^2*f)
```

Rubi [A] time = 0.248915, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{c^5(-7B+iA)\tan^2(e+fx)}{2a^2f}-\frac{c^5(7A+24iB)\tan(e+fx)}{a^2f}+\frac{16c^5(2A+3iB)}{a^2f(-\tan(e+fx)+i)}-\frac{8c^5(-B+iA)}{a^2f(-\tan(e+fx)+i)^2}+\frac{8c^5(-7}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^5)/(a + I*a*Tan[e + f*x])^
2,x]
```



```
[Out] (8*(3*A + (7*I)*B)*c^5*x)/a^2 + (8*((3*I)*A - 7*B)*c^5*Log[Cos[e + f*x]])/(
a^2*f) - (8*(I*A - B)*c^5)/(a^2*f*(I - Tan[e + f*x])^2) + (16*(2*A + (3*I)*
B)*c^5)/(a^2*f*(I - Tan[e + f*x])) - ((7*A + (24*I)*B)*c^5*Tan[e + f*x])/(a
^2*f) + ((I*A - 7*B)*c^5*Tan[e + f*x]^2)/(2*a^2*f) + ((I/3)*B*c^5*Tan[e + f
*x]^3)/(a^2*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^5}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^4}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{(7A+24iB)c^4}{a^3} + \frac{i(A+7iB)c^4x}{a^3} + \frac{iBc^4x^2}{a^3} + \frac{16i(A+iB)c^4}{a^3(-i+x)^3} + \frac{16(2A+3i}{a^3(-i+x}\right.\right.}{f}$$

$$= \frac{8(3A+7iB)c^5x}{a^2} + \frac{8(3iA-7B)c^5\log(\cos(e+fx))}{a^2f} - \frac{8(iA-B)c^5}{a^2f(i-\tan(e+f}$$

Mathematica [B] time = 11.1381, size = 1357, normalized size = 6.99

$$\frac{4(5B-3iA)\cos(2fx)\sec(e+fx)(\cos(fx)+i\sin(fx))^2(A+B\tan(e+fx))c^5}{f(A\cos(e+fx)+B\sin(e+fx))(i\tan(e+fx)a+a)^2} - \frac{4(3A+5iB)\sec(e+fx)(\cos(fx)+i\sin}{f(A\cos(e+fx)+B\sin(e+}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^5)/(a + I*a*Tan[e +
f*x])^2,x]
```

```
[Out] (4*((-3*I)*A + 5*B)*c^5*Cos[2*f*x]*Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*(
A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e +
f*x])^2) + (Sec[e + f*x]*(3*A*c^5*Cos[e] + (7*I)*B*c^5*Cos[e] + (3*I)*A*c^5
*Sin[e] - 7*B*c^5*Sin[e])*(8*ArcTan[Tan[f*x]]*Cos[e] + (8*I)*ArcTan[Tan[f*x
]]*Sin[e])*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*
x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + (Sec[e + f*x]*(3*A*c^5*Cos
[e] + (7*I)*B*c^5*Cos[e] + (3*I)*A*c^5*Sin[e] - 7*B*c^5*Sin[e])*((4*I)*Cos[
e]*Log[Cos[e + f*x]^2] - 4*Log[Cos[e + f*x]^2]*Sin[e])*(Cos[f*x] + I*Sin[f*
x])^2*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*T
an[e + f*x])^2) + (Sec[e]*Sec[e + f*x]^3*(3*A*Cos[e] + (21*I)*B*Cos[e] + 2*
B*Sin[e])*((I/6)*c^5*Cos[2*e] - (c^5*Sin[2*e])/6)*(Cos[f*x] + I*Sin[f*x])^2
*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e
+ f*x])^2) + ((A + I*B)*Cos[4*f*x]*Sec[e + f*x]*((2*I)*c^5*Cos[2*e] + 2*c^5
```

```
*Sin[2*e])*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*
x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + ((3*A + (7*I)*B)*Sec[e + f
*x]*(8*c^5*f*x*Cos[2*e] + (8*I)*c^5*f*x*Sin[2*e])*(Cos[f*x] + I*Sin[f*x])^2
*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e
+ f*x])^2) - (4*(3*A + (5*I)*B)*c^5*Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*
Sin[2*f*x]*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a +
I*a*Tan[e + f*x])^2) + ((A + I*B)*Sec[e + f*x]*(2*c^5*Cos[2*e] - (2*I)*c^5*
Sin[2*e])*(Cos[f*x] + I*Sin[f*x])^2*Sin[4*f*x]*(A + B*Tan[e + f*x]))/(f*(A*
Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + (Sec[e]*Sec[e +
f*x]^4*(Cos[f*x] + I*Sin[f*x])^2*(-(B*c^5*Cos[2*e - f*x])/2 + (B*c^5*Cos[2*
e + f*x])/2 - (I/2)*B*c^5*Sin[2*e - f*x] + (I/2)*B*c^5*Sin[2*e + f*x])*(A +
 B*Tan[e + f*x]))/(3*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f
*x])^2) + (Sec[e]*Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^2*(((-21*I)/2)*A*c
^5*Cos[2*e - f*x] + (73*B*c^5*Cos[2*e - f*x])/2 + ((21*I)/2)*A*c^5*Cos[2*e
+ f*x] - (73*B*c^5*Cos[2*e + f*x])/2 + (21*A*c^5*Sin[2*e - f*x])/2 + ((73*I
)/2)*B*c^5*Sin[2*e - f*x] - (21*A*c^5*Sin[2*e + f*x])/2 - ((73*I)/2)*B*c^5*
Sin[2*e + f*x])*(A + B*Tan[e + f*x]))/(3*f*(A*Cos[e + f*x] + B*Sin[e + f*x]
)*(a + I*a*Tan[e + f*x])^2) + (x*Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*(-2
4*A*c^5 - (56*I)*B*c^5 - (24*I)*A*c^5*Tan[e] + 56*B*c^5*Tan[e] + ((-3*I)*A
+ 7*B)*(8*c^5*Cos[2*e] + (8*I)*c^5*Sin[2*e])*Tan[e])*(A + B*Tan[e + f*x]))/
((A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2)
```

Maple [A] time = 0.06, size = 240, normalized size = 1.2

$$\frac{\frac{i}{3}Bc^5\left(\tan\left(fx+e\right)\right)^3}{a^2f}+\frac{\frac{i}{2}c^5A\left(\tan\left(fx+e\right)\right)^2}{a^2f}-\frac{24\,ic^5B\tan\left(fx+e\right)}{a^2f}-\frac{7\,Bc^5\left(\tan\left(fx+e\right)\right)^2}{2\,a^2f}-7\,\frac{Ac^5\tan\left(fx+e\right)}{a^2f}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] 1/3*I*B*c^5*tan(f*x+e)^3/a^2/f+1/2*I/f*c^5/a^2*A*tan(f*x+e)^2-24*I/f*c^5/a^
2*B*tan(f*x+e)-7/2/f*c^5/a^2*B*tan(f*x+e)^2-7/f*c^5/a^2*A*tan(f*x+e)-48*I/f
*c^5/a^2/(tan(f*x+e)-I)*B-32/f*c^5/a^2/(tan(f*x+e)-I)*A-8*I/f*c^5/a^2/(tan(
f*x+e)-I)^2*A+8/f*c^5/a^2/(tan(f*x+e)-I)^2*B-24*I/f*c^5/a^2*A*ln(tan(f*x+e)
-I)+56/f*c^5/a^2*B*ln(tan(f*x+e)-I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.16834, size = 898, normalized size = 4.63

$$\frac{48\,(3\,A+7i\,B)c^5fxe^{(10i\,fx+10i\,e)}+(-18i\,A+42\,B)c^5e^{(2i\,fx+2i\,e)}+(6i\,A-6\,B)c^5+\left(144\,(3\,A+7i\,B)c^5fx+(-72i\,A+168\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/3*(48*(3*A + 7*I*B)*c^5*f*x*e^(10*I*f*x + 10*I*e) + (-18*I*A + 42*B)*c^5*
e^(2*I*f*x + 2*I*e) + (6*I*A - 6*B)*c^5 + (144*(3*A + 7*I*B)*c^5*f*x + (-72
*I*A + 168*B)*c^5)*e^(8*I*f*x + 8*I*e) + (144*(3*A + 7*I*B)*c^5*f*x + (-180
*I*A + 420*B)*c^5)*e^(6*I*f*x + 6*I*e) + (48*(3*A + 7*I*B)*c^5*f*x + (-132*
I*A + 308*B)*c^5)*e^(4*I*f*x + 4*I*e) + ((72*I*A - 168*B)*c^5*e^(10*I*f*x +
 10*I*e) + (216*I*A - 504*B)*c^5*e^(8*I*f*x + 8*I*e) + (216*I*A - 504*B)*c^
5*e^(6*I*f*x + 6*I*e) + (72*I*A - 168*B)*c^5*e^(4*I*f*x + 4*I*e))*log(e^(2*
I*f*x + 2*I*e) + 1))/(a^2*f*e^(10*I*f*x + 10*I*e) + 3*a^2*f*e^(8*I*f*x + 8*
I*e) + 3*a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))
```

Sympy [A] time = 14.6862, size = 389, normalized size = 2.01

$$\frac{-\frac{\left(12iAc^5-36Bc^5\right)e^{-2ie}e^{4ifx}}{a^2f}-\frac{\left(26iAc^5-82Bc^5\right)e^{-4ie}e^{2ifx}}{a^2f}-\frac{\left(42iAc^5-146Bc^5\right)e^{-6ie}}{3a^2f}}{e^{6ifx}+3e^{-2ie}e^{4ifx}+3e^{-4ie}e^{2ifx}+e^{-6ie}}+\frac{c^5\left(24iA-56B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{a^2f}+\frac{\left(\begin{cases}48Ac^5xe^{4ie}-\ldots\\x\left(48Ac^5e^{4ie}-\ldots\right.\end{cases}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**5/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] (-(12*I*A*c**5 - 36*B*c**5)*exp(-2*I*e)*exp(4*I*f*x)/(a**2*f) - (26*I*A*c**
5 - 82*B*c**5)*exp(-4*I*e)*exp(2*I*f*x)/(a**2*f) - (42*I*A*c**5 - 146*B*c**
5)*exp(-6*I*e)/(3*a**2*f))/(exp(6*I*f*x) + 3*exp(-2*I*e)*exp(4*I*f*x) + 3*e
xp(-4*I*e)*exp(2*I*f*x) + exp(-6*I*e)) + c**5*(24*I*A - 56*B)*log(exp(2*I*f
*x) + exp(-2*I*e))/(a**2*f) + Piecewise((48*A*c**5*x*exp(4*I*e) - 12*I*A*c*
*5*exp(2*I*e)*exp(-2*I*f*x)/f + 2*I*A*c**5*exp(-4*I*f*x)/f + 112*I*B*c**5*x
*exp(4*I*e) + 20*B*c**5*exp(2*I*e)*exp(-2*I*f*x)/f - 2*B*c**5*exp(-4*I*f*x)
/f, Ne(f, 0)), (x*(48*A*c**5*exp(4*I*e) - 24*A*c**5*exp(2*I*e) + 8*A*c**5 +
 112*I*B*c**5*exp(4*I*e) - 40*I*B*c**5*exp(2*I*e) + 8*I*B*c**5), True))*exp
(-4*I*e)/a**2
```

Giac [B] time = 1.88084, size = 698, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] -2/3*(24*(3*I*A*c^5 - 7*B*c^5)*log(tan(1/2*f*x + 1/2*e) - I)/a^2 - 12*(3*I*
A*c^5 - 7*B*c^5)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a^2 + 12*(-3*I*A*c^5 +
7*B*c^5)*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a^2 + (66*I*A*c^5*tan(1/2*f*x +
 1/2*e)^6 - 154*B*c^5*tan(1/2*f*x + 1/2*e)^6 - 21*A*c^5*tan(1/2*f*x + 1/2*e
)^5 - 72*I*B*c^5*tan(1/2*f*x + 1/2*e)^5 - 201*I*A*c^5*tan(1/2*f*x + 1/2*e)^
4 + 483*B*c^5*tan(1/2*f*x + 1/2*e)^4 + 42*A*c^5*tan(1/2*f*x + 1/2*e)^3 + 14
8*I*B*c^5*tan(1/2*f*x + 1/2*e)^3 + 201*I*A*c^5*tan(1/2*f*x + 1/2*e)^2 - 483
*B*c^5*tan(1/2*f*x + 1/2*e)^2 - 21*A*c^5*tan(1/2*f*x + 1/2*e) - 72*I*B*c^5*
tan(1/2*f*x + 1/2*e) - 66*I*A*c^5 + 154*B*c^5)/((tan(1/2*f*x + 1/2*e)^2 - 1
)^3*a^2) + (-150*I*A*c^5*tan(1/2*f*x + 1/2*e)^4 + 350*B*c^5*tan(1/2*f*x + 1
/2*e)^4 - 648*A*c^5*tan(1/2*f*x + 1/2*e)^3 - 1496*I*B*c^5*tan(1/2*f*x + 1/2
*e)^3 + 1044*I*A*c^5*tan(1/2*f*x + 1/2*e)^2 - 2340*B*c^5*tan(1/2*f*x + 1/2*
e)^2 + 648*A*c^5*tan(1/2*f*x + 1/2*e) + 1496*I*B*c^5*tan(1/2*f*x + 1/2*e) -
 150*I*A*c^5 + 350*B*c^5)/(a^2*(tan(1/2*f*x + 1/2*e) - I)^4))/f
```

3.717 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^4}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=158

$$-\frac{c^4(A+6iB)\tan(e+fx)}{a^2f}+\frac{4c^4(3A+5iB)}{a^2f(-\tan(e+fx)+i)}-\frac{4c^4(-B+iA)}{a^2f(-\tan(e+fx)+i)^2}+\frac{6c^4(-3B+iA)\log(\cos(e+fx))}{a^2f}+6c^4x$$

```
[Out] (6*(A + (3*I)*B)*c^4*x)/a^2 + (6*(I*A - 3*B)*c^4*Log[Cos[e + f*x]])/(a^2*f)
 - (4*(I*A - B)*c^4)/(a^2*f*(I - Tan[e + f*x])^2) + (4*(3*A + (5*I)*B)*c^4)
/(a^2*f*(I - Tan[e + f*x])) - ((A + (6*I)*B)*c^4*Tan[e + f*x])/(a^2*f) - (B
*c^4*Tan[e + f*x]^2)/(2*a^2*f)
```

Rubi [A] time = 0.210053, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{c^4(A+6iB)\tan(e+fx)}{a^2f}+\frac{4c^4(3A+5iB)}{a^2f(-\tan(e+fx)+i)}-\frac{4c^4(-B+iA)}{a^2f(-\tan(e+fx)+i)^2}+\frac{6c^4(-3B+iA)\log(\cos(e+fx))}{a^2f}+6c^4x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4)/(a + I*a*Tan[e + f*x])^
2,x]
```

```
[Out] (6*(A + (3*I)*B)*c^4*x)/a^2 + (6*(I*A - 3*B)*c^4*Log[Cos[e + f*x]])/(a^2*f)
 - (4*(I*A - B)*c^4)/(a^2*f*(I - Tan[e + f*x])^2) + (4*(3*A + (5*I)*B)*c^4)
/(a^2*f*(I - Tan[e + f*x])) - ((A + (6*I)*B)*c^4*Tan[e + f*x])/(a^2*f) - (B
*c^4*Tan[e + f*x]^2)/(2*a^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^4}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^3}{(a+iax)^3}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{(A+6iB)c^3}{a^3}-\frac{Bc^3x}{a^3}+\frac{8i(A+iB)c^3}{a^3(-i+x)^3}+\frac{4(3A+5iB)c^3}{a^3(-i+x)^2}+\frac{6(-iA+3B)c^3}{a^3(-i+x)}\right.\right.}{f}$$

$$= \frac{6(A+3iB)c^4x}{a^2}+\frac{6(iA-3B)c^4\log(\cos(e+fx))}{a^2f}-\frac{4(iA-B)c^4}{a^2f(i-\tan(e+fx}$$

Mathematica [B] time = 9.05899, size = 1079, normalized size = 6.83

$$c^4\left(\frac{\left(-\frac{1}{2}B\cos(2e)-\frac{1}{2}iB\sin(2e)\right)(\cos(fx)+i\sin(fx))^2(A+B\tan(e+fx))\sec^3(e+fx)}{f(A\cos(e+fx)+B\sin(e+fx))(i\tan(e+fx)a+a)^2}+\frac{\sec(e)(\cos(fx)+i\sin(fx))^2}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4)/(a + I*a*Tan[e +
f*x])^2,x]
```

```
[Out] c^4*((4*((-I)*A + 2*B)*Cos[2*f*x]*Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*(A
 + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f
*x])^2) + (Sec[e + f*x]*(A*Cos[e] + (3*I)*B*Cos[e] + I*A*Sin[e] - 3*B*Sin[e
])*(6*ArcTan[Tan[f*x]]*Cos[e] + (6*I)*ArcTan[Tan[f*x]]*Sin[e])*(Cos[f*x] +
I*Sin[f*x])^2*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a
 + I*a*Tan[e + f*x])^2) + (Sec[e + f*x]*(A*Cos[e] + (3*I)*B*Cos[e] + I*A*Si
n[e] - 3*B*Sin[e])*((3*I)*Cos[e]*Log[Cos[e + f*x]^2] - 3*Log[Cos[e + f*x]^2
]*Sin[e])*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x
] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + ((A + I*B)*Cos[4*f*x]*Sec[e
 + f*x]*(I*Cos[2*e] + Sin[2*e])*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*
x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + (Sec[
e + f*x]^3*(-(B*Cos[2*e])/2 - (I/2)*B*Sin[2*e])*(Cos[f*x] + I*Sin[f*x])^2*(
A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e +
f*x])^2) + ((A + (3*I)*B)*Sec[e + f*x]*(6*f*x*Cos[2*e] + (6*I)*f*x*Sin[2*e]
```

```
)*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Si
n[e + f*x])*(a + I*a*Tan[e + f*x])^2) - (4*(A + (2*I)*B)*Sec[e + f*x]*(Cos[
f*x] + I*Sin[f*x])^2*Sin[2*f*x]*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] +
B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + ((A + I*B)*Sec[e + f*x]*(Cos[2*
e] - I*Sin[2*e])*(Cos[f*x] + I*Sin[f*x])^2*Sin[4*f*x]*(A + B*Tan[e + f*x]))
/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2) + (Sec[e]*S
ec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^2*((-I/2)*A*Cos[2*e - f*x] + 3*B*Cos[
2*e - f*x] + (I/2)*A*Cos[2*e + f*x] - 3*B*Cos[2*e + f*x] + (A*Sin[2*e - f*x
])/2 + (3*I)*B*Sin[2*e - f*x] - (A*Sin[2*e + f*x])/2 - (3*I)*B*Sin[2*e + f*
x])*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan
[e + f*x])^2) + (x*Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*(-6*A - (18*I)*B
- (6*I)*A*Tan[e] + 18*B*Tan[e] + ((-I)*A + 3*B)*(6*Cos[2*e] + (6*I)*Sin[2*e
])*Tan[e])*(A + B*Tan[e + f*x]))/((A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*
a*Tan[e + f*x])^2))
```

Maple [A] time = 0.043, size = 198, normalized size = 1.3

$$-\frac{Bc^4\left(\tan\left(fx+e\right)\right)^2}{2\,a^2f}-\frac{6\,ic^4B\tan\left(fx+e\right)}{a^2f}-\frac{Ac^4\tan\left(fx+e\right)}{a^2f}-\frac{20\,ic^4B}{a^2f\left(\tan\left(fx+e\right)-i\right)}-12\,\frac{Ac^4}{a^2f\left(\tan\left(fx+e\right)-i\right)}-6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -1/2*B*c^4*tan(f*x+e)^2/a^2/f-6*I/f*c^4/a^2*B*tan(f*x+e)-1/f*c^4/a^2*A*tan(
f*x+e)-20*I/f*c^4/a^2/(tan(f*x+e)-I)*B-12/f*c^4/a^2/(tan(f*x+e)-I)*A-6*I/f*
c^4/a^2*A*ln(tan(f*x+e)-I)+18/f*c^4/a^2*B*ln(tan(f*x+e)-I)-4*I/f*c^4/a^2/(t
an(f*x+e)-I)^2*A+4/f*c^4/a^2/(tan(f*x+e)-I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.06549, size = 651, normalized size = 4.12

$$\frac{12\,(A+3i\,B)c^4fxe^{(8i\,fx+8i\,e)}+(-2i\,A+6\,B)c^4e^{(2i\,fx+2i\,e)}+(i\,A-B)c^4+\left(24\,(A+3i\,B)c^4fx+(-6i\,A+18\,B)c^4\right)e^{(6i\,fx+6i}}{a^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] (12*(A + 3*I*B)*c^4*f*x*e^(8*I*f*x + 8*I*e) + (-2*I*A + 6*B)*c^4*e^(2*I*f*x
 + 2*I*e) + (I*A - B)*c^4 + (24*(A + 3*I*B)*c^4*f*x + (-6*I*A + 18*B)*c^4)*
e^(6*I*f*x + 6*I*e) + (12*(A + 3*I*B)*c^4*f*x + (-9*I*A + 27*B)*c^4)*e^(4*I
*f*x + 4*I*e) + ((6*I*A - 18*B)*c^4*e^(8*I*f*x + 8*I*e) + (12*I*A - 36*B)*c
^4*e^(6*I*f*x + 6*I*e) + (6*I*A - 18*B)*c^4*e^(4*I*f*x + 4*I*e))*log(e^(2*I
*f*x + 2*I*e) + 1))/(a^2*f*e^(8*I*f*x + 8*I*e) + 2*a^2*f*e^(6*I*f*x + 6*I*e
) + a^2*f*e^(4*I*f*x + 4*I*e))
```

Sympy [A] time = 8.28398, size = 332, normalized size = 2.1

$$\frac{-\frac{\left(2iAc^4-12Bc^4\right)e^{-4ie}}{a^2f}-\frac{\left(2iAc^4-10Bc^4\right)e^{-2ie}e^{2ifx}}{a^2f}}{e^{4ifx}+2e^{-2ie}e^{2ifx}+e^{-4ie}}+\frac{6c^4\left(iA-3B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{a^2f}+\frac{\left(\begin{cases}12Ac^4xe^{4ie}-\frac{4iAc^4e^{2ie}e^{-2ifx}}{f}+\frac{iAc^4e^{-4ifx}}{f}+3\\x\left(12Ac^4e^{4ie}-8Ac^4e^{2ie}+4Ac^4+36iBc^4\end{cases}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**4/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] (-(2*I*A*c**4 - 12*B*c**4)*exp(-4*I*e)/(a**2*f) - (2*I*A*c**4 - 10*B*c**4)*
exp(-2*I*e)*exp(2*I*f*x)/(a**2*f))/(exp(4*I*f*x) + 2*exp(-2*I*e)*exp(2*I*f*
x) + exp(-4*I*e)) + 6*c**4*(I*A - 3*B)*log(exp(2*I*f*x) + exp(-2*I*e))/(a**
2*f) + Piecewise((12*A*c**4*x*exp(4*I*e) - 4*I*A*c**4*exp(2*I*e)*exp(-2*I*f
*x)/f + I*A*c**4*exp(-4*I*f*x)/f + 36*I*B*c**4*x*exp(4*I*e) + 8*B*c**4*exp(
2*I*e)*exp(-2*I*f*x)/f - B*c**4*exp(-4*I*f*x)/f, Ne(f, 0)), (x*(12*A*c**4*e
xp(4*I*e) - 8*A*c**4*exp(2*I*e) + 4*A*c**4 + 36*I*B*c**4*exp(4*I*e) - 16*I*
```

```
B*c**4*exp(2*I*e) + 4*I*B*c**4), True))*exp(-4*I*e)/a**2
```

Giac [B] time = 2.09514, size = 601, normalized size = 3.8

$$-\frac{\frac{12\left(iAc^4-3Bc^4\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)}{a^2}-\frac{6\left(iAc^4-3Bc^4\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{a^2}+\frac{6\left(-iAc^4+3Bc^4\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{a^2}+\frac{9iAc^4\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^4}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] -(12*(I*A*c^4 - 3*B*c^4)*log(tan(1/2*f*x + 1/2*e) - I)/a^2 - 6*(I*A*c^4 - 3
*B*c^4)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a^2 + 6*(-I*A*c^4 + 3*B*c^4)*log
(abs(tan(1/2*f*x + 1/2*e) - 1))/a^2 + (9*I*A*c^4*tan(1/2*f*x + 1/2*e)^4 - 2
7*B*c^4*tan(1/2*f*x + 1/2*e)^4 - 2*A*c^4*tan(1/2*f*x + 1/2*e)^3 - 12*I*B*c^
4*tan(1/2*f*x + 1/2*e)^3 - 18*I*A*c^4*tan(1/2*f*x + 1/2*e)^2 + 56*B*c^4*tan
(1/2*f*x + 1/2*e)^2 + 2*A*c^4*tan(1/2*f*x + 1/2*e) + 12*I*B*c^4*tan(1/2*f*x
 + 1/2*e) + 9*I*A*c^4 - 27*B*c^4)/((tan(1/2*f*x + 1/2*e)^2 - 1)^2*a^2) + (-
25*I*A*c^4*tan(1/2*f*x + 1/2*e)^4 + 75*B*c^4*tan(1/2*f*x + 1/2*e)^4 - 108*A
*c^4*tan(1/2*f*x + 1/2*e)^3 - 324*I*B*c^4*tan(1/2*f*x + 1/2*e)^3 + 182*I*A*
c^4*tan(1/2*f*x + 1/2*e)^2 - 514*B*c^4*tan(1/2*f*x + 1/2*e)^2 + 108*A*c^4*t
an(1/2*f*x + 1/2*e) + 324*I*B*c^4*tan(1/2*f*x + 1/2*e) - 25*I*A*c^4 + 75*B*
c^4)/(a^2*(tan(1/2*f*x + 1/2*e) - I)^4))/f
```

3.718 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^3}{(a+ia\tan(e+fx))^2} dx$

Optimal. Leaf size=128

$$\frac{4c^3(A+2iB)}{a^2f(-\tan(e+fx)+i)} - \frac{2c^3(-B+iA)}{a^2f(-\tan(e+fx)+i)^2} + \frac{c^3(-5B+iA)\log(\cos(e+fx))}{a^2f} + \frac{c^3x(A+5iB)}{a^2} - \frac{iBc^3\tan(e+fx)}{a^2f}$$

```
[Out] ((A + (5*I)*B)*c^3*x)/a^2 + ((I*A - 5*B)*c^3*Log[Cos[e + f*x]])/(a^2*f) - (
2*(I*A - B)*c^3)/(a^2*f*(I - Tan[e + f*x])^2) + (4*(A + (2*I)*B)*c^3)/(a^2*
f*(I - Tan[e + f*x])) - (I*B*c^3*Tan[e + f*x])/(a^2*f)
```

Rubi [A] time = 0.180117, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{4c^3(A+2iB)}{a^2f(-\tan(e+fx)+i)} - \frac{2c^3(-B+iA)}{a^2f(-\tan(e+fx)+i)^2} + \frac{c^3(-5B+iA)\log(\cos(e+fx))}{a^2f} + \frac{c^3x(A+5iB)}{a^2} - \frac{iBc^3\tan(e+fx)}{a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3)/(a + I*a*Tan[e + f*x])^
2,x]
```

```
[Out] ((A + (5*I)*B)*c^3*x)/a^2 + ((I*A - 5*B)*c^3*Log[Cos[e + f*x]])/(a^2*f) - (
2*(I*A - B)*c^3)/(a^2*f*(I - Tan[e + f*x])^2) + (4*(A + (2*I)*B)*c^3)/(a^2*
f*(I - Tan[e + f*x])) - (I*B*c^3*Tan[e + f*x])/(a^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^3}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^2}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(-\frac{iBc^2}{a^3}+\frac{4i(A+iB)c^2}{a^3(-i+x)^3}+\frac{4(A+2iB)c^2}{a^3(-i+x)^2}+\frac{(-iA+5B)c^2}{a^3(-i+x)}\right)dx, x, \tan(e\right.}{f}$$

$$= \frac{(A+5iB)c^3x}{a^2}+\frac{(iA-5B)c^3\log(\cos(e+fx))}{a^2f}-\frac{2(iA-B)c^3}{a^2f(i-\tan(e+fx))^2}$$

Mathematica [B] time = 6.79035, size = 413, normalized size = 3.23

$$-\frac{c^3\sec(e)\sec^2(e+fx)(\cos(fx)+i\sin(fx))^2\left(i(A+5iB)\cos^3(e)\log\left(\cos^2(e+fx)\right)+\cos(e)\left(\cos(2e)(2fx(A+5iB)+(A\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3)/(a + I*a*Tan[e +
f*x])^2,x]
```

```
[Out] -(c^3*Sec[e]*Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^2*(I*(A + (5*I)*B)*Cos[
e]^3*Log[Cos[e + f*x]^2] - 2*(A + (5*I)*B)*Cos[e]^2*Log[Cos[e + f*x]^2]*Sin
[e] + 2*(A + (5*I)*B)*ArcTan[Tan[f*x]]*Cos[e]*(Cos[2*e] + I*Sin[2*e]) + Cos
[e]*(-2*A*f*x - (10*I)*B*f*x - (2*I)*A*Cos[2*f*x] + 6*B*Cos[2*f*x] - I*A*Lo
g[Cos[e + f*x]^2]*Sin[e]^2 + 5*B*Log[Cos[e + f*x]^2]*Sin[e]^2 + (2*I)*A*f*x
*Sin[2*e] - 10*B*f*x*Sin[2*e] + A*Cos[4*f*x]*Sin[2*e] + I*B*Cos[4*f*x]*Sin[
2*e] - 2*A*Sin[2*f*x] - (6*I)*B*Sin[2*f*x] - I*A*Sin[2*e]*Sin[4*f*x] + B*Si
n[2*e]*Sin[4*f*x] + Cos[2*e]*(2*(A + (5*I)*B)*f*x + I*(A + I*B)*Cos[4*f*x]
+ (A + I*B)*Sin[4*f*x])) + Sec[e + f*x]*(Cos[e] + I*Sin[e])*(B*Cos[e - f*x]
 - B*Cos[e + f*x] + 2*Cos[e]*(I*(A*f*x + B*(-1 + (5*I)*f*x))*Sin[f*x] + ((-
I)*A + 5*B)*f*x*Sin[2*e + f*x]))))/(2*a^2*f*(-I + Tan[e + f*x])^2)
```

Maple [A] time = 0.044, size = 160, normalized size = 1.3

$$\frac{-iBc^3\tan(fx+e)}{a^2f}-\frac{8\,ic^3B}{a^2f(\tan(fx+e)-i)}-4\frac{Ac^3}{a^2f(\tan(fx+e)-i)}-\frac{iAc^3\ln(\tan(fx+e)-i)}{a^2f}+5\frac{Bc^3\ln(\tan(fx\right.}{a^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -I*B*c^3*tan(f*x+e)/a^2/f-8*I/f*c^3/a^2/(tan(f*x+e)-I)*B-4/f*c^3/a^2/(tan(f
*x+e)-I)*A-I/f*c^3/a^2*A*ln(tan(f*x+e)-I)+5/f*c^3/a^2*B*ln(tan(f*x+e)-I)-2*
I/f*c^3/a^2/(tan(f*x+e)-I)^2*A+2/f*c^3/a^2/(tan(f*x+e)-I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.1135, size = 460, normalized size = 3.59

$$\frac{4\,(A+5i\,B)c^3 fxe^{\left(6i\,fx+6i\,e\right)}+(-i\,A+5\,B)c^3e^{\left(2i\,fx+2i\,e\right)}+(i\,A-B)c^3+\left(4\,(A+5i\,B)c^3fx+(-2i\,A+10\,B)c^3\right)e^{\left(4i\,fx+4i\,e\right)}+}{2\left(a^2fe^{\left(6i\,fx+6i\,e\right)}+a^2fe^{\left(4i\,fx+4i\,e\right)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/2*(4*(A + 5*I*B)*c^3*f*x*e^(6*I*f*x + 6*I*e) + (-I*A + 5*B)*c^3*e^(2*I*f*
x + 2*I*e) + (I*A - B)*c^3 + (4*(A + 5*I*B)*c^3*f*x + (-2*I*A + 10*B)*c^3)*
e^(4*I*f*x + 4*I*e) + ((2*I*A - 10*B)*c^3*e^(6*I*f*x + 6*I*e) + (2*I*A - 10
*B)*c^3*e^(4*I*f*x + 4*I*e))*log(e^(2*I*f*x + 2*I*e) + 1))/(a^2*f*e^(6*I*f*
x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))
```

Sympy [A] time = 8.06495, size = 269, normalized size = 2.1

$$\frac{2Bc^3e^{-2ie}}{a^2f\left(e^{2ifx}+e^{-2ie}\right)}+\frac{c^3\left(iA-5B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{a^2f}+\frac{\left(\begin{cases}2Ac^3xe^{4ie}-\frac{iAc^3e^{2ie}e^{-2ifx}}{f}+\frac{iAc^3e^{-4ifx}}{2f}+10iBc^3xe^{4ie}+\frac{3Bc^3e^{2ie}e^{-2ifx}}{f}- \\ x\left(2Ac^3e^{4ie}-2Ac^3e^{2ie}+2Ac^3+10iBc^3e^{4ie}-6iBc^3e^{2ie}+2iBc^3\right)\end{cases}\right.}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**3/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] 2*B*c**3*exp(-2*I*e)/(a**2*f*(exp(2*I*f*x) + exp(-2*I*e))) + c**3*(I*A - 5*
B)*log(exp(2*I*f*x) + exp(-2*I*e))/(a**2*f) + Piecewise((2*A*c**3*x*exp(4*I
*e) - I*A*c**3*exp(2*I*e)*exp(-2*I*f*x)/f + I*A*c**3*exp(-4*I*f*x)/(2*f) +
10*I*B*c**3*x*exp(4*I*e) + 3*B*c**3*exp(2*I*e)*exp(-2*I*f*x)/f - B*c**3*exp
(-4*I*f*x)/(2*f), Ne(f, 0)), (x*(2*A*c**3*exp(4*I*e) - 2*A*c**3*exp(2*I*e)
+ 2*A*c**3 + 10*I*B*c**3*exp(4*I*e) - 6*I*B*c**3*exp(2*I*e) + 2*I*B*c**3),
True))*exp(-4*I*e)/a**2
```

Giac [B] time = 1.94927, size = 485, normalized size = 3.79

$$\frac{\frac{12\left(-iAc^3+5Bc^3\right)\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)}{a^2}+\frac{6\left(iAc^3-5Bc^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{a^2}-\frac{6\left(-iAc^3+5Bc^3\right)\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{a^2}-\frac{6\left(iAc^3\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/6*(12*(-I*A*c^3 + 5*B*c^3)*log(tan(1/2*f*x + 1/2*e) - I)/a^2 + 6*(I*A*c^3
 - 5*B*c^3)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a^2 - 6*(-I*A*c^3 + 5*B*c^3)
*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a^2 - 6*(I*A*c^3*tan(1/2*f*x + 1/2*e)^2
 - 5*B*c^3*tan(1/2*f*x + 1/2*e)^2 - 2*I*B*c^3*tan(1/2*f*x + 1/2*e) - I*A*c^
3 + 5*B*c^3)/((tan(1/2*f*x + 1/2*e)^2 - 1)*a^2) - (-25*I*A*c^3*tan(1/2*f*x
+ 1/2*e)^4 + 125*B*c^3*tan(1/2*f*x + 1/2*e)^4 - 100*A*c^3*tan(1/2*f*x + 1/2
*e)^3 - 548*I*B*c^3*tan(1/2*f*x + 1/2*e)^3 + 198*I*A*c^3*tan(1/2*f*x + 1/2*
e)^2 - 894*B*c^3*tan(1/2*f*x + 1/2*e)^2 + 100*A*c^3*tan(1/2*f*x + 1/2*e) +
548*I*B*c^3*tan(1/2*f*x + 1/2*e) - 25*I*A*c^3 + 125*B*c^3)/(a^2*(tan(1/2*f*
x + 1/2*e) - I)^4))/f
```

3.719 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^2}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=97

$$\frac{c^2(A+3iB)}{a^2f(-\tan(e+fx)+i)}-\frac{c^2(-B+iA)}{a^2f(-\tan(e+fx)+i)^2}-\frac{Bc^2\log(\cos(e+fx))}{a^2f}+\frac{iBc^2x}{a^2}$$

```
[Out] (I*B*c^2*x)/a^2 - (B*c^2*Log[Cos[e + f*x]])/(a^2*f) - ((I*A - B)*c^2)/(a^2*
f*(I - Tan[e + f*x])^2) + ((A + (3*I)*B)*c^2)/(a^2*f*(I - Tan[e + f*x]))
```

Rubi [A] time = 0.151759, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{c^2(A+3iB)}{a^2f(-\tan(e+fx)+i)}-\frac{c^2(-B+iA)}{a^2f(-\tan(e+fx)+i)^2}-\frac{Bc^2\log(\cos(e+fx))}{a^2f}+\frac{iBc^2x}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2)/(a + I*a*Tan[e + f*x])^
2,x]
```

```
[Out] (I*B*c^2*x)/a^2 - (B*c^2*Log[Cos[e + f*x]])/(a^2*f) - ((I*A - B)*c^2)/(a^2*
f*(I - Tan[e + f*x])^2) + ((A + (3*I)*B)*c^2)/(a^2*f*(I - Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^2}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{2i(A+iB)c}{a^3(-i+x)^3} + \frac{(A+3iB)c}{a^3(-i+x)^2} + \frac{Bc}{a^3(-i+x)}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{iBc^2x}{a^2} - \frac{Bc^2\log(\cos(e+fx))}{a^2f} - \frac{(iA-B)c^2}{a^2f(i-\tan(e+fx))^2} + \frac{(A+3iB)}{a^2f(i-\tan(e}$$

Mathematica [A] time = 2.45383, size = 140, normalized size = 1.44

$$\frac{c^2\sec^2(e+fx)\left(\cos(2(e+fx))\left(-iA+2B\log\left(\cos^2(e+fx)\right)+B\right)-A\sin(2(e+fx))-iB\sin(2(e+fx))+2iB\sin(2(e+}{4a^2f(\tan(e+fx)-i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2)/(a + I*a*Tan[e +
f*x])^2,x]
```

```
[Out] (c^2*Sec[e + f*x]^2*(-4*B + Cos[2*(e + f*x)]*((-I)*A + B + 2*B*Log[Cos[e +
f*x]^2]) - A*Sin[2*(e + f*x)] - I*B*Sin[2*(e + f*x)] + (2*I)*B*Log[Cos[e +
f*x]^2]*Sin[2*(e + f*x)] + 4*B*ArcTan[Tan[f*x]]*((-I)*Cos[2*(e + f*x)] + Si
n[2*(e + f*x)])))/(4*a^2*f*(-I + Tan[e + f*x])^2)
```

Maple [A] time = 0.044, size = 116, normalized size = 1.2

$$\frac{-3\,ic^2B}{fa^2\left(\tan\left(fx+e\right)-i\right)} - \frac{Ac^2}{fa^2\left(\tan\left(fx+e\right)-i\right)} + \frac{Bc^2\ln\left(\tan\left(fx+e\right)-i\right)}{fa^2} - \frac{iAc^2}{fa^2\left(\tan\left(fx+e\right)-i\right)^2} + \frac{Bc^2}{fa^2\left(\tan\left(fx+e\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -3*I/f*c^2/a^2/(tan(f*x+e)-I)*B-1/f*c^2/a^2/(tan(f*x+e)-I)*A+1/f*c^2/a^2*B*
ln(tan(f*x+e)-I)-I/f*c^2/a^2/(tan(f*x+e)-I)^2*A+1/f*c^2/a^2/(tan(f*x+e)-I)^
2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.10993, size = 236, normalized size = 2.43

$$\frac{\left(8i\,Bc^2fxe^{(4i\,fx+4i\,e)}-4\,Bc^2e^{(4i\,fx+4i\,e)}\log\left(e^{(2i\,fx+2i\,e)}+1\right)+4\,Bc^2e^{(2i\,fx+2i\,e)}+(i\,A-B)c^2\right)e^{(-4i\,fx-4i\,e)}}{4\,a^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/4*(8*I*B*c^2*f*x*e^(4*I*f*x + 4*I*e) - 4*B*c^2*e^(4*I*f*x + 4*I*e)*log(e^
(2*I*f*x + 2*I*e) + 1) + 4*B*c^2*e^(2*I*f*x + 2*I*e) + (I*A - B)*c^2)*e^(-4
*I*f*x - 4*I*e)/(a^2*f)
```

Sympy [A] time = 1.76239, size = 207, normalized size = 2.13

$$\frac{2iBc^2x}{a^2}-\frac{Bc^2\log\left(e^{2ifx}+e^{-2ie}\right)}{a^2f}+\begin{cases}\frac{\left(4Ba^2c^2fe^{4ie}e^{-2ifx}+\left(iAa^2c^2fe^{2ie}-Ba^2c^2fe^{2ie}\right)e^{-4ifx}\right)e^{-6ie}}{4a^4f^2} & \text{for } 4a^4f^2e^{6ie}\neq 0\\ x\left(-\frac{2iBc^2}{a^2}+\frac{\left(Ac^2+2iBc^2e^{4ie}-2iBc^2e^{2ie}+iBc^2\right)e^{-4ie}}{a^2}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**2/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] 2*I*B*c**2*x/a**2 - B*c**2*log(exp(2*I*f*x) + exp(-2*I*e))/(a**2*f) + Piece
wise(((4*B*a**2*c**2*f*exp(4*I*e)*exp(-2*I*f*x) + (I*A*a**2*c**2*f*exp(2*I*
e) - B*a**2*c**2*f*exp(2*I*e))*exp(-4*I*f*x))*exp(-6*I*e)/(4*a**4*f**2), Ne
(4*a**4*f**2*exp(6*I*e), 0)), (x*(-2*I*B*c**2/a**2 + (A*c**2 + 2*I*B*c**2*e
xp(4*I*e) - 2*I*B*c**2*exp(2*I*e) + I*B*c**2)*exp(-4*I*e)/a**2), True))
```

Giac [B] time = 1.24559, size = 275, normalized size = 2.84

$$\frac{\frac{12\,Bc^2\log\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-i\right)}{a^2}-\frac{6\,Bc^2\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+1\right|\right)}{a^2}-\frac{6\,Bc^2\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-1\right|\right)}{a^2}-\frac{25\,Bc^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4+12\,Ac^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3-112i\,Bc}{}}{6\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/6*(12*B*c^2*log(tan(1/2*f*x + 1/2*e) - I)/a^2 - 6*B*c^2*log(abs(tan(1/2*f
*x + 1/2*e) + 1))/a^2 - 6*B*c^2*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a^2 - (2
5*B*c^2*tan(1/2*f*x + 1/2*e)^4 + 12*A*c^2*tan(1/2*f*x + 1/2*e)^3 - 112*I*B*
c^2*tan(1/2*f*x + 1/2*e)^3 - 198*B*c^2*tan(1/2*f*x + 1/2*e)^2 - 12*A*c^2*ta
n(1/2*f*x + 1/2*e) + 112*I*B*c^2*tan(1/2*f*x + 1/2*e) + 25*B*c^2)/(a^2*(tan
(1/2*f*x + 1/2*e) - I)^4))/f
```

3.720 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=48

$$-\frac{c(A+B\tan(e+fx))^2}{2a^2f(-B+iA)(1+i\tan(e+fx))^2}$$

```
[Out] -(c*(A + B*Tan[e + f*x])^2)/(2*a^2*(I*A - B)*f*(1 + I*Tan[e + f*x])^2)
```

Rubi [A] time = 0.0813494, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 37}

$$-\frac{c(A+B\tan(e+fx))^2}{2a^2f(-B+iA)(1+i\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(a + I*a*Tan[e + f*x])^2,
x]
```

```
[Out] -(c*(A + B*Tan[e + f*x])^2)/(2*a^2*(I*A - B)*f*(1 + I*Tan[e + f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))}{(a+ia\tan(e+fx))^2}\,dx=\frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^3}\,dx,x,\tan(e+fx)\right)}{f}$$
$$=-\frac{c(A+B\tan(e+fx))^2}{2a^2(iA-B)f(1+i\tan(e+fx))^2}$$

Mathematica [A] time = 1.44238, size = 58, normalized size = 1.21

$$\frac{(c-ic\tan(e+fx))((A-3iB)\tan(e+fx)-3iA-B)}{8a^2f(\tan(e+fx)-i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(a + I*a*Tan[e + f*
x])^2,x]
```

```
[Out] (((-3*I)*A - B + (A - (3*I)*B)*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(8*a^2
*f*(-I + Tan[e + f*x])^2)
```

Maple [A] time = 0.043, size = 46, normalized size = 1.

$$\frac{c}{fa^2}\left(\frac{-iB}{\tan(fx+e)-i}-\frac{iA-B}{2\left(\tan(fx+e)-i\right)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] 1/f*c/a^2*(-I*B/(tan(f*x+e)-I)-1/2*(I*A-B)/(tan(f*x+e)-I)^2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.15748, size = 116, normalized size = 2.42

$$\frac{\left((2i\,A+2\,B)ce^{\left(2i\,fx+2i\,e\right)}+(i\,A-B)c\right)e^{\left(-4i\,fx-4i\,e\right)}}{8\,a^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algor
ithm="fricas")
```

```
[Out] 1/8*((2*I*A + 2*B)*c*e^(2*I*f*x + 2*I*e) + (I*A - B)*c)*e^(-4*I*f*x - 4*I*e
)/(a^2*f)
```

Sympy [A] time = 1.52294, size = 160, normalized size = 3.33

$$\begin{cases}\frac{\left(\left(4iAa^2cfe^{2ie}-4Ba^2cfe^{2ie}\right)e^{-4ifx}+\left(8iAa^2cfe^{4ie}+8Ba^2cfe^{4ie}\right)e^{-2ifx}\right)e^{-6ie}}{32a^4f^2} & \text{for } 32a^4f^2e^{6ie}\neq 0\\ \frac{x\left(Ace^{2ie}+Ac-iBce^{2ie}+iBc\right)e^{-4ie}}{2a^2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] Piecewise((((4*I*A*a**2*c*f*exp(2*I*e) - 4*B*a**2*c*f*exp(2*I*e))*exp(-4*I*
f*x) + (8*I*A*a**2*c*f*exp(4*I*e) + 8*B*a**2*c*f*exp(4*I*e))*exp(-2*I*f*x))
*exp(-6*I*e)/(32*a**4*f**2), Ne(32*a**4*f**2*exp(6*I*e), 0)), (x*(A*c*exp(2
*I*e) + A*c - I*B*c*exp(2*I*e) + I*B*c)*exp(-4*I*e)/(2*a**2), True))
```

Giac [A] time = 1.29276, size = 113, normalized size = 2.35

$$-\frac{2\left(Ac\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{3}-iAc\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2}-Bc\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2}-Ac\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)\right)}{a^{2}f\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algor
ithm="giac")
```

```
[Out] -2*(A*c*tan(1/2*f*x + 1/2*e)^3 - I*A*c*tan(1/2*f*x + 1/2*e)^2 - B*c*tan(1/2
*f*x + 1/2*e)^2 - A*c*tan(1/2*f*x + 1/2*e))/(a^2*f*(tan(1/2*f*x + 1/2*e) -
I)^4)
```

3.721 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=80

$$\frac{B+iA}{4f\left(a^2+ia^2\tan(e+fx)\right)}+\frac{x(A-iB)}{4a^2}+\frac{-B+iA}{4f(a+ia\tan(e+fx))^2}$$

```
[Out] ((A - I*B)*x)/(4*a^2) + (I*A - B)/(4*f*(a + I*a*Tan[e + f*x])^2) + (I*A + B
)/(4*f*(a^2 + I*a^2*Tan[e + f*x]))
```

Rubi [A] time = 0.0653431, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3526, 3479, 8}

$$\frac{B+iA}{4f\left(a^2+ia^2\tan(e+fx)\right)}+\frac{x(A-iB)}{4a^2}+\frac{-B+iA}{4f(a+ia\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/(a + I*a*Tan[e + f*x])^2,x]
```


```
[Out] ((A - I*B)*x)/(4*a^2) + (I*A - B)/(4*f*(a + I*a*Tan[e + f*x])^2) + (I*A + B
)/(4*f*(a^2 + I*a^2*Tan[e + f*x]))
```


Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2}\,dx = \frac{iA-B}{4f(a+ia\tan(e+fx))^2} + \frac{(A-iB)\int \frac{1}{a+ia\tan(e+fx)}\,dx}{2a}$$
$$= \frac{iA-B}{4f(a+ia\tan(e+fx))^2} + \frac{iA+B}{4f\left(a^2+ia^2\tan(e+fx)\right)} + \frac{(A-iB)\int 1\,dx}{4a^2}$$
$$= \frac{(A-iB)x}{4a^2} + \frac{iA-B}{4f(a+ia\tan(e+fx))^2} + \frac{iA+B}{4f\left(a^2+ia^2\tan(e+fx)\right)}$$

Mathematica [A] time = 0.503802, size = 94, normalized size = 1.18

$$-\frac{\sec^2(e+fx)((4iAfx+A+4Bfx+iB)\sin(2(e+fx))+(A(4fx+i)+B(-1-4ifx))\cos(2(e+fx))+4iA)}{16a^2f(\tan(e+fx)-i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/(a + I*a*Tan[e + f*x])^2,x]
```

```
[Out] -(Sec[e + f*x]^2*((4*I)*A + (B*(-1 - (4*I)*f*x) + A*(I + 4*f*x))*Cos[2*(e +
 f*x)] + (A + I*B + (4*I)*A*f*x + 4*B*f*x)*Sin[2*(e + f*x)]))/(16*a^2*f*(-I
 + Tan[e + f*x])^2)
```

Maple [B] time = 0.042, size = 162, normalized size = 2.

$$\frac{A}{4fa^2\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{i}{4}B}{fa^2\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{i}{8}\ln\left(\tan\left(fx+e\right)-i\right)A}{fa^2} - \frac{\ln\left(\tan\left(fx+e\right)-i\right)B}{8fa^2} - \frac{\frac{i}{4}A}{fa^2\left(\tan\left(fx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] 1/4/f/a^2/(tan(f*x+e)-I)*A-1/4*I/f/a^2/(tan(f*x+e)-I)*B-1/8*I/f/a^2*ln(tan(
f*x+e)-I)*A-1/8/f/a^2*ln(tan(f*x+e)-I)*B-1/4*I/f/a^2/(tan(f*x+e)-I)^2*A+1/4
/f/a^2/(tan(f*x+e)-I)^2*B+1/8/f/a^2*B*ln(tan(f*x+e)+I)+1/8*I/f/a^2*A*ln(tan
```

```
(f*x+e)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.0329, size = 150, normalized size = 1.88

$$\frac{\left(4\,(A-i\,B)fxe^{\left(4i\,fx+4i\,e\right)}+4i\,Ae^{\left(2i\,fx+2i\,e\right)}+i\,A-B\right)e^{\left(-4i\,fx-4i\,e\right)}}{16\,a^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/16*(4*(A - I*B)*f*x*e^(4*I*f*x + 4*I*e) + 4*I*A*e^(2*I*f*x + 2*I*e) + I*A
 - B)*e^(-4*I*f*x - 4*I*e)/(a^2*f)
```

Sympy [A] time = 1.18336, size = 163, normalized size = 2.04

$$\begin{cases}\frac{\left(16iAa^2fe^{4ie}e^{-2ifx}+\left(4iAa^2fe^{2ie}-4Ba^2fe^{2ie}\right)e^{-4ifx}\right)e^{-6ie}}{64a^4f^2} & \text{for}\ 64a^4f^2e^{6ie}\neq 0\\ x\left(-\frac{A-iB}{4a^2}+\frac{\left(Ae^{4ie}+2Ae^{2ie}+A-iBe^{4ie}+iB\right)e^{-4ie}}{4a^2}\right) & \text{otherwise}\end{cases}+\frac{x\,(A-iB)}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] Piecewise(((16*I*A*a**2*f*exp(4*I*e)*exp(-2*I*f*x) + (4*I*A*a**2*f*exp(2*I*
e) - 4*B*a**2*f*exp(2*I*e))*exp(-4*I*f*x))*exp(-6*I*e)/(64*a**4*f**2), Ne(6
```

```
4*a**4*f**2*exp(6*I*e), 0)), (x*(-(A - I*B)/(4*a**2) + (A*exp(4*I*e) + 2*A*
exp(2*I*e) + A - I*B*exp(4*I*e) + I*B)*exp(-4*I*e)/(4*a**2)), True)) + x*(A
 - I*B)/(4*a**2)
```

Giac [A] time = 1.34665, size = 158, normalized size = 1.98

$$-\frac{\frac{2\,(-i\,A-B)\log\left(\tan\left(fx+e\right)+i\right)}{a^2}-\frac{2\,(-i\,A-B)\log\left(\tan\left(fx+e\right)-i\right)}{a^2}-\frac{3i\,A\tan\left(fx+e\right)^2+3\,B\tan\left(fx+e\right)^2+10\,A\tan\left(fx+e\right)-10i\,B\tan\left(fx+e\right)-11i\,A-3\,B}{a^2\left(\tan\left(fx+e\right)-i\right)^2}}{16\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algorithm="giac")
```

```
[Out] -1/16*(2*(-I*A - B)*log(tan(f*x + e) + I)/a^2 - 2*(-I*A - B)*log(tan(f*x +
e) - I)/a^2 - (3*I*A*tan(f*x + e)^2 + 3*B*tan(f*x + e)^2 + 10*A*tan(f*x + e
) - 10*I*B*tan(f*x + e) - 11*I*A - 3*B)/(a^2*(tan(f*x + e) - I)^2))/f
```

3.722 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))}\,dx$

Optimal. Leaf size=117

$$\frac{A-iB}{8a^2cf(\tan(e+fx)+i)}-\frac{-B+iA}{8a^2cf(-\tan(e+fx)+i)^2}+\frac{x(3A-iB)}{8a^2c}-\frac{A}{4a^2cf(-\tan(e+fx)+i)}$$

```
[Out] ((3*A - I*B)*x)/(8*a^2*c) - (I*A - B)/(8*a^2*c*f*(I - Tan[e + f*x])^2) - A/
(4*a^2*c*f*(I - Tan[e + f*x])) + (A - I*B)/(8*a^2*c*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.186812, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$\frac{A-iB}{8a^2cf(\tan(e+fx)+i)}-\frac{-B+iA}{8a^2cf(-\tan(e+fx)+i)^2}+\frac{x(3A-iB)}{8a^2c}-\frac{A}{4a^2cf(-\tan(e+fx)+i)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])),
x]
```

```
[Out] ((3*A - I*B)*x)/(8*a^2*c) - (I*A - B)/(8*a^2*c*f*(I - Tan[e + f*x])^2) - A/
(4*a^2*c*f*(I - Tan[e + f*x])) + (A - I*B)/(8*a^2*c*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{i(A+iB)}{4a^3c^2(-i+x)^3} - \frac{A}{4a^3c^2(-i+x)^2} + \frac{-A+iB}{8a^3c^2(i+x)^2} + \frac{3A-iB}{8a^3c^2(1+x^2)}\right) dx, x,$$

$$= -\frac{iA-B}{8a^2cf(i-\tan(e+fx))^2} - \frac{A}{4a^2cf(i-\tan(e+fx))} + \frac{A-iB}{8a^2cf(i+\tan(e$$

$$= \frac{(3A-iB)x}{8a^2c} - \frac{iA-B}{8a^2cf(i-\tan(e+fx))^2} - \frac{A}{4a^2cf(i-\tan(e+fx))} + \frac{}{8a^2c}$$

Mathematica [A] time = 2.03392, size = 129, normalized size = 1.1

$$-\frac{2(A-3iB)\cos(2(e+fx)) + (B+3iA)\sin(3(e+fx))\sec(e+fx) - 12Afx\tan(e+fx) + 6iA\tan(e+fx) + 12iAfx - 7}{32a^2cf(\tan(e+fx)-i)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])),x]
```

```
[Out] -(-7*A + I*B + (12*I)*A*f*x + 4*B*f*x + 2*(A - (3*I)*B)*Cos[2*(e + f*x)] +
((3*I)*A + B)*Sec[e + f*x]*Sin[3*(e + f*x)] + (6*I)*A*Tan[e + f*x] - 2*B*Ta
n[e + f*x] - 12*A*f*x*Tan[e + f*x] + (4*I)*B*f*x*Tan[e + f*x])/(32*a^2*c*f*
(-I + Tan[e + f*x]))
```

Maple [B] time = 0.089, size = 209, normalized size = 1.8

$$\frac{B}{8fa^2c\left(\tan\left(fx+e\right)-i\right)^2} - \frac{\frac{i}{8}A}{fa^2c\left(\tan\left(fx+e\right)-i\right)^2} + \frac{A}{4fa^2c\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{3i}{16}\ln\left(\tan\left(fx+e\right)-i\right)A}{fa^2c} - \frac{\ln\left(\tan\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e)),x)
```

```
[Out] 1/8/f/a^2/c/(tan(f*x+e)-I)^2*B-1/8*I/f/a^2/c/(tan(f*x+e)-I)^2*A+1/4/f/a^2/c
*A/(tan(f*x+e)-I)-3/16*I/f/a^2/c*ln(tan(f*x+e)-I)*A-1/16/f/a^2/c*ln(tan(f*x
+e)-I)*B+1/8/f/a^2/c/(tan(f*x+e)+I)*A-1/8*I/f/a^2/c/(tan(f*x+e)+I)*B+3/16*I
/f/a^2/c*ln(tan(f*x+e)+I)*A+1/16/f/a^2/c*ln(tan(f*x+e)+I)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.07083, size = 216, normalized size = 1.85

$$\frac{\left(4\,(3\,A-i\,B)fxe^{\left(4i\,fx+4i\,e\right)}+(-2i\,A-2\,B)e^{\left(6i\,fx+6i\,e\right)}+(6i\,A-2\,B)e^{\left(2i\,fx+2i\,e\right)}+i\,A-B\right)e^{\left(-4i\,fx-4i\,e\right)}}{32\,a^2cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] 1/32*(4*(3*A - I*B)*f*x*e^(4*I*f*x + 4*I*e) + (-2*I*A - 2*B)*e^(6*I*f*x + 6
*I*e) + (6*I*A - 2*B)*e^(2*I*f*x + 2*I*e) + I*A - B)*e^(-4*I*f*x - 4*I*e)/(
a^2*c*f)
```

Sympy [A] time = 2.54824, size = 298, normalized size = 2.55

$$\begin{cases} \frac{\left(\left(256iAa^4c^2f^2e^{2ie}-256Ba^4c^2f^2e^{2ie}\right)e^{-4ifx}+\left(1536iAa^4c^2f^2e^{4ie}-512Ba^4c^2f^2e^{4ie}\right)e^{-2ifx}+\left(-512iAa^4c^2f^2e^{8ie}-512Ba^4c^2f^2e^{8ie}\right)e^{2ifx}\right)e^{-6ie}}{8192a^6c^3f^3} & \text{for } 8192a^6c^3f^3 \\ x\left(-\frac{3A-iB}{8a^2c}+\frac{\left(Ae^{6ie}+3Ae^{4ie}+3Ae^{2ie}+A-iBe^{6ie}-iBe^{4ie}+iBe^{2ie}+iB\right)e^{-4ie}}{8a^2c}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e)),x)
```

```
[Out] Piecewise(((((256*I*A*a**4*c**2*f**2*exp(2*I*e) - 256*B*a**4*c**2*f**2*exp(2
*I*e))*exp(-4*I*f*x) + (1536*I*A*a**4*c**2*f**2*exp(4*I*e) - 512*B*a**4*c**
2*f**2*exp(4*I*e))*exp(-2*I*f*x) + (-512*I*A*a**4*c**2*f**2*exp(8*I*e) - 51
2*B*a**4*c**2*f**2*exp(8*I*e))*exp(2*I*f*x))*exp(-6*I*e)/(8192*a**6*c**3*f*
*3), Ne(8192*a**6*c**3*f**3*exp(6*I*e), 0)), (x*(-(3*A - I*B)/(8*a**2*c) +
(A*exp(6*I*e) + 3*A*exp(4*I*e) + 3*A*exp(2*I*e) + A - I*B*exp(6*I*e) - I*B*
exp(4*I*e) + I*B*exp(2*I*e) + I*B)*exp(-4*I*e)/(8*a**2*c)), True)) + x*(3*A
 - I*B)/(8*a**2*c)
```

Giac [A] time = 1.38387, size = 228, normalized size = 1.95

$$\frac{\frac{2\,(3i\,A+B)\log\left(\tan\left(fx+e\right)+i\right)}{a^2c}+\frac{2\,(-3i\,A-B)\log\left(\tan\left(fx+e\right)-i\right)}{a^2c}-\frac{2\left(3\,A\tan\left(fx+e\right)-i\,B\tan\left(fx+e\right)+5i\,A+3\,B\right)}{a^2c\left(-i\,\tan\left(fx+e\right)+1\right)}+\frac{9i\,A\tan\left(fx+e\right)^2+3\,B\tan\left(fx+e\right)^2+26\,A\tan}{a^2c\left(\tan\left(fx+e\right.\right.}}{32\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] 1/32*(2*(3*I*A + B)*log(tan(f*x + e) + I)/(a^2*c) + 2*(-3*I*A - B)*log(tan(
f*x + e) - I)/(a^2*c) - 2*(3*A*tan(f*x + e) - I*B*tan(f*x + e) + 5*I*A + 3*
B)/(a^2*c*(-I*tan(f*x + e) + 1)) + (9*I*A*tan(f*x + e)^2 + 3*B*tan(f*x + e)
^2 + 26*A*tan(f*x + e) - 6*I*B*tan(f*x + e) - 21*I*A + B)/(a^2*c*(tan(f*x +
 e) - I)^2))/f
```

3.723 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^2}\,dx$

Optimal. Leaf size=71

$$-\frac{\cos^4(e+fx)(B-A\tan(e+fx))}{4a^2c^2f}+\frac{3A\sin(e+fx)\cos(e+fx)}{8a^2c^2f}+\frac{3Ax}{8a^2c^2}$$

```
[Out] (3*A*x)/(8*a^2*c^2) + (3*A*Cos[e + f*x]*Sin[e + f*x])/(8*a^2*c^2*f) - (Cos[
e + f*x]^4*(B - A*Tan[e + f*x]))/(4*a^2*c^2*f)
```

Rubi [A] time = 0.138077, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.122, Rules used = {3588, 73, 639, 199, 205}

$$-\frac{\cos^4(e+fx)(B-A\tan(e+fx))}{4a^2c^2f}+\frac{3A\sin(e+fx)\cos(e+fx)}{8a^2c^2f}+\frac{3Ax}{8a^2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])^2
),x]
```

```
[Out] (3*A*x)/(8*a^2*c^2) + (3*A*Cos[e + f*x]*Sin[e + f*x])/(8*a^2*c^2*f) - (Cos[
e + f*x]^4*(B - A*Tan[e + f*x]))/(4*a^2*c^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{\left(ac+acx^2\right)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{\cos^4(e+fx)(B-A\tan(e+fx))}{4a^2c^2f} + \frac{(3A)\operatorname{Subst}\left(\int \frac{1}{\left(ac+acx^2\right)^2}\,dx, x, \text{ta}$$

$$= \frac{3A\cos(e+fx)\sin(e+fx)}{8a^2c^2f} - \frac{\cos^4(e+fx)(B-A\tan(e+fx))}{4a^2c^2f} + \frac{(3A)}{}$$

$$= \frac{3Ax}{8a^2c^2} + \frac{3A\cos(e+fx)\sin(e+fx)}{8a^2c^2f} - \frac{\cos^4(e+fx)(B-A\tan(e+fx)}{4a^2c^2f}$$

Mathematica [A] time = 0.124274, size = 53, normalized size = 0.75

$$\frac{A(12(e+fx)+8\sin(2(e+fx))+\sin(4(e+fx)))-8B\cos^4(e+fx)}{32a^2c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])^2),x]
```

```
[Out] (-8*B*Cos[e + f*x]^4 + A*(12*(e + f*x) + 8*Sin[2*(e + f*x)] + Sin[4*(e + f*
x)]))/(32*a^2*c^2*f)
```

Maple [C] time = 0.06, size = 236, normalized size = 3.3

$$\frac{3A}{16 f a^2 c^2 \left(\tan\left(fx+e\right)-i\right)} + \frac{\frac{i}{16}B}{f a^2 c^2 \left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{i}{16}A}{f a^2 c^2 \left(\tan\left(fx+e\right)-i\right)^2} + \frac{B}{16 f a^2 c^2 \left(\tan\left(fx+e\right)-i\right)^2} - \frac{3i}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 3/16/f/a^2/c^2/(tan(f*x+e)-I)*A+1/16*I/f/a^2/c^2/(tan(f*x+e)-I)*B-1/16*I/f/
a^2/c^2/(tan(f*x+e)-I)^2*A+1/16/f/a^2/c^2/(tan(f*x+e)-I)^2*B-3/16*I/f/a^2/c
^2*A*ln(tan(f*x+e)-I)+3/16/f/a^2/c^2/(tan(f*x+e)+I)*A-1/16*I/f/a^2/c^2/(tan
(f*x+e)+I)*B+3/16*I/f/a^2/c^2*A*ln(tan(f*x+e)+I)+1/16*I/f/a^2/c^2/(tan(f*x+
e)+I)^2*A+1/16/f/a^2/c^2/(tan(f*x+e)+I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [C] time = 1.1672, size = 251, normalized size = 3.54

$$\frac{\left(24 Afxe^{(4ifx+4ie)} + (-iA-B)e^{(8ifx+8ie)} + (-8iA-4B)e^{(6ifx+6ie)} + (8iA-4B)e^{(2ifx+2ie)} + iA - B\right)e^{(-4ifx-4ie)}}{64a^2c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/64*(24*A*f*x*e^(4*I*f*x + 4*I*e) + (-I*A - B)*e^(8*I*f*x + 8*I*e) + (-8*I
*A - 4*B)*e^(6*I*f*x + 6*I*e) + (8*I*A - 4*B)*e^(2*I*f*x + 2*I*e) + I*A - B
)*e^(-4*I*f*x - 4*I*e)/(a^2*c^2*f)
```

Sympy [A] time = 3.35578, size = 362, normalized size = 5.1

$$\frac{3Ax}{8a^2c^2} + \begin{cases} \frac{\left(\left(16384iAa^6c^6f^3e^{2ie} - 16384Ba^6c^6f^3e^{2ie}\right)e^{-4ifx} + \left(131072iAa^6c^6f^3e^{4ie} - 65536Ba^6c^6f^3e^{4ie}\right)e^{-2ifx} + \left(-131072iAa^6c^6f^3e^{8ie} - 65536Ba^6c^6f^3e^{8ie}\right)e^{2ifx} + (\cdots}{1048576a^8c^8f^4} \\ x\left(-\frac{3A}{8a^2c^2} + \frac{\left(Ae^{8ie} + 4Ae^{6ie} + 6Ae^{4ie} + 4Ae^{2ie} + A - iBe^{8ie} - 2iBe^{6ie} + 2iBe^{2ie} + iB\right)e^{-4ie}}{16a^2c^2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] 3*A*x/(8*a**2*c**2) + Piecewise((((16384*I*A*a**6*c**6*f**3*exp(2*I*e) - 16
384*B*a**6*c**6*f**3*exp(2*I*e))*exp(-4*I*f*x) + (131072*I*A*a**6*c**6*f**3
*exp(4*I*e) - 65536*B*a**6*c**6*f**3*exp(4*I*e))*exp(-2*I*f*x) + (-131072*I
*A*a**6*c**6*f**3*exp(8*I*e) - 65536*B*a**6*c**6*f**3*exp(8*I*e))*exp(2*I*f
*x) + (-16384*I*A*a**6*c**6*f**3*exp(10*I*e) - 16384*B*a**6*c**6*f**3*exp(1
0*I*e))*exp(4*I*f*x))*exp(-6*I*e)/(1048576*a**8*c**8*f**4), Ne(1048576*a**8
*c**8*f**4*exp(6*I*e), 0)), (x*(-3*A/(8*a**2*c**2) + (A*exp(8*I*e) + 4*A*ex
p(6*I*e) + 6*A*exp(4*I*e) + 4*A*exp(2*I*e) + A - I*B*exp(8*I*e) - 2*I*B*exp
(6*I*e) + 2*I*B*exp(2*I*e) + I*B)*exp(-4*I*e)/(16*a**2*c**2)), True))
```

Giac [A] time = 1.33025, size = 90, normalized size = 1.27

$$\frac{\frac{3(fx+e)A}{a^2c^2} + \frac{3A\tan(fx+e)^3 + 5A\tan(fx+e) - 2B}{\left(\tan(fx+e)^2+1\right)^2a^2c^2}}{8f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] 1/8*(3*(f*x + e)*A/(a^2*c^2) + (3*A*tan(f*x + e)^3 + 5*A*tan(f*x + e) - 2*B
)/((tan(f*x + e)^2 + 1)^2*a^2*c^2))/f
```

3.724 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^3}\,dx$

Optimal. Leaf size=183

$$-\frac{2A+iB}{16a^2c^3f(-\tan(e+fx)+i)}-\frac{-B+iA}{32a^2c^3f(-\tan(e+fx)+i)^2}+\frac{B+3iA}{32a^2c^3f(\tan(e+fx)+i)^2}-\frac{A-iB}{24a^2c^3f(\tan(e+fx)+i)^3}+$$

```
[Out] ((5*A + I*B)*x)/(16*a^2*c^3) - (I*A - B)/(32*a^2*c^3*f*(I - Tan[e + f*x])^2
) - (2*A + I*B)/(16*a^2*c^3*f*(I - Tan[e + f*x])) - (A - I*B)/(24*a^2*c^3*f
*(I + Tan[e + f*x])^3) + ((3*I)*A + B)/(32*a^2*c^3*f*(I + Tan[e + f*x])^2)
+ (3*A)/(16*a^2*c^3*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.238882, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{2A+iB}{16a^2c^3f(-\tan(e+fx)+i)}-\frac{-B+iA}{32a^2c^3f(-\tan(e+fx)+i)^2}+\frac{B+3iA}{32a^2c^3f(\tan(e+fx)+i)^2}-\frac{A-iB}{24a^2c^3f(\tan(e+fx)+i)^3}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])^3
),x]
```

```
[Out] ((5*A + I*B)*x)/(16*a^2*c^3) - (I*A - B)/(32*a^2*c^3*f*(I - Tan[e + f*x])^2
) - (2*A + I*B)/(16*a^2*c^3*f*(I - Tan[e + f*x])) - (A - I*B)/(24*a^2*c^3*f
*(I + Tan[e + f*x])^3) + ((3*I)*A + B)/(32*a^2*c^3*f*(I + Tan[e + f*x])^2)
+ (3*A)/(16*a^2*c^3*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^3}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{i(A+iB)}{16a^3c^4(-i+x)^3} + \frac{-2A-iB}{16a^3c^4(-i+x)^2} + \frac{A-iB}{8a^3c^4(i+x)^4} - \frac{i(3A-iB)}{16a^3c^4(i+x)^3} - \right.\right.}{f}$$

$$= -\frac{iA-B}{32a^2c^3f(i-\tan(e+fx))^2} - \frac{2A+iB}{16a^2c^3f(i-\tan(e+fx))} - \frac{}{24a^2c^3f(i}$$

$$= \frac{(5A+iB)x}{16a^2c^3} - \frac{iA-B}{32a^2c^3f(i-\tan(e+fx))^2} - \frac{2A+iB}{16a^2c^3f(i-\tan(e+fx))}$$

Mathematica [A] time = 2.16704, size = 217, normalized size = 1.19

$$\frac{\sec^2(e+fx)(\cos(3(e+fx))+i\sin(3(e+fx)))(12(A(-10fx+5i)-2iBfx+B)\cos(e+fx)+3(9B-5iA)\cos(3(e+fx}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])^3),x]
```

```
[Out] (Sec[e + f*x]^2*(Cos[3*(e + f*x)] + I*Sin[3*(e + f*x)])*(12*(B - (2*I)*B*f*
x + A*(5*I - 10*f*x))*Cos[e + f*x] + 3*((-5*I)*A + 9*B)*Cos[3*(e + f*x)] -
I*A*Cos[5*(e + f*x)] + 5*B*Cos[5*(e + f*x)] - 60*A*Sin[e + f*x] + (12*I)*B*
Sin[e + f*x] + (120*I)*A*f*x*Sin[e + f*x] - 24*B*f*x*Sin[e + f*x] - 45*A*Si
n[3*(e + f*x)] - (9*I)*B*Sin[3*(e + f*x)] - 5*A*Sin[5*(e + f*x)] - I*B*Sin[
5*(e + f*x)]))/(384*a^2*c^3*f*(-I + Tan[e + f*x])^2)
```

Maple [A] time = 0.075, size = 303, normalized size = 1.7

$$\frac{\frac{i}{16}B}{fa^2c^3\left(\tan\left(fx+e\right)-i\right)}+\frac{A}{8\,fa^2c^3\left(\tan\left(fx+e\right)-i\right)}+\frac{B}{32\,fa^2c^3\left(\tan\left(fx+e\right)-i\right)^2}-\frac{\frac{i}{32}A}{fa^2c^3\left(\tan\left(fx+e\right)-i\right)^2}-\frac{\frac{5i}{32}\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] 1/16*I/f/a^2/c^3/(tan(f*x+e)-I)*B+1/8/f/a^2/c^3/(tan(f*x+e)-I)*A+1/32/f/a^2
/c^3/(tan(f*x+e)-I)^2*B-1/32*I/f/a^2/c^3/(tan(f*x+e)-I)^2*A-5/32*I/f/a^2/c^
3*ln(tan(f*x+e)-I)*A+1/32/f/a^2/c^3*ln(tan(f*x+e)-I)*B+3/16*A/a^2/c^3/f/(ta
n(f*x+e)+I)+5/32*I/f/a^2/c^3*ln(tan(f*x+e)+I)*A-1/32/f/a^2/c^3*ln(tan(f*x+e
)+I)*B-1/24/f/a^2/c^3/(tan(f*x+e)+I)^3*A+1/24*I/f/a^2/c^3/(tan(f*x+e)+I)^3*
B+3/32*I/f/a^2/c^3/(tan(f*x+e)+I)^2*A+1/32/f/a^2/c^3/(tan(f*x+e)+I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.11237, size = 336, normalized size = 1.84

$$\frac{\left(24\,(5\,A+i\,B)fxe^{(4i\,fx+4i\,e)}+(-2i\,A-2\,B)e^{(10i\,fx+10i\,e)}+(-15i\,A-9\,B)e^{(8i\,fx+8i\,e)}+(-60i\,A-12\,B)e^{(6i\,fx+6i\,e)}+(30i\,A-\right.}{384\,a^2c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/384*(24*(5*A + I*B)*f*x*e^(4*I*f*x + 4*I*e) + (-2*I*A - 2*B)*e^(10*I*f*x
+ 10*I*e) + (-15*I*A - 9*B)*e^(8*I*f*x + 8*I*e) + (-60*I*A - 12*B)*e^(6*I*f
*x + 6*I*e) + (30*I*A - 18*B)*e^(2*I*f*x + 2*I*e) + 3*I*A - 3*B)*e^(-4*I*f*
x - 4*I*e)/(a^2*c^3*f)
```

Sympy [A] time = 4.87608, size = 456, normalized size = 2.49

$$\begin{cases} \frac{\left(\left(50331648iAa^{8}c^{12}f^{4}e^{2ie}-50331648Ba^{8}c^{12}f^{4}e^{2ie}\right)e^{-4ifx}+\left(503316480iAa^{8}c^{12}f^{4}e^{4ie}-301989888Ba^{8}c^{12}f^{4}e^{4ie}\right)e^{-2ifx}+\left(-1006632960iAa^{8}c^{12}f^{4}e^{8ie}-201326592\cdots\right.\right.}{6442450944a^{10}c\cdots} \\ x\left(-\frac{5A+iB}{16a^{2}c^{3}}+\frac{\left(Ae^{10ie}+5Ae^{8ie}+10Ae^{6ie}+10Ae^{4ie}+5Ae^{2ie}+A-iBe^{10ie}-3iBe^{8ie}-2iBe^{6ie}+2iBe^{4ie}+3iBe^{2ie}+iB\right)e^{-4ie}}{32a^{2}c^{3}}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] Piecewise((((50331648*I*A*a**8*c**12*f**4*exp(2*I*e) - 50331648*B*a**8*c**1
2*f**4*exp(2*I*e))*exp(-4*I*f*x) + (503316480*I*A*a**8*c**12*f**4*exp(4*I*e
) - 301989888*B*a**8*c**12*f**4*exp(4*I*e))*exp(-2*I*f*x) + (-1006632960*I*
A*a**8*c**12*f**4*exp(8*I*e) - 201326592*B*a**8*c**12*f**4*exp(8*I*e))*exp(
2*I*f*x) + (-251658240*I*A*a**8*c**12*f**4*exp(10*I*e) - 150994944*B*a**8*c
**12*f**4*exp(10*I*e))*exp(4*I*f*x) + (-33554432*I*A*a**8*c**12*f**4*exp(12
*I*e) - 33554432*B*a**8*c**12*f**4*exp(12*I*e))*exp(6*I*f*x))*exp(-6*I*e)/(
6442450944*a**10*c**15*f**5), Ne(6442450944*a**10*c**15*f**5*exp(6*I*e), 0)
), (x*(-(5*A + I*B)/(16*a**2*c**3) + (A*exp(10*I*e) + 5*A*exp(8*I*e) + 10*A
*exp(6*I*e) + 10*A*exp(4*I*e) + 5*A*exp(2*I*e) + A - I*B*exp(10*I*e) - 3*I*
B*exp(8*I*e) - 2*I*B*exp(6*I*e) + 2*I*B*exp(4*I*e) + 3*I*B*exp(2*I*e) + I*B
)*exp(-4*I*e)/(32*a**2*c**3)), True)) + x*(5*A + I*B)/(16*a**2*c**3)
```

Giac [A] time = 1.39957, size = 296, normalized size = 1.62

$$-\frac{\frac{6\,(-5i\,A+B)\log\left(\tan\left(fx+e\right)+i\right)}{a^{2}c^{3}}+\frac{6\,(5i\,A-B)\log\left(\tan\left(fx+e\right)-i\right)}{a^{2}c^{3}}+\frac{3\left(15i\,A\tan\left(fx+e\right)^{2}-3\,B\tan\left(fx+e\right)^{2}+38\,A\tan\left(fx+e\right)+10i\,B\tan\left(fx+e\right)-25i\,A+9\,B\right)}{a^{2}c^{3}\left(i\,\tan\left(fx+e\right)+1\right)^{2}}\cdots}{192\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] -1/192*(6*(-5*I*A + B)*log(tan(f*x + e) + I)/(a^2*c^3) + 6*(5*I*A - B)*log(
tan(f*x + e) - I)/(a^2*c^3) + 3*(15*I*A*tan(f*x + e)^2 - 3*B*tan(f*x + e)^2
 + 38*A*tan(f*x + e) + 10*I*B*tan(f*x + e) - 25*I*A + 9*B)/(a^2*c^3*(I*tan(
f*x + e) + 1)^2) + (55*I*A*tan(f*x + e)^3 - 11*B*tan(f*x + e)^3 - 201*A*tan
(f*x + e)^2 - 33*I*B*tan(f*x + e)^2 - 255*I*A*tan(f*x + e) + 27*B*tan(f*x +
 e) + 117*A - 3*I*B)/(a^2*c^3*(tan(f*x + e) + I)^3))/f
```

3.725 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^4}\,dx$

Optimal. Leaf size=221

$$-\frac{5A+3iB}{64a^2c^4f(-\tan(e+fx)+i)}+\frac{5A+iB}{32a^2c^4f(\tan(e+fx)+i)}-\frac{-B+iA}{64a^2c^4f(-\tan(e+fx)+i)^2}-\frac{3A-iB}{48a^2c^4f(\tan(e+fx)+i)^3}$$

```
[Out] (5*(3*A + I*B)*x)/(64*a^2*c^4) - (I*A - B)/(64*a^2*c^4*f*(I - Tan[e + f*x])
^2) - (5*A + (3*I)*B)/(64*a^2*c^4*f*(I - Tan[e + f*x])) - (I*A + B)/(32*a^2
*c^4*f*(I + Tan[e + f*x])^4) - (3*A - I*B)/(48*a^2*c^4*f*(I + Tan[e + f*x])
^3) + (((3*I)/32)*A)/(a^2*c^4*f*(I + Tan[e + f*x])^2) + (5*A + I*B)/(32*a^2
*c^4*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.26789, antiderivative size = 221, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{5A+3iB}{64a^2c^4f(-\tan(e+fx)+i)}+\frac{5A+iB}{32a^2c^4f(\tan(e+fx)+i)}-\frac{-B+iA}{64a^2c^4f(-\tan(e+fx)+i)^2}-\frac{3A-iB}{48a^2c^4f(\tan(e+fx)+i)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])^4
),x]
```

```
[Out] (5*(3*A + I*B)*x)/(64*a^2*c^4) - (I*A - B)/(64*a^2*c^4*f*(I - Tan[e + f*x])
^2) - (5*A + (3*I)*B)/(64*a^2*c^4*f*(I - Tan[e + f*x])) - (I*A + B)/(32*a^2
*c^4*f*(I + Tan[e + f*x])^4) - (3*A - I*B)/(48*a^2*c^4*f*(I + Tan[e + f*x])
^3) + (((3*I)/32)*A)/(a^2*c^4*f*(I + Tan[e + f*x])^2) + (5*A + I*B)/(32*a^2
*c^4*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^4}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^5}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{i(A+iB)}{32a^3c^5(-i+x)^3} + \frac{-5A-3iB}{64a^3c^5(-i+x)^2} + \frac{iA+B}{8a^3c^5(i+x)^5} + \frac{3A-iB}{16a^3c^5(i+x)^4} - \right.\right.}{f}$$

$$= -\frac{iA-B}{64a^2c^4f(i-\tan(e+fx))^2} - \frac{5A+3iB}{64a^2c^4f(i-\tan(e+fx))} - \frac{iA}{32a^2c^4f(i+}$$

$$= \frac{5(3A+iB)x}{64a^2c^4} - \frac{iA-B}{64a^2c^4f(i-\tan(e+fx))^2} - \frac{5A+3iB}{64a^2c^4f(i-\tan(e+fx))}$$

Mathematica [A] time = 2.57616, size = 232, normalized size = 1.05

$$\frac{\sec^2(e+fx)(\sin(4(e+fx))-i\cos(4(e+fx)))(30(A(-3-12ifx)+B(4fx+i))\cos(2(e+fx))+16(3A+4iB)\cos(4(e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])^4),x]
```

```
[Out] (Sec[e + f*x]^2*((-I)*Cos[4*(e + f*x)] + Sin[4*(e + f*x)])*(-240*A + 30*(A*
(-3 - (12*I)*f*x) + B*(I + 4*f*x))*Cos[2*(e + f*x)] + 16*(3*A + (4*I)*B)*Co
s[4*(e + f*x)] + 3*A*Cos[6*(e + f*x)] + (9*I)*B*Cos[6*(e + f*x)] - (90*I)*A
*Sin[2*(e + f*x)] - 30*B*Sin[2*(e + f*x)] - 360*A*f*x*Sin[2*(e + f*x)] - (1
```

```
20*I)*B*f*x*Sin[2*(e + f*x)] - (96*I)*A*Sin[4*(e + f*x)] + 32*B*Sin[4*(e +
f*x)] - (9*I)*A*Sin[6*(e + f*x)] + 3*B*Sin[6*(e + f*x)]))/(1536*a^2*c^4*f*(
-I + Tan[e + f*x])^2)
```

Maple [A] time = 0.073, size = 351, normalized size = 1.6

$$\frac{5A}{64\,fa^2c^4\left(\tan\left(fx+e\right)-i\right)}+\frac{\frac{3i}{64}B}{fa^2c^4\left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{i}{64}A}{fa^2c^4\left(\tan\left(fx+e\right)-i\right)^2}+\frac{B}{64\,fa^2c^4\left(\tan\left(fx+e\right)-i\right)^2}+\frac{5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 5/64/f/a^2/c^4/(tan(f*x+e)-I)*A+3/64*I/f/a^2/c^4/(tan(f*x+e)-I)*B-1/64*I/f/
a^2/c^4/(tan(f*x+e)-I)^2*A+1/64/f/a^2/c^4/(tan(f*x+e)-I)^2*B+5/128/f/a^2/c^
4*ln(tan(f*x+e)-I)*B-15/128*I/f/a^2/c^4*ln(tan(f*x+e)-I)*A-1/32*I/f/a^2/c^4
/(tan(f*x+e)+I)^4*A-1/32/f/a^2/c^4/(tan(f*x+e)+I)^4*B+5/32/f/a^2/c^4/(tan(f
*x+e)+I)*A+1/32*I/f/a^2/c^4/(tan(f*x+e)+I)*B-5/128/f/a^2/c^4*ln(tan(f*x+e)+
I)*B+15/128*I/f/a^2/c^4*ln(tan(f*x+e)+I)*A-1/16/f/a^2/c^4/(tan(f*x+e)+I)^3*
A+1/48*I/f/a^2/c^4/(tan(f*x+e)+I)^3*B+3/32*I*A/a^2/c^4/f/(tan(f*x+e)+I)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^4,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.08907, size = 383, normalized size = 1.73

$$\frac{\left(120\,(3\,A+i\,B)fxe^{\left(4i\,fx+4i\,e\right)}+(-3i\,A-3\,B)e^{\left(12i\,fx+12i\,e\right)}+(-24i\,A-16\,B)e^{\left(10i\,fx+10i\,e\right)}+(-90i\,A-30\,B)e^{\left(8i\,fx+8i\,e\right)}-24\right.}{1536\,a^2c^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^4,x, alg
orithm="fricas")
```

```
[Out] 1/1536*(120*(3*A + I*B)*f*x*e^(4*I*f*x + 4*I*e) + (-3*I*A - 3*B)*e^(12*I*f*
x + 12*I*e) + (-24*I*A - 16*B)*e^(10*I*f*x + 10*I*e) + (-90*I*A - 30*B)*e^(
8*I*f*x + 8*I*e) - 240*I*A*e^(6*I*f*x + 6*I*e) + (72*I*A - 48*B)*e^(2*I*f*x
 + 2*I*e) + 6*I*A - 6*B)*e^(-4*I*f*x - 4*I*e)/(a^2*c^4*f)
```

Sympy [A] time = 5.56188, size = 500, normalized size = 2.26

$$\begin{cases} \frac{\left(-2061584302080iAa^{10}c^{20}f^5e^{8ie}e^{2ifx}+\left(51539607552iAa^{10}c^{20}f^5e^{2ie}-51539607552Ba^{10}c^{20}f^5e^{2ie}\right)e^{-4ifx}+\left(618475290624iAa^{10}c^{20}f^5e^{4ie}-412316860416Ba^{10}c^{20}\right.}{} \\ x\left(-\frac{15A+5iB}{64a^2c^4}+\frac{\left(Ae^{12ie}+6Ae^{10ie}+15Ae^{8ie}+20Ae^{6ie}+15Ae^{4ie}+6Ae^{2ie}+A-iBe^{12ie}-4iBe^{10ie}-5iBe^{8ie}+5iBe^{4ie}+4iBe^{2ie}+iB\right)e^{-4ie}}{64a^2c^4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] Piecewise(((-2061584302080*I*A*a**10*c**20*f**5*exp(8*I*e)*exp(2*I*f*x) + (
51539607552*I*A*a**10*c**20*f**5*exp(2*I*e) - 51539607552*B*a**10*c**20*f**
5*exp(2*I*e))*exp(-4*I*f*x) + (618475290624*I*A*a**10*c**20*f**5*exp(4*I*e)
 - 412316860416*B*a**10*c**20*f**5*exp(4*I*e))*exp(-2*I*f*x) + (-7730941132
80*I*A*a**10*c**20*f**5*exp(10*I*e) - 257698037760*B*a**10*c**20*f**5*exp(1
0*I*e))*exp(4*I*f*x) + (-206158430208*I*A*a**10*c**20*f**5*exp(12*I*e) - 13
7438953472*B*a**10*c**20*f**5*exp(12*I*e))*exp(6*I*f*x) + (-25769803776*I*A
*a**10*c**20*f**5*exp(14*I*e) - 25769803776*B*a**10*c**20*f**5*exp(14*I*e))
*exp(8*I*f*x))*exp(-6*I*e)/(13194139533312*a**12*c**24*f**6), Ne(1319413953
3312*a**12*c**24*f**6*exp(6*I*e), 0)), (x*(-(15*A + 5*I*B)/(64*a**2*c**4) +
 (A*exp(12*I*e) + 6*A*exp(10*I*e) + 15*A*exp(8*I*e) + 20*A*exp(6*I*e) + 15*
A*exp(4*I*e) + 6*A*exp(2*I*e) + A - I*B*exp(12*I*e) - 4*I*B*exp(10*I*e) - 5
*I*B*exp(8*I*e) + 5*I*B*exp(4*I*e) + 4*I*B*exp(2*I*e) + I*B)*exp(-4*I*e)/(6
4*a**2*c**4)), True)) + x*(15*A + 5*I*B)/(64*a**2*c**4)
```

Giac [A] time = 1.23693, size = 328, normalized size = 1.48

$$\frac{\frac{12(15iA-5B)\log\left(\tan\left(fx+e\right)+i\right)}{a^2c^4}+\frac{12(-15iA+5B)\log\left(\tan\left(fx+e\right)-i\right)}{a^2c^4}-\frac{6\left(-45iA\tan\left(fx+e\right)^2+15B\tan\left(fx+e\right)^2-110A\tan\left(fx+e\right)-42iB\tan\left(fx+e\right)+69iA\right.}{a^2c^4\left(\tan\left(fx+e\right)-i\right)^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^4,x, alg
orithm="giac")
```

```
[Out] 1/1536*(12*(15*I*A - 5*B)*log(tan(f*x + e) + I)/(a^2*c^4) + 12*(-15*I*A + 5
*B)*log(tan(f*x + e) - I)/(a^2*c^4) - 6*(-45*I*A*tan(f*x + e)^2 + 15*B*tan(
f*x + e)^2 - 110*A*tan(f*x + e) - 42*I*B*tan(f*x + e) + 69*I*A - 31*B)/(a^2
*c^4*(tan(f*x + e) - I)^2) + (-375*I*A*tan(f*x + e)^4 + 125*B*tan(f*x + e)^
4 + 1740*A*tan(f*x + e)^3 + 548*I*B*tan(f*x + e)^3 + 3114*I*A*tan(f*x + e)^
2 - 894*B*tan(f*x + e)^2 - 2604*A*tan(f*x + e) - 612*I*B*tan(f*x + e) - 903
*I*A + 93*B)/(a^2*c^4*(tan(f*x + e) + I)^4))/f
```

3.726 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^5}\,dx$

Optimal. Leaf size=251

$$-\frac{3A+2iB}{64a^2c^5f(-\tan(e+fx)+i)}+\frac{5(3A+iB)}{128a^2c^5f(\tan(e+fx)+i)}-\frac{-B+iA}{128a^2c^5f(-\tan(e+fx)+i)^2}+\frac{-B+5iA}{64a^2c^5f(\tan(e+fx)+i)^2}$$

```
[Out] (3*(7*A + (3*I)*B)*x)/(128*a^2*c^5) - (I*A - B)/(128*a^2*c^5*f*(I - Tan[e +
 f*x])^2) - (3*A + (2*I)*B)/(64*a^2*c^5*f*(I - Tan[e + f*x])) + (A - I*B)/(
40*a^2*c^5*f*(I + Tan[e + f*x])^5) - ((3*I)*A + B)/(64*a^2*c^5*f*(I + Tan[e
 + f*x])^4) - A/(16*a^2*c^5*f*(I + Tan[e + f*x])^3) + ((5*I)*A - B)/(64*a^2
*c^5*f*(I + Tan[e + f*x])^2) + (5*(3*A + I*B))/(128*a^2*c^5*f*(I + Tan[e +
f*x]))
```

Rubi [A] time = 0.304617, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{3A+2iB}{64a^2c^5f(-\tan(e+fx)+i)}+\frac{5(3A+iB)}{128a^2c^5f(\tan(e+fx)+i)}-\frac{-B+iA}{128a^2c^5f(-\tan(e+fx)+i)^2}+\frac{-B+5iA}{64a^2c^5f(\tan(e+fx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])^5
),x]
```


```
[Out] (3*(7*A + (3*I)*B)*x)/(128*a^2*c^5) - (I*A - B)/(128*a^2*c^5*f*(I - Tan[e +
 f*x])^2) - (3*A + (2*I)*B)/(64*a^2*c^5*f*(I - Tan[e + f*x])) + (A - I*B)/(
40*a^2*c^5*f*(I + Tan[e + f*x])^5) - ((3*I)*A + B)/(64*a^2*c^5*f*(I + Tan[e
 + f*x])^4) - A/(16*a^2*c^5*f*(I + Tan[e + f*x])^3) + ((5*I)*A - B)/(64*a^2
*c^5*f*(I + Tan[e + f*x])^2) + (5*(3*A + I*B))/(128*a^2*c^5*f*(I + Tan[e +
f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^5}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^6}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{i(A+iB)}{64a^3c^6(-i+x)^3} + \frac{-3A-2iB}{64a^3c^6(-i+x)^2} + \frac{-A+iB}{8a^3c^6(i+x)^6} + \frac{3iA+B}{16a^3c^6(i+x)^5} + \right.\right.}{}$$

$$= -\frac{iA-B}{128a^2c^5f(i-\tan(e+fx))^2} - \frac{3A+2iB}{64a^2c^5f(i-\tan(e+fx))} + \frac{}{40a^2c^5f(}$$

$$= \frac{3(7A+3iB)x}{128a^2c^5} - \frac{iA-B}{128a^2c^5f(i-\tan(e+fx))^2} - \frac{3A+2iB}{64a^2c^5f(i-\tan(e+f}$$

Mathematica [A] time = 3.24652, size = 274, normalized size = 1.09

$$\frac{\sec^2(e+fx)(\cos(5(e+fx))+i\sin(5(e+fx)))(50i(21A+iB)\cos(e+fx)+20(A(-42fx+7i)+3B(1-6ifx))\cos(3(e}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])^5),x]
```

```
[Out] (Sec[e + f*x]^2*(Cos[5*(e + f*x)] + I*Sin[5*(e + f*x)])*((50*I)*(21*A + I*B
)*Cos[e + f*x] + 20*(A*(7*I - 42*f*x) + 3*B*(1 - (6*I)*f*x))*Cos[3*(e + f*x
)] - (105*I)*A*Cos[5*(e + f*x)] + 125*B*Cos[5*(e + f*x)] - (6*I)*A*Cos[7*(e
```

```
 + f*x)] + 14*B*Cos[7*(e + f*x)] + 350*A*Sin[e + f*x] + (150*I)*B*Sin[e + f
*x] - 140*A*Sin[3*(e + f*x)] + (60*I)*B*Sin[3*(e + f*x)] + (840*I)*A*f*x*Si
n[3*(e + f*x)] - 360*B*f*x*Sin[3*(e + f*x)] - 175*A*Sin[5*(e + f*x)] - (75*
I)*B*Sin[5*(e + f*x)] - 14*A*Sin[7*(e + f*x)] - (6*I)*B*Sin[7*(e + f*x)]))/
(5120*a^2*c^5*f*(-I + Tan[e + f*x])^2)
```

Maple [A] time = 0.088, size = 397, normalized size = 1.6

$$\frac{\frac{5 i}{64} A}{f a^2 c^5 \left(\tan \left(f x+e\right)+i\right)^2}+\frac{3 A}{64 f a^2 c^5 \left(\tan \left(f x+e\right)-i\right)}+\frac{\frac{21 i}{256} \ln \left(\tan \left(f x+e\right)+i\right) A}{f a^2 c^5}+\frac{9 \ln \left(\tan \left(f x+e\right)-i\right) B}{256 f a^2 c^5}+\frac{}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] 5/64*I/f/a^2/c^5/(tan(f*x+e)+I)^2*A+3/64/f/a^2/c^5/(tan(f*x+e)-I)*A+21/256*
I/f/a^2/c^5*ln(tan(f*x+e)+I)*A+9/256/f/a^2/c^5*ln(tan(f*x+e)-I)*B+1/128/f/a
^2/c^5/(tan(f*x+e)-I)^2*B+5/128*I/f/a^2/c^5/(tan(f*x+e)+I)*B+1/40/f/a^2/c^5
/(tan(f*x+e)+I)^5*A-3/64*I/f/a^2/c^5/(tan(f*x+e)+I)^4*A-1/40*I/f/a^2/c^5/(t
an(f*x+e)+I)^5*B-1/64/f/a^2/c^5/(tan(f*x+e)+I)^4*B+15/128/f/a^2/c^5/(tan(f*
x+e)+I)*A+1/32*I/f/a^2/c^5/(tan(f*x+e)-I)*B-1/128*I/f/a^2/c^5/(tan(f*x+e)-I
)^2*A-9/256/f/a^2/c^5*ln(tan(f*x+e)+I)*B-1/16*A/a^2/c^5/f/(tan(f*x+e)+I)^3-
21/256*I/f/a^2/c^5*ln(tan(f*x+e)-I)*A-1/64/f/a^2/c^5/(tan(f*x+e)+I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^5,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.10827, size = 464, normalized size = 1.85

$$\frac{\left(120\,(7\,A+3i\,B)fxe^{(4i\,fx+4i\,e)}+(-4i\,A-4\,B)e^{(14i\,fx+14i\,e)}+(-35i\,A-25\,B)e^{(12i\,fx+12i\,e)}+(-140i\,A-60\,B)e^{(10i\,fx+10i\,e)}\right.}{5120\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^5,x, alg
orithm="fricas")
```

```
[Out] 1/5120*(120*(7*A + 3*I*B)*f*x*e^(4*I*f*x + 4*I*e) + (-4*I*A - 4*B)*e^(14*I*
f*x + 14*I*e) + (-35*I*A - 25*B)*e^(12*I*f*x + 12*I*e) + (-140*I*A - 60*B)*
e^(10*I*f*x + 10*I*e) + (-350*I*A - 50*B)*e^(8*I*f*x + 8*I*e) + (-700*I*A +
 100*B)*e^(6*I*f*x + 6*I*e) + (140*I*A - 100*B)*e^(2*I*f*x + 2*I*e) + 10*I*
A - 10*B)*e^(-4*I*f*x - 4*I*e)/(a^2*c^5*f)
```

Sympy [A] time = 6.26768, size = 607, normalized size = 2.42

$$\begin{cases} \frac{\left(\left(1125899906842624 0iAa^{12}c^{30}f^6e^{2ie}-11258999068426240Ba^{12}c^{30}f^6e^{2ie}\right)e^{-4ifx}+\left(157625986957967360iAa^{12}c^{30}f^6e^{4ie}-112589990684262400Ba^{12}c^{30}f^6e^{4ie}\right)\right.}{} \\ x\left(-\frac{21A+9iB}{128a^2c^5}+\frac{\left(Ae^{14ie}+7Ae^{12ie}+21Ae^{10ie}+35Ae^{8ie}+35Ae^{6ie}+21Ae^{4ie}+7Ae^{2ie}+A-iBe^{14ie}-5iBe^{12ie}-9iBe^{10ie}-5iBe^{8ie}+5iBe^{6ie}+9iBe^{4ie}+5iBe^{2ie}+iB\right)e^{-4ie}}{128a^2c^5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] Piecewise((((11258999068426240*I*A*a**12*c**30*f**6*exp(2*I*e) - 1125899906
8426240*B*a**12*c**30*f**6*exp(2*I*e))*exp(-4*I*f*x) + (157625986957967360*
I*A*a**12*c**30*f**6*exp(4*I*e) - 112589990684262400*B*a**12*c**30*f**6*exp
(4*I*e))*exp(-2*I*f*x) + (-788129934789836800*I*A*a**12*c**30*f**6*exp(8*I*
e) + 112589990684262400*B*a**12*c**30*f**6*exp(8*I*e))*exp(2*I*f*x) + (-394
064967394918400*I*A*a**12*c**30*f**6*exp(10*I*e) - 56294995342131200*B*a**1
2*c**30*f**6*exp(10*I*e))*exp(4*I*f*x) + (-157625986957967360*I*A*a**12*c**
30*f**6*exp(12*I*e) - 67553994410557440*B*a**12*c**30*f**6*exp(12*I*e))*exp
(6*I*f*x) + (-39406496739491840*I*A*a**12*c**30*f**6*exp(14*I*e) - 28147497
671065600*B*a**12*c**30*f**6*exp(14*I*e))*exp(8*I*f*x) + (-4503599627370496
*I*A*a**12*c**30*f**6*exp(16*I*e) - 4503599627370496*B*a**12*c**30*f**6*exp
(16*I*e))*exp(10*I*f*x))*exp(-6*I*e)/(5764607523034234880*a**14*c**35*f**7)
, Ne(5764607523034234880*a**14*c**35*f**7*exp(6*I*e), 0)), (x*(-(21*A + 9*I
*B)/(128*a**2*c**5) + (A*exp(14*I*e) + 7*A*exp(12*I*e) + 21*A*exp(10*I*e) +
```

```
 35*A*exp(8*I*e) + 35*A*exp(6*I*e) + 21*A*exp(4*I*e) + 7*A*exp(2*I*e) + A -
 I*B*exp(14*I*e) - 5*I*B*exp(12*I*e) - 9*I*B*exp(10*I*e) - 5*I*B*exp(8*I*e)
 + 5*I*B*exp(6*I*e) + 9*I*B*exp(4*I*e) + 5*I*B*exp(2*I*e) + I*B)*exp(-4*I*e
)/(128*a**2*c**5)), True)) + x*(21*A + 9*I*B)/(128*a**2*c**5)
```

Giac [A] time = 1.31843, size = 363, normalized size = 1.45

$$-\frac{\frac{20\,(-21i\,A+9\,B)\log\left(\tan\left(fx+e\right)+i\right)}{a^2c^5}+\frac{20\,(21i\,A-9\,B)\log\left(\tan\left(fx+e\right)-i\right)}{a^2c^5}+\frac{10\left(63i\,A\tan\left(fx+e\right)^2-27\,B\tan\left(fx+e\right)^2+150\,A\tan\left(fx+e\right)+70i\,B\tan\left(fx+e\right)-91i\right.}{a^2c^5\left(-i\,\tan\left(fx+e\right)-1\right)^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^5,x, alg
orithm="giac")
```

```
[Out] -1/5120*(20*(-21*I*A + 9*B)*log(tan(f*x + e) + I)/(a^2*c^5) + 20*(21*I*A -
9*B)*log(tan(f*x + e) - I)/(a^2*c^5) + 10*(63*I*A*tan(f*x + e)^2 - 27*B*tan
(f*x + e)^2 + 150*A*tan(f*x + e) + 70*I*B*tan(f*x + e) - 91*I*A + 47*B)/(a^
2*c^5*(-I*tan(f*x + e) - 1)^2) + (959*I*A*tan(f*x + e)^5 - 411*B*tan(f*x +
e)^5 - 5395*A*tan(f*x + e)^4 - 2255*I*B*tan(f*x + e)^4 - 12390*I*A*tan(f*x
+ e)^3 + 4990*B*tan(f*x + e)^3 + 14710*A*tan(f*x + e)^2 + 5550*I*B*tan(f*x
+ e)^2 + 9275*I*A*tan(f*x + e) - 3015*B*tan(f*x + e) - 2647*A - 483*I*B)/(a
^2*c^5*(tan(f*x + e) + I)^5))/f
```

3.727 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^n}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=115

$$\frac{(B(n+3)+iA(3-n))(c-ic\tan(e+fx))^n \text{Hypergeometric2F1}\left(3,n,n+1,\frac{1}{2}(1-i\tan(e+fx))\right)}{48a^3fn}+\frac{(-B+iA)(c-ic}{6a^3f(1+i\tan}$$

```
[Out] ((I*A*(3 - n) + B*(3 + n))*Hypergeometric2F1[3, n, 1 + n, (1 - I*Tan[e + f*
x])/2]*(c - I*c*Tan[e + f*x])^n)/(48*a^3*f*n) + ((I*A - B)*(c - I*c*Tan[e +
 f*x])^n)/(6*a^3*f*(1 + I*Tan[e + f*x])^3)
```

Rubi [A] time = 0.170665, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 78, 68}

$$\frac{(B(n+3)+iA(3-n))(c-ic\tan(e+fx))^n\,{}_2F_1\left(3,n;n+1;\frac{1}{2}(1-i\tan(e+fx))\right)}{48a^3fn}+\frac{(-B+iA)(c-ic\tan(e+fx))^n}{6a^3f(1+i\tan(e+fx))^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n)/(a + I*a*Tan[e + f*x])^
3,x]
```

```
[Out] ((I*A*(3 - n) + B*(3 + n))*Hypergeometric2F1[3, n, 1 + n, (1 - I*Tan[e + f*
x])/2]*(c - I*c*Tan[e + f*x])^n)/(48*a^3*f*n) + ((I*A - B)*(c - I*c*Tan[e +
 f*x])^n)/(6*a^3*f*(1 + I*Tan[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
```

```
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^n}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{-1+n}}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^n}{6a^3f(1+i\tan(e+fx))^3} + \frac{(c(A(3-n)-iB(3+n)))\,\text{Subst}\left(\int \frac{(c-i}{(a}\right.}{6f}$$

$$= \frac{(iA(3-n)+B(3+n))\,{}_2F_1\left(3,n;1+n;\frac{1}{2}(1-i\tan(e+fx))\right)(c-ic\tan}{48a^3fn}$$

Mathematica [F] time = 180.005, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n)/(a + I*a*Tan[e +
f*x])^3,x]
```

```
[Out] $Aborted
```

Maple [F] time = 2.055, size = 0, normalized size = 0.

$$\int \frac{\left(A+B\tan\left(fx+e\right)\right)\left(c-ic\tan\left(fx+e\right)\right)^{n}}{\left(a+ia\tan\left(fx+e\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(6i\,fx+6i\,e)}+(3\,A-i\,B)e^{(4i\,fx+4i\,e)}+(3\,A+i\,B)e^{(2i\,fx+2i\,e)}+A+i\,B\right)\left(\frac{2\,c}{e^{(2i\,fx+2i\,e)}+1}\right)^{n}e^{(-6i\,fx-6i\,e)}}{8\,a^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] integral(1/8*((A - I*B)*e^(6*I*f*x + 6*I*e) + (3*A - I*B)*e^(4*I*f*x + 4*I*
e) + (3*A + I*B)*e^(2*I*f*x + 2*I*e) + A + I*B)*(2*c/(e^(2*I*f*x + 2*I*e) +
 1))^n*e^(-6*I*f*x - 6*I*e)/a^3, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(-ic\tan(fx+e)+c)^n}{(ia\tan(fx+e)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n/(a+I*a*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^n/(I*a*tan(f*x + e)
+ a)^3, x)
```

3.728 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^5}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=191

$$\frac{c^5(A+8iB)\tan(e+fx)}{a^3f}-\frac{8c^5(3A+7iB)}{a^3f(-\tan(e+fx)+i)}+\frac{8c^5(-3B+2iA)}{a^3f(-\tan(e+fx)+i)^2}+\frac{16c^5(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{8c^5(-4B+$$

```
[Out] (-8*(A + (4*I)*B)*c^5*x)/a^3 - (8*(I*A - 4*B)*c^5*Log[Cos[e + f*x]])/(a^3*f
) + (16*(A + I*B)*c^5)/(3*a^3*f*(I - Tan[e + f*x])^3) + (8*((2*I)*A - 3*B)*
c^5)/(a^3*f*(I - Tan[e + f*x])^2) - (8*(3*A + (7*I)*B)*c^5)/(a^3*f*(I - Tan
[e + f*x])) + ((A + (8*I)*B)*c^5*Tan[e + f*x])/(a^3*f) + (B*c^5*Tan[e + f*x
]^2)/(2*a^3*f)
```

Rubi [A] time = 0.244538, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{c^5(A+8iB)\tan(e+fx)}{a^3f}-\frac{8c^5(3A+7iB)}{a^3f(-\tan(e+fx)+i)}+\frac{8c^5(-3B+2iA)}{a^3f(-\tan(e+fx)+i)^2}+\frac{16c^5(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{8c^5(-4B+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^5)/(a + I*a*Tan[e + f*x])^
3,x]
```


```
[Out] (-8*(A + (4*I)*B)*c^5*x)/a^3 - (8*(I*A - 4*B)*c^5*Log[Cos[e + f*x]])/(a^3*f
) + (16*(A + I*B)*c^5)/(3*a^3*f*(I - Tan[e + f*x])^3) + (8*((2*I)*A - 3*B)*
c^5)/(a^3*f*(I - Tan[e + f*x])^2) - (8*(3*A + (7*I)*B)*c^5)/(a^3*f*(I - Tan
[e + f*x])) + ((A + (8*I)*B)*c^5*Tan[e + f*x])/(a^3*f) + (B*c^5*Tan[e + f*x
]^2)/(2*a^3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^5}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^4}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{(A+8iB)c^4}{a^4} + \frac{Bc^4x}{a^4} + \frac{16(A+iB)c^4}{a^4(-i+x)^4} + \frac{16(-2iA+3B)c^4}{a^4(-i+x)^3} - \frac{8(3A+7iB)c^4}{a^4(-i+x)^2}\right.\right.}{f}$$

$$= -\frac{8(A+4iB)c^5x}{a^3} - \frac{8(iA-4B)c^5\log(\cos(e+fx))}{a^3f} + \frac{16(A+iB)c^5}{3a^3f(i-\tan(e+f}$$

Mathematica [B] time = 11.3296, size = 1496, normalized size = 7.83

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^5)/(a + I*a*Tan[e +
f*x])^3,x]
```

```
[Out] ((A + (3*I)*B)*Cos[2*f*x]*Sec[e + f*x]^2*((6*I)*c^5*Cos[e] - 6*c^5*Sin[e])*
(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[
e + f*x])*(a + I*a*Tan[e + f*x])^3) + (((-I)*A + 2*B)*Cos[4*f*x]*Sec[e + f*
x]^2*(2*c^5*Cos[e] - (2*I)*c^5*Sin[e])*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan
[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3)
+ (Sec[e + f*x]^2*((-I)*A*c^5*Cos[(3*e)/2] + 4*B*c^5*Cos[(3*e)/2] + A*c^5*S
in[(3*e)/2] + (4*I)*B*c^5*Sin[(3*e)/2])*(8*Cos[(3*e)/2]*Log[Cos[e + f*x]] +
 (8*I)*Log[Cos[e + f*x]]*Sin[(3*e)/2])*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan
[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3)
+ ((A + I*B)*Cos[6*f*x]*Sec[e + f*x]^2*(((2*I)/3)*c^5*Cos[3*e] + (2*c^5*Sin
[3*e])/3)*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x
] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) + (Sec[e + f*x]^4*((B*c^5*Cos
[3*e])/2 + (I/2)*B*c^5*Sin[3*e])*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f
*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) + ((A
```

```
+ (4*I)*B)*Sec[e + f*x]^2*(-8*c^5*f*x*Cos[3*e] - (8*I)*c^5*f*x*Sin[3*e])*(C
os[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e
+ f*x])*(a + I*a*Tan[e + f*x])^3) + ((A + (3*I)*B)*Sec[e + f*x]^2*(6*c^5*Co
s[e] + (6*I)*c^5*Sin[e])*(Cos[f*x] + I*Sin[f*x])^3*Sin[2*f*x]*(A + B*Tan[e
+ f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) + (
(A + (2*I)*B)*Sec[e + f*x]^2*(-2*c^5*Cos[e] + (2*I)*c^5*Sin[e])*(Cos[f*x] +
 I*Sin[f*x])^3*Sin[4*f*x]*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[
e + f*x])*(a + I*a*Tan[e + f*x])^3) + ((A + I*B)*Sec[e + f*x]^2*((2*c^5*Cos
[3*e])/3 - ((2*I)/3)*c^5*Sin[3*e])*(Cos[f*x] + I*Sin[f*x])^3*Sin[6*f*x]*(A
+ B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*
x])^3) + (Sec[e + f*x]^3*(Cos[f*x] + I*Sin[f*x])^3*((I/2)*A*c^5*Cos[3*e - f
*x] - 4*B*c^5*Cos[3*e - f*x] - (I/2)*A*c^5*Cos[3*e + f*x] + 4*B*c^5*Cos[3*e
 + f*x] - (A*c^5*Sin[3*e - f*x])/2 - (4*I)*B*c^5*Sin[3*e - f*x] + (A*c^5*Si
n[3*e + f*x])/2 + (4*I)*B*c^5*Sin[3*e + f*x])*(A + B*Tan[e + f*x]))/(f*(Cos
[e/2] - Sin[e/2])*(Cos[e/2] + Sin[e/2])*(A*Cos[e + f*x] + B*Sin[e + f*x])*(
a + I*a*Tan[e + f*x])^3) + (x*Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^3*(4*A
*c^5*Cos[e] + (16*I)*B*c^5*Cos[e] - 4*A*c^5*Cos[e]^3 - (16*I)*B*c^5*Cos[e]^
3 + (8*I)*A*c^5*Sin[e] - 32*B*c^5*Sin[e] - (16*I)*A*c^5*Cos[e]^2*Sin[e] + 6
4*B*c^5*Cos[e]^2*Sin[e] + 24*A*c^5*Cos[e]*Sin[e]^2 + (96*I)*B*c^5*Cos[e]*Si
n[e]^2 + (16*I)*A*c^5*Sin[e]^3 - 64*B*c^5*Sin[e]^3 - 4*A*c^5*Sin[e]*Tan[e]
- (16*I)*B*c^5*Sin[e]*Tan[e] - 4*A*c^5*Sin[e]^3*Tan[e] - (16*I)*B*c^5*Sin[e
]^3*Tan[e] + I*(A + (4*I)*B)*(8*c^5*Cos[3*e] + (8*I)*c^5*Sin[3*e])*Tan[e])*
(A + B*Tan[e + f*x]))/((A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f
*x])^3)
```

Maple [A] time = 0.066, size = 244, normalized size = 1.3

$$\frac{Ac^5\tan\left(fx+e\right)}{fa^3}+\frac{8\,ic^5B\tan\left(fx+e\right)}{fa^3}+\frac{Bc^5\left(\tan\left(fx+e\right)\right)^2}{2\,fa^3}+\frac{56\,ic^5B}{fa^3\left(\tan\left(fx+e\right)-i\right)}+24\,\frac{Ac^5}{fa^3\left(\tan\left(fx+e\right)-i\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 1/f*c^5/a^3*A*tan(f*x+e)+8*I/f*c^5/a^3*B*tan(f*x+e)+1/2*B*c^5*tan(f*x+e)^2/
a^3/f+56*I/f*c^5/a^3/(tan(f*x+e)-I)*B+24/f*c^5/a^3/(tan(f*x+e)-I)*A+16*I/f*
c^5/a^3/(tan(f*x+e)-I)^2*A-24/f*c^5/a^3/(tan(f*x+e)-I)^2*B+8*I/f*c^5/a^3*A*
ln(tan(f*x+e)-I)-32/f*c^5/a^3*B*ln(tan(f*x+e)-I)-16/3/f*c^5/a^3/(tan(f*x+e)
-I)^3*A-16/3*I/f*c^5/a^3/(tan(f*x+e)-I)^3*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.11626, size = 736, normalized size = 3.85

$$-\frac{48\,(A+4i\,B)c^5 fxe^{(10i\,fx+10i\,e)}-(8i\,A-32\,B)c^5e^{(4i\,fx+4i\,e)}-(-2i\,A+8\,B)c^5e^{(2i\,fx+2i\,e)}-(2i\,A-2\,B)c^5+\left(96\,(A+4i\,B)c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] -1/3*(48*(A + 4*I*B)*c^5*f*x*e^(10*I*f*x + 10*I*e) - (8*I*A - 32*B)*c^5*e^(
4*I*f*x + 4*I*e) - (-2*I*A + 8*B)*c^5*e^(2*I*f*x + 2*I*e) - (2*I*A - 2*B)*c
^5 + (96*(A + 4*I*B)*c^5*f*x - (24*I*A - 96*B)*c^5)*e^(8*I*f*x + 8*I*e) + (
48*(A + 4*I*B)*c^5*f*x - (36*I*A - 144*B)*c^5)*e^(6*I*f*x + 6*I*e) - ((-24*
I*A + 96*B)*c^5*e^(10*I*f*x + 10*I*e) + (-48*I*A + 192*B)*c^5*e^(8*I*f*x +
8*I*e) + (-24*I*A + 96*B)*c^5*e^(6*I*f*x + 6*I*e))*log(e^(2*I*f*x + 2*I*e)
+ 1))/(a^3*f*e^(10*I*f*x + 10*I*e) + 2*a^3*f*e^(8*I*f*x + 8*I*e) + a^3*f*e^
(6*I*f*x + 6*I*e))
```

Sympy [A] time = 12.5139, size = 415, normalized size = 2.17

$$\frac{\frac{(2iAc^5-16Bc^5)e^{-4ie}}{a^3f}+\frac{(2iAc^5-14Bc^5)e^{-2ie}e^{2ifx}}{a^3f}}{e^{4ifx}+2e^{-2ie}e^{2ifx}+e^{-4ie}}+\frac{8c^5\,(-iA+4B)\log\left(e^{2ifx}+e^{-2ie}\right)}{a^3f}-\frac{\left(\begin{cases}16Ac^5xe^{6ie}-\frac{6iAc^5e^{4ie}e^{-2ifx}}{f}+\frac{2iAc^5e^{2ie}e^{-4ifx}}{f}-\\ x\left(16Ac^5e^{6ie}-12Ac^5e^{4ie}+8Ac^5e^{2ie}-4Ac\right.\end{cases}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**5/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] ((2*I*A*c**5 - 16*B*c**5)*exp(-4*I*e)/(a**3*f) + (2*I*A*c**5 - 14*B*c**5)*e
xp(-2*I*e)*exp(2*I*f*x)/(a**3*f))/(exp(4*I*f*x) + 2*exp(-2*I*e)*exp(2*I*f*x
) + exp(-4*I*e)) + 8*c**5*(-I*A + 4*B)*log(exp(2*I*f*x) + exp(-2*I*e))/(a**
3*f) - Piecewise((16*A*c**5*x*exp(6*I*e) - 6*I*A*c**5*exp(4*I*e)*exp(-2*I*f
*x)/f + 2*I*A*c**5*exp(2*I*e)*exp(-4*I*f*x)/f - 2*I*A*c**5*exp(-6*I*f*x)/(3
*f) + 64*I*B*c**5*x*exp(6*I*e) + 18*B*c**5*exp(4*I*e)*exp(-2*I*f*x)/f - 4*B
*c**5*exp(2*I*e)*exp(-4*I*f*x)/f + 2*B*c**5*exp(-6*I*f*x)/(3*f), Ne(f, 0)),
 (x*(16*A*c**5*exp(6*I*e) - 12*A*c**5*exp(4*I*e) + 8*A*c**5*exp(2*I*e) - 4*
A*c**5 + 64*I*B*c**5*exp(6*I*e) - 36*I*B*c**5*exp(4*I*e) + 16*I*B*c**5*exp(
2*I*e) - 4*I*B*c**5), True))*exp(-6*I*e)/a**3
```

Giac [B] time = 1.70212, size = 698, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^5/(a+I*a*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] -2/15*(120*(-I*A*c^5 + 4*B*c^5)*log(tan(1/2*f*x + 1/2*e) - I)/a^3 - 60*(-I*
A*c^5 + 4*B*c^5)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a^3 + 60*(I*A*c^5 - 4*B
*c^5)*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a^3 - 15*(6*I*A*c^5*tan(1/2*f*x +
1/2*e)^4 - 24*B*c^5*tan(1/2*f*x + 1/2*e)^4 - A*c^5*tan(1/2*f*x + 1/2*e)^3 -
 8*I*B*c^5*tan(1/2*f*x + 1/2*e)^3 - 12*I*A*c^5*tan(1/2*f*x + 1/2*e)^2 + 49*
B*c^5*tan(1/2*f*x + 1/2*e)^2 + A*c^5*tan(1/2*f*x + 1/2*e) + 8*I*B*c^5*tan(1
/2*f*x + 1/2*e) + 6*I*A*c^5 - 24*B*c^5)/((tan(1/2*f*x + 1/2*e)^2 - 1)^2*a^3
) + (294*I*A*c^5*tan(1/2*f*x + 1/2*e)^6 - 1176*B*c^5*tan(1/2*f*x + 1/2*e)^6
 + 1884*A*c^5*tan(1/2*f*x + 1/2*e)^5 + 7416*I*B*c^5*tan(1/2*f*x + 1/2*e)^5
- 4890*I*A*c^5*tan(1/2*f*x + 1/2*e)^4 + 19320*B*c^5*tan(1/2*f*x + 1/2*e)^4
- 6920*A*c^5*tan(1/2*f*x + 1/2*e)^3 - 26480*I*B*c^5*tan(1/2*f*x + 1/2*e)^3
+ 4890*I*A*c^5*tan(1/2*f*x + 1/2*e)^2 - 19320*B*c^5*tan(1/2*f*x + 1/2*e)^2
+ 1884*A*c^5*tan(1/2*f*x + 1/2*e) + 7416*I*B*c^5*tan(1/2*f*x + 1/2*e) - 294
*I*A*c^5 + 1176*B*c^5)/(a^3*(tan(1/2*f*x + 1/2*e) - I)^6))/f
```

3.729 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^4}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=164

$$-\frac{6c^4(A+3iB)}{a^3f(-\tan(e+fx)+i)}+\frac{2c^4(-5B+3iA)}{a^3f(-\tan(e+fx)+i)^2}+\frac{8c^4(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{c^4(-7B+iA)\log(\cos(e+fx))}{a^3f}-\frac{c^4x(A}{}$$

```
[Out] -(((A + (7*I)*B)*c^4*x)/a^3) - ((I*A - 7*B)*c^4*Log[Cos[e + f*x]])/(a^3*f)
+ (8*(A + I*B)*c^4)/(3*a^3*f*(I - Tan[e + f*x])^3) + (2*((3*I)*A - 5*B)*c^4
)/(a^3*f*(I - Tan[e + f*x])^2) - (6*(A + (3*I)*B)*c^4)/(a^3*f*(I - Tan[e +
f*x])) + (I*B*c^4*Tan[e + f*x])/(a^3*f)
```

Rubi [A] time = 0.209634, antiderivative size = 164, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$-\frac{6c^4(A+3iB)}{a^3f(-\tan(e+fx)+i)}+\frac{2c^4(-5B+3iA)}{a^3f(-\tan(e+fx)+i)^2}+\frac{8c^4(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{c^4(-7B+iA)\log(\cos(e+fx))}{a^3f}-\frac{c^4x(A}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4)/(a + I*a*Tan[e + f*x])^
3,x]
```


```
[Out] -(((A + (7*I)*B)*c^4*x)/a^3) - ((I*A - 7*B)*c^4*Log[Cos[e + f*x]])/(a^3*f)
+ (8*(A + I*B)*c^4)/(3*a^3*f*(I - Tan[e + f*x])^3) + (2*((3*I)*A - 5*B)*c^4
)/(a^3*f*(I - Tan[e + f*x])^2) - (6*(A + (3*I)*B)*c^4)/(a^3*f*(I - Tan[e +
f*x])) + (I*B*c^4*Tan[e + f*x])/(a^3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^4}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)(c-icx)^3}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{iBc^3}{a^4} + \frac{8(A+iB)c^3}{a^4(-i+x)^4} + \frac{4(-3iA+5B)c^3}{a^4(-i+x)^3} - \frac{6(A+3iB)c^3}{a^4(-i+x)^2} + \frac{i(A+7iB)c^3}{a^4(-i+x)}\right)\right.}{f}$$

$$= -\frac{(A+7iB)c^4x}{a^3} - \frac{(iA-7B)c^4\log(\cos(e+fx))}{a^3f} + \frac{8(A+iB)c^4}{3a^3f(i-\tan(e+fx}$$

Mathematica [B] time = 9.20892, size = 1239, normalized size = 7.55

$$c^4\left(\frac{\sec^3(e+fx)\left(-\frac{1}{2}B\cos(3e-fx)+\frac{1}{2}B\cos(3e+fx)-\frac{1}{2}iB\sin(3e-fx)+\frac{1}{2}iB\sin(3e+fx)\right)(A+B\tan(e+fx))(\cos(}{f\left(\cos\left(\frac{e}{2}\right)-\sin\left(\frac{e}{2}\right)\right)\left(\cos\left(\frac{e}{2}\right)+\sin\left(\frac{e}{2}\right)\right)(A\cos(e+fx)+B\sin(e+fx))(i\tan(e+fx)a+a)^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^4)/(a + I*a*Tan[e +
f*x])^3,x]
```

```
[Out] c^4*(((A + (5*I)*B)*Cos[2*f*x]*Sec[e + f*x]^2*(I*Cos[e] - Sin[e])*(Cos[f*x]
 + I*Sin[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])
*(a + I*a*Tan[e + f*x])^3) + (((-I)*A + 3*B)*Cos[4*f*x]*Sec[e + f*x]^2*(Cos
[e]/2 - (I/2)*Sin[e])*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A
*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) + (Sec[e + f*x]^2
*((-I)*A*Cos[(3*e)/2] + 7*B*Cos[(3*e)/2] + A*Sin[(3*e)/2] + (7*I)*B*Sin[(3*
e)/2])*(Cos[(3*e)/2]*Log[Cos[e + f*x]] + I*Log[Cos[e + f*x]]*Sin[(3*e)/2])*
(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[
e + f*x])*(a + I*a*Tan[e + f*x])^3) + ((A + I*B)*Cos[6*f*x]*Sec[e + f*x]^2*
((I/3)*Cos[3*e] + Sin[3*e]/3)*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x]
))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) + ((A + (
7*I)*B)*Sec[e + f*x]^2*(-(f*x*Cos[3*e]) - I*f*x*Sin[3*e])*(Cos[f*x] + I*Sin
[f*x])^3*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*
a*Tan[e + f*x])^3) + ((A + (5*I)*B)*Sec[e + f*x]^2*(Cos[e] + I*Sin[e])*(Cos
```

```
[f*x] + I*Sin[f*x])^3*Sin[2*f*x]*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] +
 B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) + ((A + (3*I)*B)*Sec[e + f*x]^2*
(-Cos[e]/2 + (I/2)*Sin[e])*(Cos[f*x] + I*Sin[f*x])^3*Sin[4*f*x]*(A + B*Tan[
e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) +
 ((A + I*B)*Sec[e + f*x]^2*(Cos[3*e]/3 - (I/3)*Sin[3*e])*(Cos[f*x] + I*Sin[
f*x])^3*Sin[6*f*x]*(A + B*Tan[e + f*x]))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x
])*(a + I*a*Tan[e + f*x])^3) + (Sec[e + f*x]^3*(Cos[f*x] + I*Sin[f*x])^3*(-
(B*Cos[3*e - f*x])/2 + (B*Cos[3*e + f*x])/2 - (I/2)*B*Sin[3*e - f*x] + (I/2
)*B*Sin[3*e + f*x])*(A + B*Tan[e + f*x]))/(f*(Cos[e/2] - Sin[e/2])*(Cos[e/2
] + Sin[e/2])*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3) +
 (x*Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^3*((A*Cos[e])/2 + ((7*I)/2)*B*Co
s[e] - (A*Cos[e]^3)/2 - ((7*I)/2)*B*Cos[e]^3 + I*A*Sin[e] - 7*B*Sin[e] - (2
*I)*A*Cos[e]^2*Sin[e] + 14*B*Cos[e]^2*Sin[e] + 3*A*Cos[e]*Sin[e]^2 + (21*I)
*B*Cos[e]*Sin[e]^2 + (2*I)*A*Sin[e]^3 - 14*B*Sin[e]^3 - (A*Sin[e]*Tan[e])/2
 - ((7*I)/2)*B*Sin[e]*Tan[e] - (A*Sin[e]^3*Tan[e])/2 - ((7*I)/2)*B*Sin[e]^3
*Tan[e] + I*(A + (7*I)*B)*(Cos[3*e] + I*Sin[3*e])*Tan[e])*(A + B*Tan[e + f*
x]))/((A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^3))
```

Maple [A] time = 0.048, size = 207, normalized size = 1.3

$$\frac{iBc^4\tan\left(fx+e\right)}{a^3f} - \frac{8\,Ac^4}{3\,a^3f\left(\tan\left(fx+e\right)-i\right)^3} - \frac{\frac{8\,i}{3}c^4B}{a^3f\left(\tan\left(fx+e\right)-i\right)^3} + \frac{18\,ic^4B}{a^3f\left(\tan\left(fx+e\right)-i\right)} + 6\,\frac{Ac^4}{a^3f\left(\tan\left(fx+e\right)-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] I*B*c^4*tan(f*x+e)/a^3/f-8/3/f*c^4/a^3/(tan(f*x+e)-I)^3*A-8/3*I/f*c^4/a^3/(
tan(f*x+e)-I)^3*B+18*I/f*c^4/a^3/(tan(f*x+e)-I)*B+6/f*c^4/a^3/(tan(f*x+e)-I
)*A+6*I/f*c^4/a^3/(tan(f*x+e)-I)^2*A-10/f*c^4/a^3/(tan(f*x+e)-I)^2*B+I/f*c^
4/a^3*A*ln(tan(f*x+e)-I)-7/f*c^4/a^3*B*ln(tan(f*x+e)-I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.09455, size = 527, normalized size = 3.21

$$-\frac{12\,(A+7i\,B)c^4fxe^{(8i\,fx+8i\,e)}-(3i\,A-21\,B)c^4e^{(4i\,fx+4i\,e)}-(-i\,A+7\,B)c^4e^{(2i\,fx+2i\,e)}-(2i\,A-2\,B)c^4+\Big(12\,(A+7i\,B)c^4f}{6\Big(a^3fe^{(8i\,fx+8i\,e)}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] -1/6*(12*(A + 7*I*B)*c^4*f*x*e^(8*I*f*x + 8*I*e) - (3*I*A - 21*B)*c^4*e^(4*
I*f*x + 4*I*e) - (-I*A + 7*B)*c^4*e^(2*I*f*x + 2*I*e) - (2*I*A - 2*B)*c^4 +
 (12*(A + 7*I*B)*c^4*f*x - (6*I*A - 42*B)*c^4)*e^(6*I*f*x + 6*I*e) - ((-6*I
*A + 42*B)*c^4*e^(8*I*f*x + 8*I*e) + (-6*I*A + 42*B)*c^4*e^(6*I*f*x + 6*I*e
))*log(e^(2*I*f*x + 2*I*e) + 1))/(a^3*f*e^(8*I*f*x + 8*I*e) + a^3*f*e^(6*I*
f*x + 6*I*e))
```

Sympy [A] time = 10.7475, size = 348, normalized size = 2.12

$$-\frac{2Bc^4e^{-2ie}}{a^3f\left(e^{2ifx}+e^{-2ie}\right)}+\frac{c^4\left(-iA+7B\right)\log\left(e^{2ifx}+e^{-2ie}\right)}{a^3f}-\frac{\Bigg(\begin{cases}2Ac^4xe^{6ie}-\frac{iAc^4e^{4ie}e^{-2ifx}}{f}+\frac{iAc^4e^{2ie}e^{-4ifx}}{2f}-\frac{iAc^4e^{-6ifx}}{3f}+14iBc^4xe \\ x\left(2Ac^4e^{6ie}-2Ac^4e^{4ie}+2Ac^4e^{2ie}-2Ac^4+14iBc^4e^{6ie}-10i\right.\end{cases}}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**4/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] -2*B*c**4*exp(-2*I*e)/(a**3*f*(exp(2*I*f*x) + exp(-2*I*e))) + c**4*(-I*A +
7*B)*log(exp(2*I*f*x) + exp(-2*I*e))/(a**3*f) - Piecewise((2*A*c**4*x*exp(6
*I*e) - I*A*c**4*exp(4*I*e)*exp(-2*I*f*x)/f + I*A*c**4*exp(2*I*e)*exp(-4*I*
f*x)/(2*f) - I*A*c**4*exp(-6*I*f*x)/(3*f) + 14*I*B*c**4*x*exp(6*I*e) + 5*B*
c**4*exp(4*I*e)*exp(-2*I*f*x)/f - 3*B*c**4*exp(2*I*e)*exp(-4*I*f*x)/(2*f) +
 B*c**4*exp(-6*I*f*x)/(3*f), Ne(f, 0)), (x*(2*A*c**4*exp(6*I*e) - 2*A*c**4*
exp(4*I*e) + 2*A*c**4*exp(2*I*e) - 2*A*c**4 + 14*I*B*c**4*exp(6*I*e) - 10*I
*B*c**4*exp(4*I*e) + 6*I*B*c**4*exp(2*I*e) - 2*I*B*c**4), True))*exp(-6*I*e
```

```
)/a**3
```

Giac [B] time = 1.59241, size = 582, normalized size = 3.55

$$\frac{\frac{60\,(i\,Ac^4-7\,Bc^4)\log\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-i\right)}{a^3}+\frac{30\,(-i\,Ac^4+7\,Bc^4)\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)+1\right|\right)}{a^3}-\frac{30\,(i\,Ac^4-7\,Bc^4)\log\left(\left|\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-1\right|\right)}{a^3}-\frac{30\left(-i\,Ac^4\tan\left(\frac{1}{2}\,fx+\right.\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^4/(a+I*a*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] 1/30*(60*(I*A*c^4 - 7*B*c^4)*log(tan(1/2*f*x + 1/2*e) - I)/a^3 + 30*(-I*A*c
^4 + 7*B*c^4)*log(abs(tan(1/2*f*x + 1/2*e) + 1))/a^3 - 30*(I*A*c^4 - 7*B*c^
4)*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a^3 - 30*(-I*A*c^4*tan(1/2*f*x + 1/2*
e)^2 + 7*B*c^4*tan(1/2*f*x + 1/2*e)^2 + 2*I*B*c^4*tan(1/2*f*x + 1/2*e) + I*
A*c^4 - 7*B*c^4)/((tan(1/2*f*x + 1/2*e)^2 - 1)*a^3) - (147*I*A*c^4*tan(1/2*
f*x + 1/2*e)^6 - 1029*B*c^4*tan(1/2*f*x + 1/2*e)^6 + 1002*A*c^4*tan(1/2*f*x
 + 1/2*e)^5 + 6534*I*B*c^4*tan(1/2*f*x + 1/2*e)^5 - 2445*I*A*c^4*tan(1/2*f*
x + 1/2*e)^4 + 17115*B*c^4*tan(1/2*f*x + 1/2*e)^4 - 3820*A*c^4*tan(1/2*f*x
+ 1/2*e)^3 - 23860*I*B*c^4*tan(1/2*f*x + 1/2*e)^3 + 2445*I*A*c^4*tan(1/2*f*
x + 1/2*e)^2 - 17115*B*c^4*tan(1/2*f*x + 1/2*e)^2 + 1002*A*c^4*tan(1/2*f*x
+ 1/2*e) + 6534*I*B*c^4*tan(1/2*f*x + 1/2*e) - 147*I*A*c^4 + 1029*B*c^4)/(a
^3*(tan(1/2*f*x + 1/2*e) - I)^6))/f
```

3.730 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^3}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=135

$$\frac{c^3(-B+iA)(1-i\tan(e+fx))^3}{6a^3f(1+i\tan(e+fx))^3}-\frac{4iBc^3}{a^3f(-\tan(e+fx)+i)}-\frac{2Bc^3}{a^3f(-\tan(e+fx)+i)^2}+\frac{Bc^3\log(\cos(e+fx))}{a^3f}-\frac{iBc^3x}{a^3}$$

```
[Out] ((-I)*B*c^3*x)/a^3 + (B*c^3*Log[Cos[e + f*x]])/(a^3*f) - (2*B*c^3)/(a^3*f*(
I - Tan[e + f*x])^2) - ((4*I)*B*c^3)/(a^3*f*(I - Tan[e + f*x])) + ((I*A - B
)*c^3*(1 - I*Tan[e + f*x])^3)/(6*a^3*f*(1 + I*Tan[e + f*x])^3)
```

Rubi [A] time = 0.156834, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 78, 43}

$$\frac{c^3(-B+iA)(1-i\tan(e+fx))^3}{6a^3f(1+i\tan(e+fx))^3}-\frac{4iBc^3}{a^3f(-\tan(e+fx)+i)}-\frac{2Bc^3}{a^3f(-\tan(e+fx)+i)^2}+\frac{Bc^3\log(\cos(e+fx))}{a^3f}-\frac{iBc^3x}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3)/(a + I*a*Tan[e + f*x])^
3,x]
```

```
[Out] ((-I)*B*c^3*x)/a^3 + (B*c^3*Log[Cos[e + f*x]])/(a^3*f) - (2*B*c^3)/(a^3*f*(
I - Tan[e + f*x])^2) - ((4*I)*B*c^3)/(a^3*f*(I - Tan[e + f*x])) + ((I*A - B
)*c^3*(1 - I*Tan[e + f*x])^3)/(6*a^3*f*(1 + I*Tan[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 43

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

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^3}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)(c-icx)^2}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)c^3(1-i\tan(e+fx))^3}{6a^3f(1+i\tan(e+fx))^3} - \frac{(iBc)\,\mathrm{Subst}\left(\int \frac{(c-icx)^2}{(a+iax)^3}\,dx, x, \tan(e+f\right.}{f}$$

$$= \frac{(iA-B)c^3(1-i\tan(e+fx))^3}{6a^3f(1+i\tan(e+fx))^3} - \frac{(iBc)\,\mathrm{Subst}\left(\int \left(\frac{4ic^2}{a^3(-i+x)^3} + \frac{4c^2}{a^3(-i+x)^2} - \right.\right.}{f}$$

$$= -\frac{iBc^3x}{a^3} + \frac{Bc^3\log(\cos(e+fx))}{a^3f} - \frac{2Bc^3}{a^3f(i-\tan(e+fx))^2} - \frac{4iBc}{a^3f(i-\tan(}$$

Mathematica [A] time = 3.60465, size = 145, normalized size = 1.07

$$\frac{c^3\sec^3(e+fx)(-\cos(3(e+fx))(A-6iB\log(\cos(e+fx))-6Bfx+iB)+iA\sin(3(e+fx))+9B\sin(e+fx)-B\sin(3(e}{6a^3f(\tan(e+fx)-i)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^3)/(a + I*a*Tan[e +
f*x])^3,x]
```

```
[Out] (c^3*Sec[e + f*x]^3*((-3*I)*B*Cos[e + f*x] - Cos[3*(e + f*x)]*(A + I*B - 6*
B*f*x - (6*I)*B*Log[Cos[e + f*x]]) + 9*B*Sin[e + f*x] + I*A*Sin[3*(e + f*x)
] - B*Sin[3*(e + f*x)] + (6*I)*B*f*x*Sin[3*(e + f*x)] - 6*B*Log[Cos[e + f*x
]]*Sin[3*(e + f*x)]))/(6*a^3*f*(-I + Tan[e + f*x])^3)
```

Maple [A] time = 0.053, size = 164, normalized size = 1.2

$$\frac{5\,ic^3B}{fa^3\left(\tan\left(fx+e\right)-i\right)}+\frac{Ac^3}{fa^3\left(\tan\left(fx+e\right)-i\right)}-\frac{Bc^3\ln\left(\tan\left(fx+e\right)-i\right)}{fa^3}+\frac{2\,ic^3A}{fa^3\left(\tan\left(fx+e\right)-i\right)^2}-4\,\frac{Bc^3}{fa^3\left(\tan\left(fx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 5*I/f*c^3/a^3/(tan(f*x+e)-I)*B+1/f*c^3/a^3/(tan(f*x+e)-I)*A-1/f*c^3/a^3*B*l
n(tan(f*x+e)-I)+2*I/f*c^3/a^3/(tan(f*x+e)-I)^2*A-4/f*c^3/a^3/(tan(f*x+e)-I)
^2*B-4/3*I/f*c^3/a^3/(tan(f*x+e)-I)^3*B-4/3/f*c^3/a^3/(tan(f*x+e)-I)^3*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.10689, size = 279, normalized size = 2.07

$$\frac{\left(-12i\,Bc^3fxe^{\left(6i\,fx+6i\,e\right)}+6\,Bc^3e^{\left(6i\,fx+6i\,e\right)}\log\left(e^{\left(2i\,fx+2i\,e\right)}+1\right)-6\,Bc^3e^{\left(4i\,fx+4i\,e\right)}+3\,Bc^3e^{\left(2i\,fx+2i\,e\right)}+\left(i\,A-B\right)c^3\right)e^{\left(-6i\,fx-6i\right.}}{6\,a^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/6*(-12*I*B*c^3*f*x*e^(6*I*f*x + 6*I*e) + 6*B*c^3*e^(6*I*f*x + 6*I*e)*log(
e^(2*I*f*x + 2*I*e) + 1) - 6*B*c^3*e^(4*I*f*x + 4*I*e) + 3*B*c^3*e^(2*I*f*x
 + 2*I*e) + (I*A - B)*c^3)*e^(-6*I*f*x - 6*I*e)/(a^3*f)
```

Sympy [A] time = 3.60864, size = 260, normalized size = 1.93

$$-\frac{2iBc^3x}{a^3}+\frac{Bc^3\log\left(e^{2ifx}+e^{-2ie}\right)}{a^3f}+\begin{cases}\frac{\left(-12Ba^6c^3f^2e^{10ie}e^{-2ifx}+6Ba^6c^3f^2e^{8ie}e^{-4ifx}+\left(2iAa^6c^3f^2e^{6ie}-2Ba^6c^3f^2e^{6ie}\right)e^{-6ifx}\right)e^{-12ie}}{12a^9f^3} & \text{for } 12a^9f^3e^{12i\cdots} \\ x\left(\frac{2iBc^3}{a^3}+\frac{\left(Ac^3-2iBc^3e^{6ie}+2iBc^3e^{4ie}-2iBc^3e^{2ie}+iBc^3\right)e^{-6ie}}{a^3}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**3/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] -2*I*B*c**3*x/a**3 + B*c**3*log(exp(2*I*f*x) + exp(-2*I*e))/(a**3*f) + Piec
ewise(((-12*B*a**6*c**3*f**2*exp(10*I*e)*exp(-2*I*f*x) + 6*B*a**6*c**3*f**2
*exp(8*I*e)*exp(-4*I*f*x) + (2*I*A*a**6*c**3*f**2*exp(6*I*e) - 2*B*a**6*c**
3*f**2*exp(6*I*e))*exp(-6*I*f*x))*exp(-12*I*e)/(12*a**9*f**3), Ne(12*a**9*f
**3*exp(12*I*e), 0)), (x*(2*I*B*c**3/a**3 + (A*c**3 - 2*I*B*c**3*exp(6*I*e)
 + 2*I*B*c**3*exp(4*I*e) - 2*I*B*c**3*exp(2*I*e) + I*B*c**3)*exp(-6*I*e)/a*
*3), True))
```

Giac [B] time = 1.54282, size = 348, normalized size = 2.58

$$-\frac{\frac{60\,Bc^3\log\left(\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-i\right)}{a^3}-\frac{30\,Bc^3\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)+1\right|\right)}{a^3}-\frac{30\,Bc^3\log\left(\left|\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-1\right|\right)}{a^3}-\frac{147\,Bc^3\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^6-60\,Ac^3\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5-94\cdots}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^3/(a+I*a*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] -1/30*(60*B*c^3*log(tan(1/2*f*x + 1/2*e) - I)/a^3 - 30*B*c^3*log(abs(tan(1/
2*f*x + 1/2*e) + 1))/a^3 - 30*B*c^3*log(abs(tan(1/2*f*x + 1/2*e) - 1))/a^3
- (147*B*c^3*tan(1/2*f*x + 1/2*e)^6 - 60*A*c^3*tan(1/2*f*x + 1/2*e)^5 - 942
*I*B*c^3*tan(1/2*f*x + 1/2*e)^5 - 2445*B*c^3*tan(1/2*f*x + 1/2*e)^4 + 200*A
*c^3*tan(1/2*f*x + 1/2*e)^3 + 3620*I*B*c^3*tan(1/2*f*x + 1/2*e)^3 + 2445*B*
c^3*tan(1/2*f*x + 1/2*e)^2 - 60*A*c^3*tan(1/2*f*x + 1/2*e) - 942*I*B*c^3*ta
n(1/2*f*x + 1/2*e) - 147*B*c^3)/(a^3*(tan(1/2*f*x + 1/2*e) - I)^6))/f
```

3.731 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^2}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=99

$$\frac{c^2(-3B+iA)}{2a^3f(-\tan(e+fx)+i)^2}+\frac{2c^2(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{iBc^2}{a^3f(-\tan(e+fx)+i)}$$

```
[Out] (2*(A + I*B)*c^2)/(3*a^3*f*(I - Tan[e + f*x])^3) + ((I*A - 3*B)*c^2)/(2*a^3
*f*(I - Tan[e + f*x])^2) - (I*B*c^2)/(a^3*f*(I - Tan[e + f*x]))
```

Rubi [A] time = 0.156943, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 77}

$$\frac{c^2(-3B+iA)}{2a^3f(-\tan(e+fx)+i)^2}+\frac{2c^2(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{iBc^2}{a^3f(-\tan(e+fx)+i)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2)/(a + I*a*Tan[e + f*x])^
3,x]
```

```
[Out] (2*(A + I*B)*c^2)/(3*a^3*f*(I - Tan[e + f*x])^3) + ((I*A - 3*B)*c^2)/(2*a^3
*f*(I - Tan[e + f*x])^2) - (I*B*c^2)/(a^3*f*(I - Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^2}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)}{(a+iax)^4}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{2(A+iB)c}{a^4(-i+x)^4}+\frac{(-iA+3B)c}{a^4(-i+x)^3}-\frac{iBc}{a^4(-i+x)^2}\right)dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{2(A+iB)c^2}{3a^3f(i-\tan(e+fx))^3}+\frac{(iA-3B)c^2}{2a^3f(i-\tan(e+fx))^2}-\frac{iBc^2}{a^3f(i-\tan(e+fx$$

Mathematica [A] time = 2.7558, size = 79, normalized size = 0.8

$$-\frac{ic^2\sec^2(e+fx)(\cos(2(e+fx))-i\sin(2(e+fx)))((A-5iB)\tan(e+fx)-5iA-B)}{24a^3f(\tan(e+fx)-i)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^2)/(a + I*a*Tan[e +
f*x])^3,x]
```

```
[Out] ((-I/24)*c^2*Sec[e + f*x]^2*(Cos[2*(e + f*x)] - I*Sin[2*(e + f*x)])*((-5*I)
*A - B + (A - (5*I)*B)*Tan[e + f*x]))/(a^3*f*(-I + Tan[e + f*x])^3)
```

Maple [A] time = 0.049, size = 69, normalized size = 0.7

$$\frac{c^2}{fa^3}\left(\frac{iB}{\tan\left(fx+e\right)-i}-\frac{-iA+3B}{2\left(\tan\left(fx+e\right)-i\right)^2}-\frac{2iB+2A}{3\left(\tan\left(fx+e\right)-i\right)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 1/f*c^2/a^3*(I*B/(tan(f*x+e)-I)-1/2*(-I*A+3*B)/(tan(f*x+e)-I)^2-1/3*(2*I*B+
2*A)/(tan(f*x+e)-I)^3)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.051, size = 128, normalized size = 1.29

$$\frac{\left((3i\,A+3\,B)c^2e^{(2i\,fx+2i\,e)}+(2i\,A-2\,B)c^2\right)e^{(-6i\,fx-6i\,e)}}{24\,a^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/24*((3*I*A + 3*B)*c^2*e^(2*I*f*x + 2*I*e) + (2*I*A - 2*B)*c^2)*e^(-6*I*f*
x - 6*I*e)/(a^3*f)
```

Sympy [A] time = 2.76566, size = 173, normalized size = 1.75

$$\begin{cases} \frac{\left(\left(8iAa^3c^2fe^{4ie}-8Ba^3c^2fe^{4ie}\right)e^{-6ifx}+\left(12iAa^3c^2fe^{6ie}+12Ba^3c^2fe^{6ie}\right)e^{-4ifx}\right)e^{-10ie}}{96a^6f^2} & \text{for } 96a^6f^2e^{10ie}\neq 0 \\ \frac{x\left(Ac^2e^{2ie}+Ac^2-iBc^2e^{2ie}+iBc^2\right)e^{-6ie}}{2a^3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**2/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] Piecewise((((8*I*A*a**3*c**2*f*exp(4*I*e) - 8*B*a**3*c**2*f*exp(4*I*e))*exp
(-6*I*f*x) + (12*I*A*a**3*c**2*f*exp(6*I*e) + 12*B*a**3*c**2*f*exp(6*I*e))*
exp(-4*I*f*x))*exp(-10*I*e)/(96*a**6*f**2), Ne(96*a**6*f**2*exp(10*I*e), 0)
```

```
), (x*(A*c**2*exp(2*I*e) + A*c**2 - I*B*c**2*exp(2*I*e) + I*B*c**2)*exp(-6*
I*e)/(2*a**3), True))
```

Giac [B] time = 1.48839, size = 223, normalized size = 2.25

$$-\frac{2\left(3\,Ac^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5-3i\,Ac^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-3\,Bc^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-8\,Ac^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3-2i\,Bc^2\tan\left(\right.\right.}{3\,a^3f\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-i\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^2/(a+I*a*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] -2/3*(3*A*c^2*tan(1/2*f*x + 1/2*e)^5 - 3*I*A*c^2*tan(1/2*f*x + 1/2*e)^4 - 3
*B*c^2*tan(1/2*f*x + 1/2*e)^4 - 8*A*c^2*tan(1/2*f*x + 1/2*e)^3 - 2*I*B*c^2*
tan(1/2*f*x + 1/2*e)^3 + 3*I*A*c^2*tan(1/2*f*x + 1/2*e)^2 + 3*B*c^2*tan(1/2
*f*x + 1/2*e)^2 + 3*A*c^2*tan(1/2*f*x + 1/2*e))/(a^3*f*(tan(1/2*f*x + 1/2*e
) - I)^6)
```

3.732 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=59

$$\frac{c(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{Bc}{2a^3f(-\tan(e+fx)+i)^2}$$

```
[Out] ((A + I*B)*c)/(3*a^3*f*(I - Tan[e + f*x])^3) - (B*c)/(2*a^3*f*(I - Tan[e +
f*x])^2)
```

Rubi [A] time = 0.0884157, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051, Rules used = {3588, 43}

$$\frac{c(A+iB)}{3a^3f(-\tan(e+fx)+i)^3}-\frac{Bc}{2a^3f(-\tan(e+fx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(a + I*a*Tan[e + f*x])^3,
x]
```

```
[Out] ((A + I*B)*c)/(3*a^3*f*(I - Tan[e + f*x])^3) - (B*c)/(2*a^3*f*(I - Tan[e +
f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{A+iB}{a^4(-i+x)^4}+\frac{B}{a^4(-i+x)^3}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(A+iB)c}{3a^3f(i-\tan(e+fx))^3}-\frac{Bc}{2a^3f(i-\tan(e+fx))^2}$$

Mathematica [A] time = 1.21049, size = 81, normalized size = 1.37

$$\frac{c(\tan(e+fx)+i)\sec^2(e+fx)(-2(A-2iB)\sin(2(e+fx))+2(B+2iA)\cos(2(e+fx))+3iA)}{24a^3f(\tan(e+fx)-i)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]))/(a + I*a*Tan[e + f*
x])^3,x]
```

```
[Out] (c*Sec[e + f*x]^2*((3*I)*A + 2*((2*I)*A + B)*Cos[2*(e + f*x)] - 2*(A - (2*I
)*B)*Sin[2*(e + f*x)])*(I + Tan[e + f*x]))/(24*a^3*f*(-I + Tan[e + f*x])^3)
```

Maple [A] time = 0.05, size = 43, normalized size = 0.7

$$\frac{c}{fa^3}\left(-\frac{B}{2\left(\tan\left(fx+e\right)-i\right)^2}-\frac{A+iB}{3\left(\tan\left(fx+e\right)-i\right)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 1/f*c/a^3*(-1/2*B/(tan(f*x+e)-I)^2-1/3*(A+I*B)/(tan(f*x+e)-I)^3)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.03511, size = 158, normalized size = 2.68

$$\frac{\left((3i\,A+3\,B)ce^{\left(4i\,fx+4i\,e\right)}+3i\,Ace^{\left(2i\,fx+2i\,e\right)}+(i\,A-B)c\right)e^{\left(-6i\,fx-6i\,e\right)}}{24\,a^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x, algor
ithm="fricas")
```

```
[Out] 1/24*((3*I*A + 3*B)*c*e^(4*I*f*x + 4*I*e) + 3*I*A*c*e^(2*I*f*x + 2*I*e) + (
I*A - B)*c)*e^(-6*I*f*x - 6*I*e)/(a^3*f)
```

Sympy [A] time = 1.39956, size = 207, normalized size = 3.51

$$\begin{cases}\frac{\left(192iAa^6cf^2e^{8ie}e^{-4ifx}+\left(64iAa^6cf^2e^{6ie}-64Ba^6cf^2e^{6ie}\right)e^{-6ifx}+\left(192iAa^6cf^2e^{10ie}+192Ba^6cf^2e^{10ie}\right)e^{-2ifx}\right)e^{-12ie}}{1536a^9f^3} & \text{for } 1536a^9f^3e^{12ie}\neq 0\\ \frac{x\left(Ace^{4ie}+2Ace^{2ie}+Ac-iBce^{4ie}+iBc\right)e^{-6ie}}{4a^3} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] Piecewise((((192*I*A*a**6*c*f**2*exp(8*I*e)*exp(-4*I*f*x) + (64*I*A*a**6*c*f
**2*exp(6*I*e) - 64*B*a**6*c*f**2*exp(6*I*e))*exp(-6*I*f*x) + (192*I*A*a**6
*c*f**2*exp(10*I*e) + 192*B*a**6*c*f**2*exp(10*I*e))*exp(-2*I*f*x))*exp(-12
*I*e)/(1536*a**9*f**3), Ne(1536*a**9*f**3*exp(12*I*e), 0)), (x*(A*c*exp(4*I
*e) + 2*A*c*exp(2*I*e) + A*c - I*B*c*exp(4*I*e) + I*B*c)*exp(-6*I*e)/(4*a**
3), True))
```

Giac [B] time = 1.34081, size = 201, normalized size = 3.41

$$-\frac{2\left(3\,Ac\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{5}-6i\,Ac\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{4}-3\,Bc\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{4}-10\,Ac\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{3}+2i\,Bc\tan\left(\frac{1}{2}\,fx\right.\right.}{3\,a^{3}f\left(\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-i\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x, algor
ithm="giac")
```

```
[Out] -2/3*(3*A*c*tan(1/2*f*x + 1/2*e)^5 - 6*I*A*c*tan(1/2*f*x + 1/2*e)^4 - 3*B*c
*tan(1/2*f*x + 1/2*e)^4 - 10*A*c*tan(1/2*f*x + 1/2*e)^3 + 2*I*B*c*tan(1/2*f
*x + 1/2*e)^3 + 6*I*A*c*tan(1/2*f*x + 1/2*e)^2 + 3*B*c*tan(1/2*f*x + 1/2*e)
^2 + 3*A*c*tan(1/2*f*x + 1/2*e))/(a^3*f*(tan(1/2*f*x + 1/2*e) - I)^6)
```

3.733 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=112

$$\frac{B+iA}{8f\left(a^3+ia^3\tan(e+fx)\right)}+\frac{x(A-iB)}{8a^3}+\frac{-B+iA}{6f(a+ia\tan(e+fx))^3}+\frac{B+iA}{8af(a+ia\tan(e+fx))^2}$$

```
[Out] ((A - I*B)*x)/(8*a^3) + (I*A - B)/(6*f*(a + I*a*Tan[e + f*x])^3) + (I*A + B
)/(8*a*f*(a + I*a*Tan[e + f*x])^2) + (I*A + B)/(8*f*(a^3 + I*a^3*Tan[e + f*
x]))
```

Rubi [A] time = 0.0850948, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3526, 3479, 8}

$$\frac{B+iA}{8f\left(a^3+ia^3\tan(e+fx)\right)}+\frac{x(A-iB)}{8a^3}+\frac{-B+iA}{6f(a+ia\tan(e+fx))^3}+\frac{B+iA}{8af(a+ia\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/(a + I*a*Tan[e + f*x])^3,x]
```


```
[Out] ((A - I*B)*x)/(8*a^3) + (I*A - B)/(6*f*(a + I*a*Tan[e + f*x])^3) + (I*A + B
)/(8*a*f*(a + I*a*Tan[e + f*x])^2) + (I*A + B)/(8*f*(a^3 + I*a^3*Tan[e + f*
x]))
```


Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3479

```
Int[((a_) + (b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(a*(a +
b*Tan[c + d*x])^n)/(2*b*d*n), x] + Dist[1/(2*a), Int[(a + b*Tan[c + d*x])^(
n + 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 + b^2, 0] && LtQ[n, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3}\,dx = \frac{iA-B}{6f(a+ia\tan(e+fx))^3} + \frac{(A-iB)\int \frac{1}{(a+ia\tan(e+fx))^2}\,dx}{2a}$$

$$= \frac{iA-B}{6f(a+ia\tan(e+fx))^3} + \frac{iA+B}{8af(a+ia\tan(e+fx))^2} + \frac{(A-iB)\int \frac{1}{a+ia\tan(e+fx)}\,dx}{4a^2}$$

$$= \frac{iA-B}{6f(a+ia\tan(e+fx))^3} + \frac{iA+B}{8af(a+ia\tan(e+fx))^2} + \frac{iA+B}{8f\left(a^3+ia^3\tan(e+fx)\right)} + \frac{(A-iB}{8}$$

$$= \frac{(A-iB)x}{8a^3} + \frac{iA-B}{6f(a+ia\tan(e+fx))^3} + \frac{iA+B}{8af(a+ia\tan(e+fx))^2} + \frac{iA+B}{8f\left(a^3+ia^3\tan(e+fx\right.}$$

Mathematica [A] time = 0.712872, size = 150, normalized size = 1.34

$$\frac{\sec^3(e+fx)((-27A+3iB)\cos(e+fx)+2(6iAfx-A+6Bfx-iB)\cos(3(e+fx))-9iA\sin(e+fx)+2iA\sin(3(e+fx}{96a^3f(\tan(e+fx)-i)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/(a + I*a*Tan[e + f*x])^3,x]
```

```
[Out] (Sec[e + f*x]^3*((-27*A + (3*I)*B)*Cos[e + f*x] + 2*(-A - I*B + (6*I)*A*f*x
 + 6*B*f*x)*Cos[3*(e + f*x)] - (9*I)*A*Sin[e + f*x] - 9*B*Sin[e + f*x] + (2
*I)*A*Sin[3*(e + f*x)] - 2*B*Sin[3*(e + f*x)] - 12*A*f*x*Sin[3*(e + f*x)] +
 (12*I)*B*f*x*Sin[3*(e + f*x)]))/(96*a^3*f*(-I + Tan[e + f*x])^3)
```

Maple [B] time = 0.046, size = 203, normalized size = 1.8

$$\frac{A}{8fa^3\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{i}{8}B}{fa^3\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{i}{8}A}{fa^3\left(\tan\left(fx+e\right)-i\right)^2} - \frac{B}{8fa^3\left(\tan\left(fx+e\right)-i\right)^2} - \frac{\frac{i}{16}\ln\left(\tan\left(fx\right.\right.}{fa^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 1/8/f/a^3/(tan(f*x+e)-I)*A-1/8*I/f/a^3/(tan(f*x+e)-I)*B-1/8*I/f/a^3/(tan(f*
x+e)-I)^2*A-1/8/f/a^3/(tan(f*x+e)-I)^2*B-1/16*I/f/a^3*ln(tan(f*x+e)-I)*A-1/
16/f/a^3*ln(tan(f*x+e)-I)*B-1/6/f/a^3/(tan(f*x+e)-I)^3*A-1/6*I/f/a^3/(tan(f
*x+e)-I)^3*B+1/16/f/a^3*B*ln(tan(f*x+e)+I)+1/16*I/f/a^3*A*ln(tan(f*x+e)+I)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.07208, size = 217, normalized size = 1.94

$$\frac{\left(12\,(A-i\,B)fxe^{\left(6i\,fx+6i\,e\right)}+(18i\,A+6\,B)e^{\left(4i\,fx+4i\,e\right)}+(9i\,A-3\,B)e^{\left(2i\,fx+2i\,e\right)}+2i\,A-2\,B\right)e^{\left(-6i\,fx-6i\,e\right)}}{96\,a^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/96*(12*(A - I*B)*f*x*e^(6*I*f*x + 6*I*e) + (18*I*A + 6*B)*e^(4*I*f*x + 4*
I*e) + (9*I*A - 3*B)*e^(2*I*f*x + 2*I*e) + 2*I*A - 2*B)*e^(-6*I*f*x - 6*I*e
)/(a^3*f)
```

Sympy [A] time = 4.46947, size = 260, normalized size = 2.32

$$\begin{cases}\frac{\left(\left(512iAa^6f^2e^{6ie}-512Ba^6f^2e^{6ie}\right)e^{-6ifx}+\left(2304iAa^6f^2e^{8ie}-768Ba^6f^2e^{8ie}\right)e^{-4ifx}+\left(4608iAa^6f^2e^{10ie}+1536Ba^6f^2e^{10ie}\right)e^{-2ifx}\right)e^{-12ie}}{24576a^9f^3} & \text{for } 24576a^9f^3e^{12ie} \\ x\left(-\frac{A-iB}{8a^3}+\frac{\left(Ae^{6ie}+3Ae^{4ie}+3Ae^{2ie}+A-iBe^{6ie}-iBe^{4ie}+iBe^{2ie}+iB\right)e^{-6ie}}{8a^3}\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3,x)
```

```
[Out] Piecewise((((512*I*A*a**6*f**2*exp(6*I*e) - 512*B*a**6*f**2*exp(6*I*e))*exp
(-6*I*f*x) + (2304*I*A*a**6*f**2*exp(8*I*e) - 768*B*a**6*f**2*exp(8*I*e))*e
xp(-4*I*f*x) + (4608*I*A*a**6*f**2*exp(10*I*e) + 1536*B*a**6*f**2*exp(10*I*
e))*exp(-2*I*f*x))*exp(-12*I*e)/(24576*a**9*f**3), Ne(24576*a**9*f**3*exp(1
2*I*e), 0)), (x*(-(A - I*B)/(8*a**3) + (A*exp(6*I*e) + 3*A*exp(4*I*e) + 3*A
*exp(2*I*e) + A - I*B*exp(6*I*e) - I*B*exp(4*I*e) + I*B*exp(2*I*e) + I*B)*e
xp(-6*I*e)/(8*a**3)), True)) + x*(A - I*B)/(8*a**3)
```

Giac [A] time = 1.22681, size = 189, normalized size = 1.69

$$-\frac{\frac{6\,(iA+B)\log\left(\tan\left(fx+e\right)-i\right)}{a^3}+\frac{6\,(-iA-B)\log\left(i\tan\left(fx+e\right)-1\right)}{a^3}+\frac{-11iA\tan\left(fx+e\right)^3-11B\tan\left(fx+e\right)^3-45A\tan\left(fx+e\right)^2+45iB\tan\left(fx+e\right)^2+69iA\tan\left(fx\right.}{a^3\left(\tan\left(fx+e\right)-i\right)^3}}{96f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x, algorithm="giac")
```

```
[Out] -1/96*(6*(I*A + B)*log(tan(f*x + e) - I)/a^3 + 6*(-I*A - B)*log(I*tan(f*x +
 e) - 1)/a^3 + (-11*I*A*tan(f*x + e)^3 - 11*B*tan(f*x + e)^3 - 45*A*tan(f*x
 + e)^2 + 45*I*B*tan(f*x + e)^2 + 69*I*A*tan(f*x + e) + 69*B*tan(f*x + e) +
 51*A - 19*I*B)/(a^3*(tan(f*x + e) - I)^3))/f
```

3.734 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))}\,dx$

Optimal. Leaf size=153

$$-\frac{3A-iB}{16a^3cf(-\tan(e+fx)+i)}+\frac{A-iB}{16a^3cf(\tan(e+fx)+i)}+\frac{A+iB}{12a^3cf(-\tan(e+fx)+i)^3}+\frac{x(2A-iB)}{8a^3c}-\frac{iA}{8a^3cf(-\tan(e+$$

```
[Out] ((2*A - I*B)*x)/(8*a^3*c) + (A + I*B)/(12*a^3*c*f*(I - Tan[e + f*x])^3) - (
(I/8)*A)/(a^3*c*f*(I - Tan[e + f*x])^2) - (3*A - I*B)/(16*a^3*c*f*(I - Tan[
e + f*x])) + (A - I*B)/(16*a^3*c*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.213472, antiderivative size = 153, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{3A-iB}{16a^3cf(-\tan(e+fx)+i)}+\frac{A-iB}{16a^3cf(\tan(e+fx)+i)}+\frac{A+iB}{12a^3cf(-\tan(e+fx)+i)^3}+\frac{x(2A-iB)}{8a^3c}-\frac{iA}{8a^3cf(-\tan(e+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])),
x]
```

```
[Out] ((2*A - I*B)*x)/(8*a^3*c) + (A + I*B)/(12*a^3*c*f*(I - Tan[e + f*x])^3) - (
(I/8)*A)/(a^3*c*f*(I - Tan[e + f*x])^2) - (3*A - I*B)/(16*a^3*c*f*(I - Tan[
e + f*x])) + (A - I*B)/(16*a^3*c*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A+iB}{4a^4c^2(-i+x)^4} + \frac{iA}{4a^4c^2(-i+x)^3} + \frac{-3A+iB}{16a^4c^2(-i+x)^2} + \frac{-A+iB}{16a^4c^2(i+x)^2} + \frac{}{8a\cdots}\right.\right.}{f}$$

$$= \frac{A+iB}{12a^3cf(i-\tan(e+fx))^3} - \frac{iA}{8a^3cf(i-\tan(e+fx))^2} - \frac{3A-iB}{16a^3cf(i-\tan(\cdots}$$

$$= \frac{(2A-iB)x}{8a^3c} + \frac{A+iB}{12a^3cf(i-\tan(e+fx))^3} - \frac{iA}{8a^3cf(i-\tan(e+fx))^2} - \frac{}{16\cdots}$$

Mathematica [A] time = 2.08965, size = 164, normalized size = 1.07

$$-\frac{\sec^2(e+fx)(3(A(8fx+2i)+B(-1-4ifx))\cos(2(e+fx))+(-4B-2iA)\cos(4(e+fx))+24iAfx\sin(2(e+fx))+6A\cdots}{96a^3cf(\tan(e+\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])),x]
```

```
[Out] -(Sec[e + f*x]^2*((18*I)*A + 3*(B*(-1 - (4*I)*f*x) + A*(2*I + 8*f*x))*Cos[2
*(e + f*x)] + ((-2*I)*A - 4*B)*Cos[4*(e + f*x)] + 6*A*Sin[2*(e + f*x)] + (3
*I)*B*Sin[2*(e + f*x)] + (24*I)*A*f*x*Sin[2*(e + f*x)] + 12*B*f*x*Sin[2*(e
+ f*x)] + 4*A*Sin[4*(e + f*x)] - (2*I)*B*Sin[4*(e + f*x)]))/(96*a^3*c*f*(-I
 + Tan[e + f*x])^2)
```

Maple [A] time = 0.069, size = 257, normalized size = 1.7

$$\frac{-\frac{i}{8}A}{fa^3c\left(\tan\left(fx+e\right)-i\right)^2}+\frac{3A}{16fa^3c\left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{i}{16}B}{fa^3c\left(\tan\left(fx+e\right)-i\right)}-\frac{A}{12fa^3c\left(\tan\left(fx+e\right)-i\right)^3}-\frac{}{fa^3c\left(\mathrm{t}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e)),x)
```

```
[Out] -1/8*I/f/a^3/c*A/(tan(f*x+e)-I)^2+3/16/f/a^3/c/(tan(f*x+e)-I)*A-1/16*I/f/a^
3/c/(tan(f*x+e)-I)*B-1/12/f/a^3/c/(tan(f*x+e)-I)^3*A-1/12*I/f/a^3/c/(tan(f*
x+e)-I)^3*B-1/16/f/a^3/c*ln(tan(f*x+e)-I)*B-1/8*I/f/a^3/c*ln(tan(f*x+e)-I)*
A+1/16/f/a^3/c/(tan(f*x+e)+I)*A-1/16*I/f/a^3/c/(tan(f*x+e)+I)*B+1/16/f/a^3/
c*ln(tan(f*x+e)+I)*B+1/8*I/f/a^3/c*ln(tan(f*x+e)+I)*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e)),x, algor
ithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.05501, size = 257, normalized size = 1.68

$$\frac{\left(12\left(2A-iB\right)fxe^{\left(6ifx+6ie\right)}+\left(-3iA-3B\right)e^{\left(8ifx+8ie\right)}+18iAe^{\left(4ifx+4ie\right)}+\left(6iA-3B\right)e^{\left(2ifx+2ie\right)}+iA-B\right)e^{\left(-6ifx-6ie\right)}}{96a^3cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e)),x, algor
ithm="fricas")
```

```
[Out] 1/96*(12*(2*A - I*B)*f*x*e^(6*I*f*x + 6*I*e) + (-3*I*A - 3*B)*e^(8*I*f*x +
8*I*e) + 18*I*A*e^(4*I*f*x + 4*I*e) + (6*I*A - 3*B)*e^(2*I*f*x + 2*I*e) + I
```

```
*A - B)*e^(-6*I*f*x - 6*I*e)/(a^3*c*f)
```

Sympy [A] time = 4.52343, size = 342, normalized size = 2.24

$$\begin{cases} \frac{\left(294912iAa^9c^3f^3e^{10ie}e^{-2ifx}+\left(16384iAa^9c^3f^3e^{6ie}-16384Ba^9c^3f^3e^{6ie}\right)e^{-6ifx}+\left(98304iAa^9c^3f^3e^{8ie}-49152Ba^9c^3f^3e^{8ie}\right)e^{-4ifx}+\left(-49152iAa^9c^3f^3e^{14ie}-49152Ba^9c\right.}{1572864a^{12}c^4f^4} \\ x\left(-\frac{2A-iB}{8a^3c}+\frac{\left(Ae^{8ie}+4Ae^{6ie}+6Ae^{4ie}+4Ae^{2ie}+A-iBe^{8ie}-2iBe^{6ie}+2iBe^{2ie}+iB\right)e^{-6ie}}{16a^3c}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e)),x)
```

```
[Out] Piecewise(((294912*I*A*a**9*c**3*f**3*exp(10*I*e)*exp(-2*I*f*x) + (16384*I*
A*a**9*c**3*f**3*exp(6*I*e) - 16384*B*a**9*c**3*f**3*exp(6*I*e))*exp(-6*I*f
*x) + (98304*I*A*a**9*c**3*f**3*exp(8*I*e) - 49152*B*a**9*c**3*f**3*exp(8*I
*e))*exp(-4*I*f*x) + (-49152*I*A*a**9*c**3*f**3*exp(14*I*e) - 49152*B*a**9*
c**3*f**3*exp(14*I*e))*exp(2*I*f*x))*exp(-12*I*e)/(1572864*a**12*c**4*f**4)
, Ne(1572864*a**12*c**4*f**4*exp(12*I*e), 0)), (x*(-(2*A - I*B)/(8*a**3*c)
+ (A*exp(8*I*e) + 4*A*exp(6*I*e) + 6*A*exp(4*I*e) + 4*A*exp(2*I*e) + A - I*
B*exp(8*I*e) - 2*I*B*exp(6*I*e) + 2*I*B*exp(2*I*e) + I*B)*exp(-6*I*e)/(16*a
**3*c)), True)) + x*(2*A - I*B)/(8*a**3*c)
```

Giac [A] time = 1.30702, size = 259, normalized size = 1.69

$$-\frac{\frac{6\,(-2i\,A-B)\log\left(\tan\left(fx+e\right)+i\right)}{a^3c}+\frac{6\,(2i\,A+B)\log\left(\tan\left(fx+e\right)-i\right)}{a^3c}+\frac{6\left(2i\,A\tan\left(fx+e\right)+B\tan\left(fx+e\right)-3\,A+2i\,B\right)}{a^3c\left(\tan\left(fx+e\right)+i\right)}+\frac{-22i\,A\tan\left(fx+e\right)^3-11\,B\tan\left(fx+e\right)^3-84}{}}{96\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e)),x, algor
ithm="giac")
```

```
[Out] -1/96*(6*(-2*I*A - B)*log(tan(f*x + e) + I)/(a^3*c) + 6*(2*I*A + B)*log(tan
(f*x + e) - I)/(a^3*c) + 6*(2*I*A*tan(f*x + e) + B*tan(f*x + e) - 3*A + 2*I
*B)/(a^3*c*(tan(f*x + e) + I)) + (-22*I*A*tan(f*x + e)^3 - 11*B*tan(f*x + e
)^3 - 84*A*tan(f*x + e)^2 + 39*I*B*tan(f*x + e)^2 + 114*I*A*tan(f*x + e) +
45*B*tan(f*x + e) + 60*A - 9*I*B)/(a^3*c*(tan(f*x + e) - I)^3))/f
```

3.735 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^2}\,dx$

Optimal. Leaf size=185

$$\frac{2A-iB}{16a^3c^2f(\tan(e+fx)+i)}-\frac{-B+3iA}{32a^3c^2f(-\tan(e+fx)+i)^2}+\frac{B+iA}{32a^3c^2f(\tan(e+fx)+i)^2}+\frac{A+iB}{24a^3c^2f(-\tan(e+fx)+i)^3}+$$

```
[Out] ((5*A - I*B)*x)/(16*a^3*c^2) + (A + I*B)/(24*a^3*c^2*f*(I - Tan[e + f*x])^3
) - ((3*I)*A - B)/(32*a^3*c^2*f*(I - Tan[e + f*x])^2) - (3*A)/(16*a^3*c^2*f
*(I - Tan[e + f*x])) + (I*A + B)/(32*a^3*c^2*f*(I + Tan[e + f*x])^2) + (2*A
 - I*B)/(16*a^3*c^2*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.239247, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$\frac{2A-iB}{16a^3c^2f(\tan(e+fx)+i)}-\frac{-B+3iA}{32a^3c^2f(-\tan(e+fx)+i)^2}+\frac{B+iA}{32a^3c^2f(\tan(e+fx)+i)^2}+\frac{A+iB}{24a^3c^2f(-\tan(e+fx)+i)^3}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^2
),x]
```

```
[Out] ((5*A - I*B)*x)/(16*a^3*c^2) + (A + I*B)/(24*a^3*c^2*f*(I - Tan[e + f*x])^3
) - ((3*I)*A - B)/(32*a^3*c^2*f*(I - Tan[e + f*x])^2) - (3*A)/(16*a^3*c^2*f
*(I - Tan[e + f*x])) + (I*A + B)/(32*a^3*c^2*f*(I + Tan[e + f*x])^2) + (2*A
 - I*B)/(16*a^3*c^2*f*(I + Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int\left(\frac{A+iB}{8a^4c^3(-i+x)^4}+\frac{i(3A+iB)}{16a^4c^3(-i+x)^3}-\frac{3A}{16a^4c^3(-i+x)^2}-\frac{i(A-iB)}{16a^4c^3(i+x)^3}+\right.}{f}$$

$$= \frac{A+iB}{24a^3c^2f(i-\tan(e+fx))^3}-\frac{3iA-B}{32a^3c^2f(i-\tan(e+fx))^2}-\frac{3}{16a^3c^2f(i-}$$

$$= \frac{(5A-iB)x}{16a^3c^2}+\frac{A+iB}{24a^3c^2f(i-\tan(e+fx))^3}-\frac{3iA-B}{32a^3c^2f(i-\tan(e+fx))^2}$$

Mathematica [A] time = 2.38725, size = 217, normalized size = 1.17

$$\frac{\sec^3(e+fx)(\cos(2(e+fx))+i\sin(2(e+fx)))(12(A(-5+10ifx)+B(2fx-i))\cos(e+fx)+3(5A-9iB)\cos(3(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^2),x]
```

```
[Out] (Sec[e + f*x]^3*(Cos[2*(e + f*x)] + I*Sin[2*(e + f*x)])*(12*(A*(-5 + (10*I)
*f*x) + B*(-I + 2*f*x))*Cos[e + f*x] + 3*(5*A - (9*I)*B)*Cos[3*(e + f*x)] +
 A*Cos[5*(e + f*x)] - (5*I)*B*Cos[5*(e + f*x)] + (60*I)*A*Sin[e + f*x] - 12
*B*Sin[e + f*x] - 120*A*f*x*Sin[e + f*x] + (24*I)*B*f*x*Sin[e + f*x] + (45*
I)*A*Sin[3*(e + f*x)] + 9*B*Sin[3*(e + f*x)] + (5*I)*A*Sin[5*(e + f*x)] + B
*Sin[5*(e + f*x)]))/(384*a^3*c^2*f*(-I + Tan[e + f*x])^3)
```

Maple [A] time = 0.073, size = 303, normalized size = 1.6

$$\frac{3A}{16 f a^3 c^2 (\tan(fx+e)-i)} - \frac{\frac{3i}{32} A}{f a^3 c^2 (\tan(fx+e)-i)^2} + \frac{B}{32 f a^3 c^2 (\tan(fx+e)-i)^2} - \frac{\frac{5i}{32}\ln(\tan(fx+e)-i) A}{f a^3 c^2} - \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^2,x)
```

```
[Out] 3/16/f/a^3/c^2*A/(tan(f*x+e)-I)-3/32*I/f/a^3/c^2/(tan(f*x+e)-I)^2*A+1/32/f/
a^3/c^2/(tan(f*x+e)-I)^2*B-5/32*I/f/a^3/c^2*ln(tan(f*x+e)-I)*A-1/32/f/a^3/c
^2*ln(tan(f*x+e)-I)*B-1/24/f/a^3/c^2/(tan(f*x+e)-I)^3*A-1/24*I/f/a^3/c^2/(t
an(f*x+e)-I)^3*B+1/32*I/f/a^3/c^2/(tan(f*x+e)+I)^2*A+1/32/f/a^3/c^2/(tan(f*
x+e)+I)^2*B-1/16*I/f/a^3/c^2/(tan(f*x+e)+I)*B+1/8/f/a^3/c^2/(tan(f*x+e)+I)*
A+5/32*I/f/a^3/c^2*ln(tan(f*x+e)+I)*A+1/32/f/a^3/c^2*ln(tan(f*x+e)+I)*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^2,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.06795, size = 335, normalized size = 1.81

$$\frac{\left(24 (5A - iB) f x e^{(6i fx+6i e)} + (-3i A - 3B) e^{(10i fx+10i e)} + (-30i A - 18B) e^{(8i fx+8i e)} + (60i A - 12B) e^{(4i fx+4i e)} + (15i A \cdots\right.}{384 a^3 c^2 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^2,x, alg
orithm="fricas")
```

```
[Out] 1/384*(24*(5*A - I*B)*f*x*e^(6*I*f*x + 6*I*e) + (-3*I*A - 3*B)*e^(10*I*f*x
+ 10*I*e) + (-30*I*A - 18*B)*e^(8*I*f*x + 8*I*e) + (60*I*A - 12*B)*e^(4*I*f
*x + 4*I*e) + (15*I*A - 9*B)*e^(2*I*f*x + 2*I*e) + 2*I*A - 2*B)*e^(-6*I*f*x
 - 6*I*e)/(a^3*c^2*f)
```

Sympy [A] time = 6.11453, size = 454, normalized size = 2.45

$$\begin{cases} \frac{\left(\left(33554432iAa^{12}c^{8}f^{4}e^{6ie}-33554432Ba^{12}c^{8}f^{4}e^{6ie}\right)e^{-6ifx}+\left(251658240iAa^{12}c^{8}f^{4}e^{8ie}-150994944Ba^{12}c^{8}f^{4}e^{8ie}\right)e^{-4ifx}+\left(1006632960iAa^{12}c^{8}f^{4}e^{10ie}-201326592B\ldots\right.\right.}{6442450944a^{15}c^{1\ldots}} \\ x\left(-\frac{5A-iB}{16a^{3}c^{2}}+\frac{\left(Ae^{10ie}+5Ae^{8ie}+10Ae^{6ie}+10Ae^{4ie}+5Ae^{2ie}+A-iBe^{10ie}-3iBe^{8ie}-2iBe^{6ie}+2iBe^{4ie}+3iBe^{2ie}+iB\right)e^{-6ie}}{32a^{3}c^{2}}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**2,x)
```

```
[Out] Piecewise((((33554432*I*A*a**12*c**8*f**4*exp(6*I*e) - 33554432*B*a**12*c**
8*f**4*exp(6*I*e))*exp(-6*I*f*x) + (251658240*I*A*a**12*c**8*f**4*exp(8*I*e
) - 150994944*B*a**12*c**8*f**4*exp(8*I*e))*exp(-4*I*f*x) + (1006632960*I*A
*a**12*c**8*f**4*exp(10*I*e) - 201326592*B*a**12*c**8*f**4*exp(10*I*e))*exp
(-2*I*f*x) + (-503316480*I*A*a**12*c**8*f**4*exp(14*I*e) - 301989888*B*a**1
2*c**8*f**4*exp(14*I*e))*exp(2*I*f*x) + (-50331648*I*A*a**12*c**8*f**4*exp(
16*I*e) - 50331648*B*a**12*c**8*f**4*exp(16*I*e))*exp(4*I*f*x))*exp(-12*I*e
)/(6442450944*a**15*c**10*f**5), Ne(6442450944*a**15*c**10*f**5*exp(12*I*e)
, 0)), (x*(-(5*A - I*B)/(16*a**3*c**2) + (A*exp(10*I*e) + 5*A*exp(8*I*e) +
10*A*exp(6*I*e) + 10*A*exp(4*I*e) + 5*A*exp(2*I*e) + A - I*B*exp(10*I*e) -
3*I*B*exp(8*I*e) - 2*I*B*exp(6*I*e) + 2*I*B*exp(4*I*e) + 3*I*B*exp(2*I*e) +
 I*B)*exp(-6*I*e)/(32*a**3*c**2)), True)) + x*(5*A - I*B)/(16*a**3*c**2)
```

Giac [A] time = 1.27442, size = 296, normalized size = 1.6

$$-\frac{\frac{6\,(-5i\,A-B)\log\left(\tan\left(fx+e\right)+i\right)}{a^{3}c^{2}}+\frac{6\,(5i\,A+B)\log\left(\tan\left(fx+e\right)-i\right)}{a^{3}c^{2}}+\frac{3\left(-15i\,A\tan\left(fx+e\right)^{2}-3\,B\tan\left(fx+e\right)^{2}+38\,A\tan\left(fx+e\right)-10i\,B\tan\left(fx+e\right)+25i\,A+9\,B\right)}{a^{3}c^{2}\left(-i\,\tan\left(fx+e\right)+1\right)^{2}}+\ldots}{192\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^2,x, alg
orithm="giac")
```

```
[Out] -1/192*(6*(-5*I*A - B)*log(tan(f*x + e) + I)/(a^3*c^2) + 6*(5*I*A + B)*log(
tan(f*x + e) - I)/(a^3*c^2) + 3*(-15*I*A*tan(f*x + e)^2 - 3*B*tan(f*x + e)^
2 + 38*A*tan(f*x + e) - 10*I*B*tan(f*x + e) + 25*I*A + 9*B)/(a^3*c^2*(-I*ta
n(f*x + e) + 1)^2) + (-55*I*A*tan(f*x + e)^3 - 11*B*tan(f*x + e)^3 - 201*A*
tan(f*x + e)^2 + 33*I*B*tan(f*x + e)^2 + 255*I*A*tan(f*x + e) + 27*B*tan(f*
x + e) + 117*A + 3*I*B)/(a^3*c^2*(tan(f*x + e) - I)^3))/f
```

3.736 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^3}\,dx$

Optimal. Leaf size=99

$$-\frac{\cos^6(e+fx)(B-A\tan(e+fx))}{6a^3c^3f}+\frac{5A\sin(e+fx)\cos^3(e+fx)}{24a^3c^3f}+\frac{5A\sin(e+fx)\cos(e+fx)}{16a^3c^3f}+\frac{5Ax}{16a^3c^3}$$

```
[Out] (5*A*x)/(16*a^3*c^3) + (5*A*Cos[e + f*x]*Sin[e + f*x])/(16*a^3*c^3*f) + (5*
A*Cos[e + f*x]^3*Sin[e + f*x])/(24*a^3*c^3*f) - (Cos[e + f*x]^6*(B - A*Tan[
e + f*x]))/(6*a^3*c^3*f)
```

Rubi [A] time = 0.14586, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.122, Rules used = {3588, 73, 639, 199, 205}

$$-\frac{\cos^6(e+fx)(B-A\tan(e+fx))}{6a^3c^3f}+\frac{5A\sin(e+fx)\cos^3(e+fx)}{24a^3c^3f}+\frac{5A\sin(e+fx)\cos(e+fx)}{16a^3c^3f}+\frac{5Ax}{16a^3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^3
),x]
```

```
[Out] (5*A*x)/(16*a^3*c^3) + (5*A*Cos[e + f*x]*Sin[e + f*x])/(16*a^3*c^3*f) + (5*
A*Cos[e + f*x]^3*Sin[e + f*x])/(24*a^3*c^3*f) - (Cos[e + f*x]^6*(B - A*Tan[
e + f*x]))/(6*a^3*c^3*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^3}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^4}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{\left(ac+acx^2\right)^4}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= -\frac{\cos^6(e+fx)(B-A\tan(e+fx))}{6a^3c^3f} + \frac{(5A)\,\mathrm{Subst}\left(\int \frac{1}{\left(ac+acx^2\right)^3}\,dx,x,\mathrm{t}\right.}{6f}$$

$$= \frac{5A\cos^3(e+fx)\sin(e+fx)}{24a^3c^3f} - \frac{\cos^6(e+fx)(B-A\tan(e+fx))}{6a^3c^3f} + \frac{(5}{}$$

$$= \frac{5A\cos(e+fx)\sin(e+fx)}{16a^3c^3f} + \frac{5A\cos^3(e+fx)\sin(e+fx)}{24a^3c^3f} - \frac{\cos^6(e}{}$$

$$= \frac{5Ax}{16a^3c^3} + \frac{5A\cos(e+fx)\sin(e+fx)}{16a^3c^3f} + \frac{5A\cos^3(e+fx)\sin(e+fx)}{24a^3c^3f}$$

Mathematica [A] time = 0.144557, size = 63, normalized size = 0.64

$$\frac{A(45\sin(2(e+fx))+9\sin(4(e+fx))+\sin(6(e+fx))+60e+60fx)-32B\cos^6(e+fx)}{192a^3c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^3),x]
```

```
[Out] (-32*B*Cos[e + f*x]^6 + A*(60*e + 60*f*x + 45*Sin[2*(e + f*x)] + 9*Sin[4*(e
 + f*x)] + Sin[6*(e + f*x)]))/(192*a^3*c^3*f)
```

Maple [C] time = 0.07, size = 330, normalized size = 3.3

$$\frac{-\frac{5i}{32}A\ln\left(\tan\left(fx+e\right)-i\right)}{fa^3c^3}+\frac{5A}{32fa^3c^3\left(\tan\left(fx+e\right)-i\right)}+\frac{\frac{i}{32}B}{fa^3c^3\left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{i}{48}B}{fa^3c^3\left(\tan\left(fx+e\right)-i\right)^3}-\frac{}{48fa}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^3,x)
```

```
[Out] -5/32*I/f/a^3/c^3*A*ln(tan(f*x+e)-I)+5/32/f/a^3/c^3/(tan(f*x+e)-I)*A+1/32*I
/f/a^3/c^3/(tan(f*x+e)-I)*B-1/48*I/f/a^3/c^3/(tan(f*x+e)-I)^3*B-1/48/f/a^3/
c^3/(tan(f*x+e)-I)^3*A+1/32/f/a^3/c^3/(tan(f*x+e)-I)^2*B-1/16*I/f/a^3/c^3/(
tan(f*x+e)-I)^2*A+5/32*I/f/a^3/c^3*A*ln(tan(f*x+e)+I)+5/32/f/a^3/c^3/(tan(f
*x+e)+I)*A-1/32*I/f/a^3/c^3/(tan(f*x+e)+I)*B-1/48/f/a^3/c^3/(tan(f*x+e)+I)^
3*A+1/48*I/f/a^3/c^3/(tan(f*x+e)+I)^3*B+1/32/f/a^3/c^3/(tan(f*x+e)+I)^2*B+1
/16*I/f/a^3/c^3/(tan(f*x+e)+I)^2*A
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^3,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [C] time = 1.10016, size = 363, normalized size = 3.67

$$\frac{\left(120\,Afxe^{(6i\,fx+6i\,e)} + (-i\,A - B)e^{(12i\,fx+12i\,e)} + (-9i\,A - 6\,B)e^{(10i\,fx+10i\,e)} + (-45i\,A - 15\,B)e^{(8i\,fx+8i\,e)} + (45i\,A - 15\,B)e^{(4\cdots}\right.}{384\,a^3c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^3,x, alg
orithm="fricas")
```

```
[Out] 1/384*(120*A*f*x*e^(6*I*f*x + 6*I*e) + (-I*A - B)*e^(12*I*f*x + 12*I*e) + (
-9*I*A - 6*B)*e^(10*I*f*x + 10*I*e) + (-45*I*A - 15*B)*e^(8*I*f*x + 8*I*e)
+ (45*I*A - 15*B)*e^(4*I*f*x + 4*I*e) + (9*I*A - 6*B)*e^(2*I*f*x + 2*I*e) +
 I*A - B)*e^(-6*I*f*x - 6*I*e)/(a^3*c^3*f)
```

Sympy [A] time = 5.92886, size = 510, normalized size = 5.15

$$\frac{5Ax}{16a^3c^3} + \begin{cases} \frac{\left(\left(103079215104iAa^{15}c^{15}f^5e^{6ie} - 103079215104Ba^{15}c^{15}f^5e^{6ie}\right)e^{-6ifx} + \left(927712935936iAa^{15}c^{15}f^5e^{8ie} - 618475290624Ba^{15}c^{15}f^5e^{8ie}\right)e^{-4ifx} + \left(4638\cdots\right.\right.}{\cdots} \\ x\left(-\frac{5A}{16a^3c^3} + \frac{\left(Ae^{12ie} + 6Ae^{10ie} + 15Ae^{8ie} + 20Ae^{6ie} + 15Ae^{4ie} + 6Ae^{2ie} + A - iBe^{12ie} - 4iBe^{10ie} - 5iBe^{8ie} + 5iBe^{4ie} + 4iBe^{2ie} + iB\right)e^{-6ie}}{64a^3c^3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**3,x)
```

```
[Out] 5*A*x/(16*a**3*c**3) + Piecewise((((103079215104*I*A*a**15*c**15*f**5*exp(6
*I*e) - 103079215104*B*a**15*c**15*f**5*exp(6*I*e))*exp(-6*I*f*x) + (927712
935936*I*A*a**15*c**15*f**5*exp(8*I*e) - 618475290624*B*a**15*c**15*f**5*ex
p(8*I*e))*exp(-4*I*f*x) + (4638564679680*I*A*a**15*c**15*f**5*exp(10*I*e) -
 1546188226560*B*a**15*c**15*f**5*exp(10*I*e))*exp(-2*I*f*x) + (-4638564679
680*I*A*a**15*c**15*f**5*exp(14*I*e) - 1546188226560*B*a**15*c**15*f**5*exp
(14*I*e))*exp(2*I*f*x) + (-927712935936*I*A*a**15*c**15*f**5*exp(16*I*e) -
618475290624*B*a**15*c**15*f**5*exp(16*I*e))*exp(4*I*f*x) + (-103079215104*
I*A*a**15*c**15*f**5*exp(18*I*e) - 103079215104*B*a**15*c**15*f**5*exp(18*I
*e))*exp(6*I*f*x))*exp(-12*I*e)/(39582418599936*a**18*c**18*f**6), Ne(39582
418599936*a**18*c**18*f**6*exp(12*I*e), 0)), (x*(-5*A/(16*a**3*c**3) + (A*e
```

```
xp(12*I*e) + 6*A*exp(10*I*e) + 15*A*exp(8*I*e) + 20*A*exp(6*I*e) + 15*A*exp
(4*I*e) + 6*A*exp(2*I*e) + A - I*B*exp(12*I*e) - 4*I*B*exp(10*I*e) - 5*I*B*
exp(8*I*e) + 5*I*B*exp(4*I*e) + 4*I*B*exp(2*I*e) + I*B)*exp(-6*I*e)/(64*a**
3*c**3)), True))
```

Giac [A] time = 1.33634, size = 107, normalized size = 1.08

$$\frac{\frac{15\,(fx+e)A}{a^3c^3} + \frac{15\,A\tan(fx+e)^5+40\,A\tan(fx+e)^3+33\,A\tan(fx+e)-8\,B}{\left(\tan(fx+e)^2+1\right)^3a^3c^3}}{48\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^3,x, alg
orithm="giac")
```

```
[Out] 1/48*(15*(f*x + e)*A/(a^3*c^3) + (15*A*tan(f*x + e)^5 + 40*A*tan(f*x + e)^3
 + 33*A*tan(f*x + e) - 8*B)/((tan(f*x + e)^2 + 1)^3*a^3*c^3))/f
```

3.737 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^4}\,dx$

Optimal. Leaf size=251

$$-\frac{5(3A+iB)}{128a^3c^4f(-\tan(e+fx)+i)}-\frac{-3B+5iA}{128a^3c^4f(-\tan(e+fx)+i)^2}+\frac{B+5iA}{64a^3c^4f(\tan(e+fx)+i)^2}+\frac{A+iB}{96a^3c^4f(-\tan(e+fx)+\ldots}$$

```
[Out] (5*(7*A + I*B)*x)/(128*a^3*c^4) + (A + I*B)/(96*a^3*c^4*f*(I - Tan[e + f*x]
)^3) - ((5*I)*A - 3*B)/(128*a^3*c^4*f*(I - Tan[e + f*x])^2) - (5*(3*A + I*B
))/(128*a^3*c^4*f*(I - Tan[e + f*x])) - (I*A + B)/(64*a^3*c^4*f*(I + Tan[e
+ f*x])^4) - (2*A - I*B)/(48*a^3*c^4*f*(I + Tan[e + f*x])^3) + ((5*I)*A + B
)/(64*a^3*c^4*f*(I + Tan[e + f*x])^2) + (5*A)/(32*a^3*c^4*f*(I + Tan[e + f*
x]))
```

Rubi [A] time = 0.30624, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{5(3A+iB)}{128a^3c^4f(-\tan(e+fx)+i)}-\frac{-3B+5iA}{128a^3c^4f(-\tan(e+fx)+i)^2}+\frac{B+5iA}{64a^3c^4f(\tan(e+fx)+i)^2}+\frac{A+iB}{96a^3c^4f(-\tan(e+fx)+\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^4
),x]
```


```
[Out] (5*(7*A + I*B)*x)/(128*a^3*c^4) + (A + I*B)/(96*a^3*c^4*f*(I - Tan[e + f*x]
)^3) - ((5*I)*A - 3*B)/(128*a^3*c^4*f*(I - Tan[e + f*x])^2) - (5*(3*A + I*B
))/(128*a^3*c^4*f*(I - Tan[e + f*x])) - (I*A + B)/(64*a^3*c^4*f*(I + Tan[e
+ f*x])^4) - (2*A - I*B)/(48*a^3*c^4*f*(I + Tan[e + f*x])^3) + ((5*I)*A + B
)/(64*a^3*c^4*f*(I + Tan[e + f*x])^2) + (5*A)/(32*a^3*c^4*f*(I + Tan[e + f*
x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^4}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^5}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A+iB}{32a^4c^5(-i+x)^4} + \frac{i(5A+3iB)}{64a^4c^5(-i+x)^3} - \frac{5(3A+iB)}{128a^4c^5(-i+x)^2} + \frac{iA+B}{16a^4c^5(i+x)^5} \right.\right.}{}$$

$$= \frac{A+iB}{96a^3c^4f(i-\tan(e+fx))^3} - \frac{5iA-3B}{128a^3c^4f(i-\tan(e+fx))^2} - \frac{5(3}{128a^3c^4f(i}$$

$$= \frac{5(7A+iB)x}{128a^3c^4} + \frac{A+iB}{96a^3c^4f(i-\tan(e+fx))^3} - \frac{5iA-3B}{128a^3c^4f(i-\tan(e+fx)}$$

Mathematica [A] time = 3.21447, size = 267, normalized size = 1.06

$$\frac{\sec^3(e+fx)(-\cos(4(e+fx))-i\sin(4(e+fx)))(60(A(-7-14ifx)+B(2fx+i))\cos(e+fx)+18(7A+9iB)\cos(3(e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^4),x]
```

```
[Out] (Sec[e + f*x]^3*(-Cos[4*(e + f*x)] - I*Sin[4*(e + f*x)])*(60*(A*(-7 - (14*I
)*f*x) + B*(I + 2*f*x))*Cos[e + f*x] + 18*(7*A + (9*I)*B)*Cos[3*(e + f*x)]
+ 14*A*Cos[5*(e + f*x)] + (50*I)*B*Cos[5*(e + f*x)] + A*Cos[7*(e + f*x)] +
```

```
(7*I)*B*Cos[7*(e + f*x)] - (420*I)*A*Sin[e + f*x] - 60*B*Sin[e + f*x] - 840
*A*f*x*Sin[e + f*x] - (120*I)*B*f*x*Sin[e + f*x] - (378*I)*A*Sin[3*(e + f*x
)] + 54*B*Sin[3*(e + f*x)] - (70*I)*A*Sin[5*(e + f*x)] + 10*B*Sin[5*(e + f*
x)] - (7*I)*A*Sin[7*(e + f*x)] + B*Sin[7*(e + f*x)]))/(3072*a^3*c^4*f*(-I +
 Tan[e + f*x])^3)
```

Maple [A] time = 0.076, size = 397, normalized size = 1.6

$$\frac{15\,A}{128\,f a^{3} c^{4} \left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{5\,i}{128}A}{f a^{3} c^{4} \left(\tan\left(fx+e\right)-i\right)^{2}}+\frac{\frac{35\,i}{256}\ln\left(\tan\left(fx+e\right)+i\right)A}{f a^{3} c^{4}}+\frac{3\,B}{128\,f a^{3} c^{4} \left(\tan\left(fx+e\right)-i\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^4,x)
```

```
[Out] 15/128/f/a^3/c^4/(tan(f*x+e)-I)*A-5/128*I/f/a^3/c^4/(tan(f*x+e)-I)^2*A+35/2
56*I/f/a^3/c^4*ln(tan(f*x+e)+I)*A+3/128/f/a^3/c^4/(tan(f*x+e)-I)^2*B-1/96/f
/a^3/c^4/(tan(f*x+e)-I)^3*A+5/128*I/f/a^3/c^4/(tan(f*x+e)-I)*B+5/64*I/f/a^3
/c^4/(tan(f*x+e)+I)^2*A+5/256/f/a^3/c^4*ln(tan(f*x+e)-I)*B-1/64*I/f/a^3/c^4
/(tan(f*x+e)+I)^4*A-1/64/f/a^3/c^4/(tan(f*x+e)+I)^4*B+5/32*A/a^3/c^4/f/(tan
(f*x+e)+I)-1/96*I/f/a^3/c^4/(tan(f*x+e)-I)^3*B-5/256/f/a^3/c^4*ln(tan(f*x+e
)+I)*B-35/256*I/f/a^3/c^4*ln(tan(f*x+e)-I)*A-1/24/f/a^3/c^4/(tan(f*x+e)+I)^
3*A+1/48*I/f/a^3/c^4/(tan(f*x+e)+I)^3*B+1/64/f/a^3/c^4/(tan(f*x+e)+I)^2*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^4,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.05392, size = 455, normalized size = 1.81

$$\frac{\left(120\,(7\,A+i\,B)fxe^{(6i\,fx+6i\,e)}+(-3i\,A-3\,B)e^{(14i\,fx+14i\,e)}+(-28i\,A-20\,B)e^{(12i\,fx+12i\,e)}+(-126i\,A-54\,B)e^{(10i\,fx+10i\,e)}+\cdots\right.}{3072\,a^3c^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^4,x, alg
orithm="fricas")
```

```
[Out] 1/3072*(120*(7*A + I*B)*f*x*e^(6*I*f*x + 6*I*e) + (-3*I*A - 3*B)*e^(14*I*f*
x + 14*I*e) + (-28*I*A - 20*B)*e^(12*I*f*x + 12*I*e) + (-126*I*A - 54*B)*e^
(10*I*f*x + 10*I*e) + (-420*I*A - 60*B)*e^(8*I*f*x + 8*I*e) + (252*I*A - 10
8*B)*e^(4*I*f*x + 4*I*e) + (42*I*A - 30*B)*e^(2*I*f*x + 2*I*e) + 4*I*A - 4*
B)*e^(-6*I*f*x - 6*I*e)/(a^3*c^4*f)
```

Sympy [A] time = 7.96462, size = 607, normalized size = 2.42

$$\begin{cases} \frac{\left(\left(13510798882111488iAa^{18}c^{24}f^6e^{6ie}-13510798882111488Ba^{18}c^{24}f^6e^{6ie}\right)e^{-6ifx}+\left(141863388262170624iAa^{18}c^{24}f^6e^{8ie}-101330991615836160Ba^{18}c^{24}f^6e^{8ie}\right)e^{-\cdots}\right.}{\cdots} \\ x\left(-\frac{35A+5iB}{128a^3c^4}+\frac{\left(Ae^{14ie}+7Ae^{12ie}+21Ae^{10ie}+35Ae^{8ie}+35Ae^{6ie}+21Ae^{4ie}+7Ae^{2ie}+A-iBe^{14ie}-5iBe^{12ie}-9iBe^{10ie}-5iBe^{8ie}+5iBe^{6ie}+9iBe^{4ie}+5iBe^{2ie}+iB\right)e^{-6ie}}{128a^3c^4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**4,x)
```

```
[Out] Piecewise((((13510798882111488*I*A*a**18*c**24*f**6*exp(6*I*e) - 1351079888
2111488*B*a**18*c**24*f**6*exp(6*I*e))*exp(-6*I*f*x) + (141863388262170624*
I*A*a**18*c**24*f**6*exp(8*I*e) - 101330991615836160*B*a**18*c**24*f**6*exp
(8*I*e))*exp(-4*I*f*x) + (851180329573023744*I*A*a**18*c**24*f**6*exp(10*I*
e) - 364791569817010176*B*a**18*c**24*f**6*exp(10*I*e))*exp(-2*I*f*x) + (-1
418633882621706240*I*A*a**18*c**24*f**6*exp(14*I*e) - 202661983231672320*B*
a**18*c**24*f**6*exp(14*I*e))*exp(2*I*f*x) + (-425590164786511872*I*A*a**18
*c**24*f**6*exp(16*I*e) - 182395784908505088*B*a**18*c**24*f**6*exp(16*I*e)
)*exp(4*I*f*x) + (-94575592174780416*I*A*a**18*c**24*f**6*exp(18*I*e) - 675
53994410557440*B*a**18*c**24*f**6*exp(18*I*e))*exp(6*I*f*x) + (-10133099161
583616*I*A*a**18*c**24*f**6*exp(20*I*e) - 10133099161583616*B*a**18*c**24*f
**6*exp(20*I*e))*exp(8*I*f*x))*exp(-12*I*e)/(1037629354146162784*a**21*c**
28*f**7), Ne(1037629354146162784*a**21*c**28*f**7*exp(12*I*e), 0)), (x*(-(
35*A + 5*I*B)/(128*a**3*c**4) + (A*exp(14*I*e) + 7*A*exp(12*I*e) + 21*A*exp
```

```
(10*I*e) + 35*A*exp(8*I*e) + 35*A*exp(6*I*e) + 21*A*exp(4*I*e) + 7*A*exp(2*
I*e) + A - I*B*exp(14*I*e) - 5*I*B*exp(12*I*e) - 9*I*B*exp(10*I*e) - 5*I*B*
exp(8*I*e) + 5*I*B*exp(6*I*e) + 9*I*B*exp(4*I*e) + 5*I*B*exp(2*I*e) + I*B)*
exp(-6*I*e)/(128*a**3*c**4)), True)) + x*(35*A + 5*I*B)/(128*a**3*c**4)
```

Giac [A] time = 1.50037, size = 366, normalized size = 1.46

$$\frac{\frac{12\,(35i\,A-5\,B)\log\left(\tan\left(fx+e\right)+i\right)}{a^3c^4}-\frac{12\,(35i\,A-5\,B)\log\left(-i\,\tan\left(fx+e\right)-1\right)}{a^3c^4}+\frac{2\left(385\,A\tan\left(fx+e\right)^3+55i\,B\tan\left(fx+e\right)^3-1335i\,A\tan\left(fx+e\right)^2+225\,B\tan\left(fx+e\right)^2 \cdots\right)}{a^3c^4\left(i\,\tan\left(fx+e\right)+1\right)^3}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^4,x, alg
orithm="giac")
```

```
[Out] 1/3072*(12*(35*I*A - 5*B)*log(tan(f*x + e) + I)/(a^3*c^4) - 12*(35*I*A - 5*
B)*log(-I*tan(f*x + e) - 1)/(a^3*c^4) + 2*(385*A*tan(f*x + e)^3 + 55*I*B*ta
n(f*x + e)^3 - 1335*I*A*tan(f*x + e)^2 + 225*B*tan(f*x + e)^2 - 1575*A*tan(
f*x + e) - 321*I*B*tan(f*x + e) + 641*I*A - 167*B)/(a^3*c^4*(I*tan(f*x + e)
 + 1)^3) + (-875*I*A*tan(f*x + e)^4 + 125*B*tan(f*x + e)^4 + 3980*A*tan(f*x
 + e)^3 + 500*I*B*tan(f*x + e)^3 + 6930*I*A*tan(f*x + e)^2 - 702*B*tan(f*x
+ e)^2 - 5548*A*tan(f*x + e) - 340*I*B*tan(f*x + e) - 1771*I*A - 35*B)/(a^3
*c^4*(tan(f*x + e) + I)^4))/f
```

3.738 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^5}\,dx$

Optimal. Leaf size=287

$$-\frac{3(7A+3iB)}{256a^3c^5f(-\tan(e+fx)+i)}+\frac{5(7A+iB)}{256a^3c^5f(\tan(e+fx)+i)}-\frac{-2B+3iA}{128a^3c^5f(-\tan(e+fx)+i)^2}+\frac{A+iB}{192a^3c^5f(-\tan(e+fx)+\cdots}$$

```
[Out] (7*(4*A + I*B)*x)/(128*a^3*c^5) + (A + I*B)/(192*a^3*c^5*f*(I - Tan[e + f*x
])^3) - ((3*I)*A - 2*B)/(128*a^3*c^5*f*(I - Tan[e + f*x])^2) - (3*(7*A + (3
*I)*B))/(256*a^3*c^5*f*(I - Tan[e + f*x])) + (A - I*B)/(80*a^3*c^5*f*(I + T
an[e + f*x])^5) - ((2*I)*A + B)/(64*a^3*c^5*f*(I + Tan[e + f*x])^4) - (5*A
- I*B)/(96*a^3*c^5*f*(I + Tan[e + f*x])^3) + (((5*I)/64)*A)/(a^3*c^5*f*(I +
 Tan[e + f*x])^2) + (5*(7*A + I*B))/(256*a^3*c^5*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.337937, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{3(7A+3iB)}{256a^3c^5f(-\tan(e+fx)+i)}+\frac{5(7A+iB)}{256a^3c^5f(\tan(e+fx)+i)}-\frac{-2B+3iA}{128a^3c^5f(-\tan(e+fx)+i)^2}+\frac{A+iB}{192a^3c^5f(-\tan(e+fx)+\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^5
),x]
```


```
[Out] (7*(4*A + I*B)*x)/(128*a^3*c^5) + (A + I*B)/(192*a^3*c^5*f*(I - Tan[e + f*x
])^3) - ((3*I)*A - 2*B)/(128*a^3*c^5*f*(I - Tan[e + f*x])^2) - (3*(7*A + (3
*I)*B))/(256*a^3*c^5*f*(I - Tan[e + f*x])) + (A - I*B)/(80*a^3*c^5*f*(I + T
an[e + f*x])^5) - ((2*I)*A + B)/(64*a^3*c^5*f*(I + Tan[e + f*x])^4) - (5*A
- I*B)/(96*a^3*c^5*f*(I + Tan[e + f*x])^3) + (((5*I)/64)*A)/(a^3*c^5*f*(I +
 Tan[e + f*x])^2) + (5*(7*A + I*B))/(256*a^3*c^5*f*(I + Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^5}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^6}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{A+iB}{64a^4c^6(-i+x)^4} + \frac{i(3A+2iB)}{64a^4c^6(-i+x)^3} - \frac{3(7A+3iB)}{256a^4c^6(-i+x)^2} + \frac{-A+iB}{16a^4c^6(i+x)^6}\right.\right.}{}$$

$$= \frac{A+iB}{192a^3c^5f(i-\tan(e+fx))^3} - \frac{3iA-2B}{128a^3c^5f(i-\tan(e+fx))^2} - \frac{3}{256a^3c^5}$$

$$= \frac{7(4A+iB)x}{128a^3c^5} + \frac{A+iB}{192a^3c^5f(i-\tan(e+fx))^3} - \frac{3iA-2B}{128a^3c^5f(i-\tan(e+f}$$

Mathematica [A] time = 4.36775, size = 280, normalized size = 0.98

$$\frac{\sec^3(e+fx)(\cos(5(e+fx))+i\sin(5(e+fx)))(210(4A(1+4ifx)-B(4fx+i))\cos(2(e+fx))-560(A+iB)\cos(4(e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^5),x]
```

```
[Out] (Sec[e + f*x]^3*(Cos[5*(e + f*x)] + I*Sin[5*(e + f*x)])*(2100*A + 210*(4*A*
(1 + (4*I)*f*x) - B*(I + 4*f*x))*Cos[2*(e + f*x)] - 560*(A + I*B)*Cos[4*(e
+ f*x)] - 60*A*Cos[6*(e + f*x)] - (135*I)*B*Cos[6*(e + f*x)] - 4*A*Cos[8*(e
```

```
 + f*x)] - (16*I)*B*Cos[8*(e + f*x)] + (840*I)*A*Sin[2*(e + f*x)] + 210*B*S
in[2*(e + f*x)] + 3360*A*f*x*Sin[2*(e + f*x)] + (840*I)*B*f*x*Sin[2*(e + f*
x)] + (1120*I)*A*Sin[4*(e + f*x)] - 280*B*Sin[4*(e + f*x)] + (180*I)*A*Sin[
6*(e + f*x)] - 45*B*Sin[6*(e + f*x)] + (16*I)*A*Sin[8*(e + f*x)] - 4*B*Sin[
8*(e + f*x)]))/(15360*a^3*c^5*f*(-I + Tan[e + f*x])^3)
```

Maple [A] time = 0.078, size = 445, normalized size = 1.6

$$-\frac{A}{192\,f a^{3} c^{5} \left(\tan \left(f x + e\right) - i\right)^{3}} - \frac{\frac{7 i}{64} \ln \left(\tan \left(f x + e\right) - i\right) A}{f a^{3} c^{5}} + \frac{7 \ln \left(\tan \left(f x + e\right) - i\right) B}{256\, f a^{3} c^{5}} - \frac{\frac{i}{32} A}{f a^{3} c^{5} \left(\tan \left(f x + e\right) + i\right)^{4}} + \frac{}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^5,x)
```

```
[Out] -1/192/f/a^3/c^5/(tan(f*x+e)-I)^3*A-7/64*I/f/a^3/c^5*ln(tan(f*x+e)-I)*A+7/2
56/f/a^3/c^5*ln(tan(f*x+e)-I)*B-1/32*I/f/a^3/c^5/(tan(f*x+e)+I)^4*A+21/256/
f/a^3/c^5/(tan(f*x+e)-I)*A-1/192*I/f/a^3/c^5/(tan(f*x+e)-I)^3*B+1/64/f/a^3/
c^5/(tan(f*x+e)-I)^2*B-3/128*I/f/a^3/c^5/(tan(f*x+e)-I)^2*A+5/256*I/f/a^3/c
^5/(tan(f*x+e)+I)*B+1/80/f/a^3/c^5/(tan(f*x+e)+I)^5*A+1/96*I/f/a^3/c^5/(tan
(f*x+e)+I)^3*B-5/96/f/a^3/c^5/(tan(f*x+e)+I)^3*A+7/64*I/f/a^3/c^5*ln(tan(f*
x+e)+I)*A+35/256/f/a^3/c^5/(tan(f*x+e)+I)*A+9/256*I/f/a^3/c^5/(tan(f*x+e)-I
)*B-1/64/f/a^3/c^5/(tan(f*x+e)+I)^4*B+5/64*I*A/a^3/c^5/f/(tan(f*x+e)+I)^2-7
/256/f/a^3/c^5*ln(tan(f*x+e)+I)*B-1/80*I/f/a^3/c^5/(tan(f*x+e)+I)^5*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^5,x, alg
orithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.06409, size = 508, normalized size = 1.77

$$\frac{\left(840\,(4\,A+i\,B)fxe^{\left(6i\,fx+6i\,e\right)}+(-6i\,A-6\,B)e^{\left(16i\,fx+16i\,e\right)}+(-60i\,A-45\,B)e^{\left(14i\,fx+14i\,e\right)}+(-280i\,A-140\,B)e^{\left(12i\,fx+12i\,e\right)}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^5,x, alg
orithm="fricas")
```

```
[Out] 1/15360*(840*(4*A + I*B)*f*x*e^(6*I*f*x + 6*I*e) + (-6*I*A - 6*B)*e^(16*I*f
*x + 16*I*e) + (-60*I*A - 45*B)*e^(14*I*f*x + 14*I*e) + (-280*I*A - 140*B)*
e^(12*I*f*x + 12*I*e) + (-840*I*A - 210*B)*e^(10*I*f*x + 10*I*e) - 2100*I*A
*e^(8*I*f*x + 8*I*e) + (840*I*A - 420*B)*e^(4*I*f*x + 4*I*e) + (120*I*A - 9
0*B)*e^(2*I*f*x + 2*I*e) + 10*I*A - 10*B)*e^(-6*I*f*x - 6*I*e)/(a^3*c^5*f)
```

Sympy [A] time = 10.0078, size = 648, normalized size = 2.26

$$\begin{cases} \frac{\left(-7263405479023135948800iAa^{21}c^{35}f^7e^{14ie}e^{2ifx}+\left(3458764513820540928 0iAa^{21}c^{35}f^7e^{6ie}-34587645138205409280Ba^{21}c^{35}f^7e^{6ie}\right)e^{-6ifx}+\left(41505174165846\right.\right.}{} \\ x\left(-\frac{28A+7iB}{128a^3c^5}+\frac{\left(Ae^{16ie}+8Ae^{14ie}+28Ae^{12ie}+56Ae^{10ie}+70Ae^{8ie}+56Ae^{6ie}+28Ae^{4ie}+8Ae^{2ie}+A-iBe^{16ie}-6iBe^{14ie}-14iBe^{12ie}-14iBe^{10ie}+14iBe^{6ie}+14iBe^{4ie}+6iB\right.}{256a^3c^5}\right. \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**5,x)
```

```
[Out] Piecewise(((-7263405479023135948800*I*A*a**21*c**35*f**7*exp(14*I*e)*exp(2*
I*f*x) + (34587645138205409280*I*A*a**21*c**35*f**7*exp(6*I*e) - 3458764513
8205409280*B*a**21*c**35*f**7*exp(6*I*e))*exp(-6*I*f*x) + (4150517416584649
11360*I*A*a**21*c**35*f**7*exp(8*I*e) - 311288806243848683520*B*a**21*c**35
*f**7*exp(8*I*e))*exp(-4*I*f*x) + (2905362191609254379520*I*A*a**21*c**35*f
**7*exp(10*I*e) - 1452681095804627189760*B*a**21*c**35*f**7*exp(10*I*e))*ex
p(-2*I*f*x) + (-2905362191609254379520*I*A*a**21*c**35*f**7*exp(16*I*e) - 7
263405479023135948800*B*a**21*c**35*f**7*exp(16*I*e))*exp(4*I*f*x) + (-96845
40638697514598400*I*A*a**21*c**35*f**7*exp(18*I*e) - 4842270319348757299200*B
*a**21*c**35*f**7*exp(18*I*e))*exp(6*I*f*x) + (-2075258708292324556800*I*A*a
**21*c**35*f**7*exp(20*I*e) - 1556444031219243417600*B*a**21*c**35*f**7*exp(
20*I*e))*exp(8*I*f*x) + (-207525870829232455680*I*A*a**21*c**35*f**7*exp(22*
I*e) - 207525870829232455680*B*a**21*c**35*f**7*exp(22*I*e))*exp(10*I*f*x))*
exp(-12*I*e)/(5312662293228350865408 0*a**24*c**40*f**8), Ne(531266229322835
```

```
08654080*a**24*c**40*f**8*exp(12*I*e), 0)), (x*(-(28*A + 7*I*B)/(128*a**3*c
**5) + (A*exp(16*I*e) + 8*A*exp(14*I*e) + 28*A*exp(12*I*e) + 56*A*exp(10*I*
e) + 70*A*exp(8*I*e) + 56*A*exp(6*I*e) + 28*A*exp(4*I*e) + 8*A*exp(2*I*e) +
 A - I*B*exp(16*I*e) - 6*I*B*exp(14*I*e) - 14*I*B*exp(12*I*e) - 14*I*B*exp(
10*I*e) + 14*I*B*exp(6*I*e) + 14*I*B*exp(4*I*e) + 6*I*B*exp(2*I*e) + I*B)*e
xp(-6*I*e)/(256*a**3*c**5)), True)) + x*(28*A + 7*I*B)/(128*a**3*c**5)
```

Giac [A] time = 1.43331, size = 393, normalized size = 1.37

$$-\frac{\frac{60\,(-28i\,A+7\,B)\log\left(\tan\left(fx+e\right)+i\right)}{a^3c^5}+\frac{60\,(28i\,A-7\,B)\log\left(\tan\left(fx+e\right)-i\right)}{a^3c^5}+\frac{10\left(-308i\,A\tan\left(fx+e\right)^3+77\,B\tan\left(fx+e\right)^3-1050\,A\tan\left(fx+e\right)^2-285i\,B\tan\left(fx+e\right.\right.}{a^3c^5\left(\tan\left(fx+e\right)-i\right)^3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^5,x, alg
orithm="giac")
```

```
[Out] -1/15360*(60*(-28*I*A + 7*B)*log(tan(f*x + e) + I)/(a^3*c^5) + 60*(28*I*A -
 7*B)*log(tan(f*x + e) - I)/(a^3*c^5) + 10*(-308*I*A*tan(f*x + e)^3 + 77*B*
tan(f*x + e)^3 - 1050*A*tan(f*x + e)^2 - 285*I*B*tan(f*x + e)^2 + 1212*I*A*
tan(f*x + e) - 363*B*tan(f*x + e) + 478*A + 163*I*B)/(a^3*c^5*(tan(f*x + e)
 - I)^3) + (3836*I*A*tan(f*x + e)^5 - 959*B*tan(f*x + e)^5 - 21280*A*tan(f*
x + e)^4 - 5095*I*B*tan(f*x + e)^4 - 47960*I*A*tan(f*x + e)^3 + 10790*B*tan
(f*x + e)^3 + 55360*A*tan(f*x + e)^2 + 11230*I*B*tan(f*x + e)^2 + 33260*I*A
*tan(f*x + e) - 5435*B*tan(f*x + e) - 8608*A - 667*I*B)/(a^3*c^5*(tan(f*x +
 e) + I)^5))/f
```

3.739 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^6}\,dx$

Optimal. Leaf size=319

$$-\frac{7(2A+iB)}{256a^3c^6f(-\tan(e+fx)+i)}+\frac{7(4A+iB)}{256a^3c^6f(\tan(e+fx)+i)}-\frac{-5B+7iA}{512a^3c^6f(-\tan(e+fx)+i)^2}+\frac{5(-B+7iA)}{512a^3c^6f(\tan(e+fx)+$$

```
[Out] (7*(3*A + I*B)*x)/(128*a^3*c^6) + (A + I*B)/(384*a^3*c^6*f*(I - Tan[e + f*x
])^3) - ((7*I)*A - 5*B)/(512*a^3*c^6*f*(I - Tan[e + f*x])^2) - (7*(2*A + I*
B))/(256*a^3*c^6*f*(I - Tan[e + f*x])) + (I*A + B)/(96*a^3*c^6*f*(I + Tan[e
 + f*x])^6) + (2*A - I*B)/(80*a^3*c^6*f*(I + Tan[e + f*x])^5) - ((5*I)*A +
B)/(128*a^3*c^6*f*(I + Tan[e + f*x])^4) - (5*A)/(96*a^3*c^6*f*(I + Tan[e +
f*x])^3) + (5*((7*I)*A - B))/(512*a^3*c^6*f*(I + Tan[e + f*x])^2) + (7*(4*A
 + I*B))/(256*a^3*c^6*f*(I + Tan[e + f*x]))
```

Rubi [A] time = 0.380221, antiderivative size = 319, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.073, Rules used = {3588, 77, 203}

$$-\frac{7(2A+iB)}{256a^3c^6f(-\tan(e+fx)+i)}+\frac{7(4A+iB)}{256a^3c^6f(\tan(e+fx)+i)}-\frac{-5B+7iA}{512a^3c^6f(-\tan(e+fx)+i)^2}+\frac{5(-B+7iA)}{512a^3c^6f(\tan(e+fx)+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^6
),x]
```


```
[Out] (7*(3*A + I*B)*x)/(128*a^3*c^6) + (A + I*B)/(384*a^3*c^6*f*(I - Tan[e + f*x
])^3) - ((7*I)*A - 5*B)/(512*a^3*c^6*f*(I - Tan[e + f*x])^2) - (7*(2*A + I*
B))/(256*a^3*c^6*f*(I - Tan[e + f*x])) + (I*A + B)/(96*a^3*c^6*f*(I + Tan[e
 + f*x])^6) + (2*A - I*B)/(80*a^3*c^6*f*(I + Tan[e + f*x])^5) - ((5*I)*A +
B)/(128*a^3*c^6*f*(I + Tan[e + f*x])^4) - (5*A)/(96*a^3*c^6*f*(I + Tan[e +
f*x])^3) + (5*((7*I)*A - B))/(512*a^3*c^6*f*(I + Tan[e + f*x])^2) + (7*(4*A
 + I*B))/(256*a^3*c^6*f*(I + Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
```

```
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^6}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^7}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A+iB}{128a^4c^7(-i+x)^4} + \frac{i(7A+5iB)}{256a^4c^7(-i+x)^3} - \frac{7(2A+iB)}{256a^4c^7(-i+x)^2} - \frac{i(A-iB)}{16a^4c^7(i+x)^7}\right.\right.}{}$$

$$= \frac{A+iB}{384a^3c^6f(i-\tan(e+fx))^3} - \frac{7iA-5B}{512a^3c^6f(i-\tan(e+fx))^2} - \frac{7(}{256a^3c^6f}$$

$$= \frac{7(3A+iB)x}{128a^3c^6} + \frac{A+iB}{384a^3c^6f(i-\tan(e+fx))^3} - \frac{7iA-5B}{512a^3c^6f(i-\tan(e+fx}$$

Mathematica [A] time = 5.02441, size = 321, normalized size = 1.01

$$\frac{\sec^3(e+fx)(-\cos(6(e+fx))-i\sin(6(e+fx)))(-210(27A+iB)\cos(e+fx)+280(-18iAfx-3A+6Bfx+iB)\cos(3(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^6),x]
```

```
[Out] (Sec[e + f*x]^3*(-Cos[6*(e + f*x)] - I*Sin[6*(e + f*x)])*(-210*(27*A + I*B)
*Cos[e + f*x] + 280*(-3*A + I*B - (18*I)*A*f*x + 6*B*f*x)*Cos[3*(e + f*x)]
+ 810*A*Cos[5*(e + f*x)] + (750*I)*B*Cos[5*(e + f*x)] + 81*A*Cos[7*(e + f*x
)] + (147*I)*B*Cos[7*(e + f*x)] + 5*A*Cos[9*(e + f*x)] + (15*I)*B*Cos[9*(e
+ f*x)] + (1890*I)*A*Sin[e + f*x] - 630*B*Sin[e + f*x] - (840*I)*A*Sin[3*(e
 + f*x)] - 280*B*Sin[3*(e + f*x)] - 5040*A*f*x*Sin[3*(e + f*x)] - (1680*I)*
B*f*x*Sin[3*(e + f*x)] - (1350*I)*A*Sin[5*(e + f*x)] + 450*B*Sin[5*(e + f*x
)] - (189*I)*A*Sin[7*(e + f*x)] + 63*B*Sin[7*(e + f*x)] - (15*I)*A*Sin[9*(e
 + f*x)] + 5*B*Sin[9*(e + f*x)]))/(30720*a^3*c^6*f*(-I + Tan[e + f*x])^3)
```

Maple [A] time = 0.078, size = 491, normalized size = 1.5

$$\frac{-\frac{21 i}{256}\ln\left(\tan\left(fx+e\right)-i\right)A}{fa^3c^6}+\frac{7A}{128\,fa^3c^6\left(\tan\left(fx+e\right)-i\right)}-\frac{\frac{i}{80}B}{fa^3c^6\left(\tan\left(fx+e\right)+i\right)^5}+\frac{7\ln\left(\tan\left(fx+e\right)-i\right)B}{256\,fa^3c^6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^6,x)
```

```
[Out] -21/256*I/f/a^3/c^6*ln(tan(f*x+e)-I)*A+7/128/f/a^3/c^6/(tan(f*x+e)-I)*A-1/8
0*I/f/a^3/c^6/(tan(f*x+e)+I)^5*B+7/256/f/a^3/c^6*ln(tan(f*x+e)-I)*B+5/512/f
/a^3/c^6/(tan(f*x+e)-I)^2*B-5/128*I/f/a^3/c^6/(tan(f*x+e)+I)^4*A-1/384/f/a^
3/c^6/(tan(f*x+e)-I)^3*A-1/384*I/f/a^3/c^6/(tan(f*x+e)-I)^3*B+35/512*I/f/a^
3/c^6/(tan(f*x+e)+I)^2*A-5/512/f/a^3/c^6/(tan(f*x+e)+I)^2*B-7/512*I/f/a^3/c
^6/(tan(f*x+e)-I)^2*A+1/40/f/a^3/c^6/(tan(f*x+e)+I)^5*A+21/256*I/f/a^3/c^6*
ln(tan(f*x+e)+I)*A-1/128/f/a^3/c^6/(tan(f*x+e)+I)^4*B+7/64/f/a^3/c^6/(tan(f
*x+e)+I)*A+7/256*I/f/a^3/c^6/(tan(f*x+e)-I)*B-5/96*A/a^3/c^6/f/(tan(f*x+e)+
I)^3+1/96*I/f/a^3/c^6/(tan(f*x+e)+I)^6*A-7/256/f/a^3/c^6*ln(tan(f*x+e)+I)*B
+7/256*I/f/a^3/c^6/(tan(f*x+e)+I)*B+1/96/f/a^3/c^6/(tan(f*x+e)+I)^6*B
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^6,x, alg
orithm="maxima")
```

[Out] Exception raised: RuntimeError

Fricas [A] time = 1.07719, size = 586, normalized size = 1.84

$$\left(1680\,(3\,A+i\,B)fxe^{(6i\,fx+6i\,e)}+(-5i\,A-5\,B)e^{(18i\,fx+18i\,e)}+(-54i\,A-42\,B)e^{(16i\,fx+16i\,e)}+(-270i\,A-150\,B)e^{(14i\,fx+14i\,e)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^6,x, alg
orithm="fricas")
```

```
[Out] 1/30720*(1680*(3*A + I*B)*f*x*e^(6*I*f*x + 6*I*e) + (-5*I*A - 5*B)*e^(18*I*
f*x + 18*I*e) + (-54*I*A - 42*B)*e^(16*I*f*x + 16*I*e) + (-270*I*A - 150*B)
*e^(14*I*f*x + 14*I*e) + (-840*I*A - 280*B)*e^(12*I*f*x + 12*I*e) + (-1890*
I*A - 210*B)*e^(10*I*f*x + 10*I*e) + (-3780*I*A + 420*B)*e^(8*I*f*x + 8*I*e
) + (1080*I*A - 600*B)*e^(4*I*f*x + 4*I*e) + (135*I*A - 105*B)*e^(2*I*f*x +
 2*I*e) + 10*I*A - 10*B)*e^(-6*I*f*x - 6*I*e)/(a^3*c^6*f)
```

Sympy [A] time = 10.4687, size = 755, normalized size = 2.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**6,x)
```

```
[Out] Piecewise((((680020773533228910772240*I*A*a**24*c**48*f**8*exp(6*I*e) - 68
0020773533228910772240*B*a**24*c**48*f**8*exp(6*I*e))*exp(-6*I*f*x) + (918
0280442698590295425024O*I*A*a**24*c**48*f**8*exp(8*I*e) - 71402181220989035
631083520*B*a**24*c**48*f**8*exp(8*I*e))*exp(-4*I*f*x) + (73442243541588722
3634001920*I*A*a**24*c**48*f**8*exp(10*I*e) - 408012464119937346463334400*B
*a**24*c**48*f**8*exp(10*I*e))*exp(-2*I*f*x) + (-257047852395560528271900067
20*I*A*a**24*c**48*f**8*exp(14*I*e) + 2856087248839561425243340 80*B*a**24*c
**48*f**8*exp(14*I*e))*exp(2*I*f*x) + (-128523926197780264135950336 0*I*A*a*
*24*c**48*f**8*exp(16*I*e) - 142804362441978071262167040*B*a**24*c**48*f**8
*exp(16*I*e))*exp(4*I*f*x) + (-571217449767912285048668160*I*A*a**24*c**48*
f**8*exp(18*I*e) - 190405816589304095016222720*B*a**24*c**48*f**8*exp(18*I*
e))*exp(6*I*f*x) + (-18360560885397180590850048 0*I*A*a**24*c**48*f**8*exp(2
```

```
0*I*e) - 1020031160299843366158336 00*B*a**24*c**48*f**8*exp(20*I*e))*exp(8*
I*f*x) + (-367211217707943611817000 96*I*A*a**24*c**48*f**8*exp(22*I*e) - 28
5608724883956142524334 08*B*a**24*c**48*f**8*exp(22*I*e))*exp(10*I*f*x) + (-
3400103867666144553861120*I*A*a**24*c**48*f**8*exp(24*I*e) - 34001038676661
44553861120*B*a**24*c**48*f**8*exp(24*I*e))*exp(12*I*f*x))*exp(-12*I*e)/(20
890238162940792138922721280*a**27*c**54*f**9), Ne(208902381629407921389222 72
1280*a**27*c**54*f**9*exp(12*I*e), 0)), (x*(-(21*A + 7*I*B)/(128*a**3*c**6)
 + (A*exp(18*I*e) + 9*A*exp(16*I*e) + 36*A*exp(14*I*e) + 84*A*exp(12*I*e) +
 126*A*exp(10*I*e) + 126*A*exp(8*I*e) + 84*A*exp(6*I*e) + 36*A*exp(4*I*e) +
 9*A*exp(2*I*e) + A - I*B*exp(18*I*e) - 7*I*B*exp(16*I*e) - 20*I*B*exp(14*I
*e) - 28*I*B*exp(12*I*e) - 14*I*B*exp(10*I*e) + 14*I*B*exp(8*I*e) + 28*I*B*
exp(6*I*e) + 20*I*B*exp(4*I*e) + 7*I*B*exp(2*I*e) + I*B)*exp(-6*I*e)/(512*a
**3*c**6)), True)) + x*(21*A + 7*I*B)/(128*a**3*c**6)
```

Giac [A] time = 1.425, size = 431, normalized size = 1.35

$$\frac{\frac{60\,(21i\,A-7\,B)\log\left(\tan\left(fx+e\right)+i\right)}{a^3c^6}-\frac{60\,(21i\,A-7\,B)\log\left(i\,\tan\left(fx+e\right)+1\right)}{a^3c^6}-\frac{10\left(231\,A\tan\left(fx+e\right)^3+77i\,B\tan\left(fx+e\right)^3-777i\,A\tan\left(fx+e\right)^2+273\,B\tan\left(fx+e\right)^2\cdots\right.}{a^3c^6\left(-i\,\tan\left(fx+e\right)-1\right)^3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^6,x, alg
orithm="giac")
```

```
[Out] 1/15360*(60*(21*I*A - 7*B)*log(tan(f*x + e) + I)/(a^3*c^6) - 60*(21*I*A - 7
*B)*log(I*tan(f*x + e) + 1)/(a^3*c^6) - 10*(231*A*tan(f*x + e)^3 + 77*I*B*t
an(f*x + e)^3 - 777*I*A*tan(f*x + e)^2 + 273*B*tan(f*x + e)^2 - 882*A*tan(f
*x + e) - 330*I*B*tan(f*x + e) + 340*I*A - 138*B)/(a^3*c^6*(-I*tan(f*x + e)
 - 1)^3) + (-3087*I*A*tan(f*x + e)^6 + 1029*B*tan(f*x + e)^6 + 20202*A*tan(
f*x + e)^5 + 6594*I*B*tan(f*x + e)^5 + 55755*I*A*tan(f*x + e)^4 - 17685*B*t
an(f*x + e)^4 - 83540*A*tan(f*x + e)^3 - 25380*I*B*tan(f*x + e)^3 - 72405*I
*A*tan(f*x + e)^2 + 20415*B*tan(f*x + e)^2 + 35106*A*tan(f*x + e) + 8442*I*
B*tan(f*x + e) + 7761*I*A - 1127*B)/(a^3*c^6*(tan(f*x + e) + I)^6))/f
```

3.740 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=62

$$\frac{2a(B+iA)(c-ic\tan(e+fx))^{7/2}}{7f}-\frac{2aB(c-ic\tan(e+fx))^{9/2}}{9cf}$$

```
[Out] (2*a*(I*A + B)*(c - I*c*Tan[e + f*x])^(7/2))/(7*f) - (2*a*B*(c - I*c*Tan[e
+ f*x])^(9/2))/(9*c*f)
```

Rubi [A] time = 0.106525, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2a(B+iA)(c-ic\tan(e+fx))^{7/2}}{7f}-\frac{2aB(c-ic\tan(e+fx))^{9/2}}{9cf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2
),x]
```

```
[Out] (2*a*(I*A + B)*(c - I*c*Tan[e + f*x])^(7/2))/(7*f) - (2*a*B*(c - I*c*Tan[e
+ f*x])^(9/2))/(9*c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (A+Bx)(c-icx)^{5/2}\,dx, x, \tan(e+f\right.}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left((A-iB)(c-icx)^{5/2}+\frac{iB(c-icx)^{7/2}}{c}\right)\right.}{f}$$

$$= \frac{2a(iA+B)(c-ic\tan(e+fx))^{7/2}}{7f} - \frac{2aB(c-ic\tan}{9c}$$

Mathematica [A] time = 6.53682, size = 90, normalized size = 1.45

$$\frac{2ac^3\sec^3(e+fx)(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(\sin(3e+2fx)+i\cos(3e+2fx))(9A+7B\tan(e+fx)-2iB}{63f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(7/2),x]
```

```
[Out] (2*a*c^3*Sec[e + f*x]^3*(Cos[f*x] - I*Sin[f*x])*(I*Cos[3*e + 2*f*x] + Sin[3
*e + 2*f*x])*(9*A - (2*I)*B + 7*B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])
/(63*f)
```

Maple [A] time = 0.066, size = 55, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(\frac{i}{9}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{9}{2}}+\frac{-iBc+Ac}{7}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 2*I/f*a/c*(1/9*I*B*(c-I*c*tan(f*x+e))^(9/2)+1/7*(-I*B*c+A*c)*(c-I*c*tan(f*x
+e))^(7/2))
```

Maxima [A] time = 1.41209, size = 66, normalized size = 1.06

$$\frac{2i\left(7i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}Ba+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}(9A-9iB)ac\right)}{63cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x, a
lgorithm="maxima")
```

```
[Out] 2/63*I*(7*I*(-I*c*tan(f*x + e) + c)^(9/2)*B*a + (-I*c*tan(f*x + e) + c)^(7/
2)*(9*A - 9*I*B)*a*c)/(c*f)
```

Fricas [B] time = 1.7984, size = 304, normalized size = 4.9

$$\frac{\sqrt{2}\left((144iA+144B)ac^3e^{\left(2ifx+2ie\right)}+(144iA-80B)ac^3\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}}{63\left(fe^{\left(8ifx+8ie\right)}+4fe^{\left(6ifx+6ie\right)}+6fe^{\left(4ifx+4ie\right)}+4fe^{\left(2ifx+2ie\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x, a
lgorithm="fricas")
```

```
[Out] 1/63*sqrt(2)*((144*I*A + 144*B)*a*c^3*e^(2*I*f*x + 2*I*e) + (144*I*A - 80*B
)*a*c^3)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(
6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

3.741 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=62

$$\frac{2a(B+iA)(c-ic\tan(e+fx))^{5/2}}{5f}-\frac{2aB(c-ic\tan(e+fx))^{7/2}}{7cf}$$

```
[Out] (2*a*(I*A + B)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f) - (2*a*B*(c - I*c*Tan[e
+ f*x])^(7/2))/(7*c*f)
```

Rubi [A] time = 0.107791, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2a(B+iA)(c-ic\tan(e+fx))^{5/2}}{5f}-\frac{2aB(c-ic\tan(e+fx))^{7/2}}{7cf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2
),x]
```

```
[Out] (2*a*(I*A + B)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f) - (2*a*B*(c - I*c*Tan[e
+ f*x])^(7/2))/(7*c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (A+Bx)(c-icx)^{3/2}\,dx, x, \tan(e+f$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left((A-iB)(c-icx)^{3/2}+\frac{iB(c-icx)^{5/2}}{c}\right)$$

$$= \frac{2a(iA+B)(c-ic\tan(e+fx))^{5/2}}{5f} - \frac{2aB(c-ic\tan$$

Mathematica [A] time = 4.41823, size = 88, normalized size = 1.42

$$\frac{2ac^2\sec^2(e+fx)(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(\sin(2e+fx)+i\cos(2e+fx))(7A+5B\tan(e+fx)-2iB)}{35f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(5/2),x]
```

```
[Out] (2*a*c^2*Sec[e + f*x]^2*(Cos[f*x] - I*Sin[f*x])*(I*Cos[2*e + f*x] + Sin[2*e
 + f*x])*(7*A - (2*I)*B + 5*B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(35
*f)
```

Maple [A] time = 0.059, size = 55, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(\frac{i}{7}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}+\frac{-iBc+Ac}{5}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 2*I/f*a/c*(1/7*I*B*(c-I*c*tan(f*x+e))^(7/2)+1/5*(-I*B*c+A*c)*(c-I*c*tan(f*x
+e))^(5/2))
```

Maxima [A] time = 1.50115, size = 66, normalized size = 1.06

$$\frac{2i\left(5i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}Ba+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}(7A-7iB)ac\right)}{35cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/35*I*(5*I*(-I*c*tan(f*x + e) + c)^(7/2)*B*a + (-I*c*tan(f*x + e) + c)^(5/
2)*(7*A - 7*I*B)*a*c)/(c*f)
```

Fricas [A] time = 1.40985, size = 265, normalized size = 4.27

$$\frac{\sqrt{2}\left((56iA+56B)ac^2e^{(2ifx+2ie)}+(56iA-24B)ac^2\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{35\left(fe^{(6ifx+6ie)}+3fe^{(4ifx+4ie)}+3fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 1/35*sqrt(2)*((56*I*A + 56*B)*a*c^2*e^(2*I*f*x + 2*I*e) + (56*I*A - 24*B)*a
*c^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I
*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e) +
c)^(5/2), x)
```

3.742 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=62

$$\frac{2a(B+iA)(c-ic\tan(e+fx))^{3/2}}{3f}-\frac{2aB(c-ic\tan(e+fx))^{5/2}}{5cf}$$

```
[Out] (2*a*(I*A + B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f) - (2*a*B*(c - I*c*Tan[e
+ f*x])^(5/2))/(5*c*f)
```

Rubi [A] time = 0.106542, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2a(B+iA)(c-ic\tan(e+fx))^{3/2}}{3f}-\frac{2aB(c-ic\tan(e+fx))^{5/2}}{5cf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2
),x]
```

```
[Out] (2*a*(I*A + B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f) - (2*a*B*(c - I*c*Tan[e
+ f*x])^(5/2))/(5*c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (A+Bx)\sqrt{c-icx}\,dx, x, \tan(e+fx\right.}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left((A-iB)\sqrt{c-icx}+\frac{iB(c-icx)^{3/2}}{c}\right) dx\right.}{f}$$
$$= \frac{2a(iA+B)(c-ic\tan(e+fx))^{3/2}}{3f} - \frac{2aB(c-ic\tan}{5c}$$

Mathematica [A] time = 3.20934, size = 97, normalized size = 1.56

$$\frac{2ac(\cos(e)-i\sin(e))(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(5iA+3iB\tan(e+fx)+2B)(A+B\tan(e+fx))}{15f(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(3/2),x]
```

```
[Out] (2*a*c*(Cos[e] - I*Sin[e])*(Cos[f*x] - I*Sin[f*x])*((5*I)*A + 2*B + (3*I)*B
*Tan[e + f*x])*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(15*f*(A*Co
s[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.062, size = 55, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(\frac{i}{5}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\frac{-iBc+Ac}{3}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 2*I/f*a/c*(1/5*I*B*(c-I*c*tan(f*x+e))^(5/2)+1/3*(-I*B*c+A*c)*(c-I*c*tan(f*x
+e))^(3/2))
```

Maxima [A] time = 1.18334, size = 66, normalized size = 1.06

$$\frac{2i\left(3i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}Ba+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}(5A-5iB)ac\right)}{15cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] 2/15*I*(3*I*(-I*c*tan(f*x + e) + c)^(5/2)*B*a + (-I*c*tan(f*x + e) + c)^(3/
2)*(5*A - 5*I*B)*a*c)/(c*f)
```

Fricas [A] time = 1.15164, size = 223, normalized size = 3.6

$$\frac{\sqrt{2}\left((20iA+20B)ace^{(2ifx+2ie)}+(20iA-4B)ac\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{15\left(fe^{(4ifx+4ie)}+2fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 1/15*sqrt(2)*((20*I*A + 20*B)*a*c*e^(2*I*f*x + 2*I*e) + (20*I*A - 4*B)*a*c)
*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x
+ 2*I*e) + f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int Ac\sqrt{-ic\tan\left(e+fx\right)+c}\,dx+\int Ac\sqrt{-ic\tan\left(e+fx\right)+c}\tan^{2}\left(e+fx\right)dx+\int Bc\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(e+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2),x)
```

```
[Out] a*(Integral(A*c*sqrt(-I*c*tan(e + f*x) + c), x) + Integral(A*c*sqrt(-I*c*ta
n(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(B*c*sqrt(-I*c*tan(e + f*x) +
 c)*tan(e + f*x), x) + Integral(B*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x
)**3, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e) +
c)^(3/2), x)
```

3.743 $\int (a+ia\tan(e+fx))(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx$

Optimal. Leaf size=60

$$\frac{2a(B+iA)\sqrt{c-ic\tan(e+fx)}}{f}-\frac{2aB(c-ic\tan(e+fx))^{3/2}}{3cf}$$

```
[Out] (2*a*(I*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/f - (2*a*B*(c - I*c*Tan[e + f*x]
)^(3/2))/(3*c*f)
```

Rubi [A] time = 0.0989737, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2a(B+iA)\sqrt{c-ic\tan(e+fx)}}{f}-\frac{2aB(c-ic\tan(e+fx))^{3/2}}{3cf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]],
x]
```

```
[Out] (2*a*(I*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/f - (2*a*B*(c - I*c*Tan[e + f*x]
)^(3/2))/(3*c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int (a+ia\tan(e+fx))(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A-iB}{\sqrt{c-icx}}+\frac{iB\sqrt{c-icx}}{c}\right)dx, x, \tan(e+fx)\right.}{f}$$

$$= \frac{2a(iA+B)\sqrt{c-ic\tan(e+fx)}}{f} - \frac{2aB(c-ic\tan(e-}{3cf}$$

Mathematica [A] time = 2.36431, size = 45, normalized size = 0.75

$$\frac{2a\sqrt{c-ic\tan(e+fx)}(3iA+iB\tan(e+fx)+2B)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e +
f*x]],x]
```

```
[Out] (2*a*((3*I)*A + 2*B + I*B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(3*f)
```

Maple [A] time = 0.069, size = 66, normalized size = 1.1

$$\frac{2\,ia}{cf}\left(\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}-iBc\sqrt{c-ic\tan\left(fx+e\right)}+Ac\sqrt{c-ic\tan\left(fx+e\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x)
```

```
[Out] 2*I/f*a/c*(1/3*I*B*(c-I*c*tan(f*x+e))^(3/2)-I*B*c*(c-I*c*tan(f*x+e))^(1/2)+
A*c*(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [A] time = 1.19481, size = 66, normalized size = 1.1

$$\frac{2i\left(i\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}Ba+\sqrt{-i\,c\tan\left(fx+e\right)+c}(3\,A-3i\,B)ac\right)}{3\,cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x, a
lgorithm="maxima")
```

```
[Out] 2/3*I*(I*(-I*c*tan(f*x + e) + c)^(3/2)*B*a + sqrt(-I*c*tan(f*x + e) + c)*(3
*A - 3*I*B)*a*c)/(c*f)
```

Fricas [A] time = 1.10666, size = 177, normalized size = 2.95

$$\frac{\sqrt{2}\left((6i\,A+6\,B)ae^{(2i\,fx+2i\,e)}+(6i\,A+2\,B)a\right)\sqrt{\frac{c}{e^{(2i\,fx+2i\,e)}+1}}}{3\left(fe^{(2i\,fx+2i\,e)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x, a
lgorithm="fricas")
```

```
[Out] 1/3*sqrt(2)*((6*I*A + 6*B)*a*e^(2*I*f*x + 2*I*e) + (6*I*A + 2*B)*a)*sqrt(c/
(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int A\sqrt{-ic\tan\left(e+fx\right)+c}\,dx+\int B\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(e+fx\right)dx+\int iA\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(e+fx\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x)
```

```
[Out] a*(Integral(A*sqrt(-I*c*tan(e + f*x) + c), x) + Integral(B*sqrt(-I*c*tan(e
+ f*x) + c)*tan(e + f*x), x) + Integral(I*A*sqrt(-I*c*tan(e + f*x) + c)*tan
(e + f*x), x) + Integral(I*B*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**2, x
))
```

<u>Giac</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)\sqrt{-ic\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))*(A+B*tan(f*x+e)),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)*sqrt(-I*c*tan(f*x + e
) + c), x)
```

3.744 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=58

$$-\frac{2a(B+iA)}{f\sqrt{c-ic\tan(e+fx)}}-\frac{2aB\sqrt{c-ic\tan(e+fx)}}{cf}$$

```
[Out] (-2*a*(I*A + B))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (2*a*B*Sqrt[c - I*c*Tan[e
 + f*x]])/(c*f)
```

Rubi [A] time = 0.100029, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$-\frac{2a(B+iA)}{f\sqrt{c-ic\tan(e+fx)}}-\frac{2aB\sqrt{c-ic\tan(e+fx)}}{cf}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e + f*x]
],x]
```

```
[Out] (-2*a*(I*A + B))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (2*a*B*Sqrt[c - I*c*Tan[e
 + f*x]])/(c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(c-icx)^{3/2}}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\operatorname{Subst}\left(\int \left(\frac{A-iB}{(c-icx)^{3/2}}+\frac{iB}{c\sqrt{c-icx}}\right)dx,x,\tan(e+fx)\right)}{f}$$
$$= -\frac{2a(iA+B)}{f\sqrt{c-ic\tan(e+fx)}}-\frac{2aB\sqrt{c-ic\tan(e+fx)}}{cf}$$

Mathematica [A] time = 2.52525, size = 82, normalized size = 1.41

$$\frac{2a(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(\sin(e+2fx)-i\cos(e+2fx))(-B\sin(e+fx)+(A-2iB)\cos(e+fx))}{cf}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e
+ f*x]],x]
```

```
[Out] (2*a*(Cos[f*x] - I*Sin[f*x])*((A - (2*I)*B)*Cos[e + f*x] - B*Sin[e + f*x])*
((-I)*Cos[e + 2*f*x] + Sin[e + 2*f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(c*f)
```

Maple [A] time = 0.133, size = 53, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(iB\sqrt{c-ic\tan\left(fx+e\right)}-c\,(A-iB)\,\frac{1}{\sqrt{c-ic\tan\left(fx+e\right)}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] 2*I/f*a/c*(I*B*(c-I*c*tan(f*x+e))^(1/2)-c*(A-I*B)/(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [A] time = 1.1618, size = 65, normalized size = 1.12

$$\frac{2i\left(i\sqrt{-ic\tan\left(fx+e\right)+c}Ba-\frac{(A-iB)ac}{\sqrt{-ic\tan\left(fx+e\right)+c}}\right)}{cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2*I*(I*sqrt(-I*c*tan(f*x + e) + c)*B*a - (A - I*B)*a*c/sqrt(-I*c*tan(f*x +
e) + c))/(c*f)
```

Fricas [A] time = 1.06398, size = 136, normalized size = 2.34

$$\frac{\sqrt{2}\left((-iA-B)ae^{\left(2ifx+2ie\right)}+(-iA-3B)a\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}}{cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x, a
lgorithm="fricas")
```

```
[Out] sqrt(2)*((-I*A - B)*a*e^(2*I*f*x + 2*I*e) + (-I*A - 3*B)*a)*sqrt(c/(e^(2*I*
f*x + 2*I*e) + 1))/(c*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\left(\int\frac{A}{\sqrt{-ic\tan\left(e+fx\right)+c}}\,dx+\int\frac{B\tan\left(e+fx\right)}{\sqrt{-ic\tan\left(e+fx\right)+c}}\,dx+\int\frac{iA\tan\left(e+fx\right)}{\sqrt{-ic\tan\left(e+fx\right)+c}}\,dx+\int\frac{iB\tan^{2}\left(e+fx\right)}{\sqrt{-ic\tan\left(e+fx\right)+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2),x)
```

```
[Out] a*(Integral(A/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(B*tan(e + f*x)/sqr
t(-I*c*tan(e + f*x) + c), x) + Integral(I*A*tan(e + f*x)/sqrt(-I*c*tan(e +
f*x) + c), x) + Integral(I*B*tan(e + f*x)**2/sqrt(-I*c*tan(e + f*x) + c), x
))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)}{\sqrt{-ic\tan(fx+e)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)/sqrt(-I*c*tan(f*x + e
) + c), x)
```

3.745 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=60

$$\frac{2aB}{cf\sqrt{c-ic\tan(e+fx)}}-\frac{2a(B+iA)}{3f(c-ic\tan(e+fx))^{3/2}}$$

```
[Out] (-2*a*(I*A + B))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*B)/(c*f*Sqrt[c -
 I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.107126, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2aB}{cf\sqrt{c-ic\tan(e+fx)}}-\frac{2a(B+iA)}{3f(c-ic\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^(3
/2),x]
```

```
[Out] (-2*a*(I*A + B))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*B)/(c*f*Sqrt[c -
 I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A-iB}{(c-icx)^{5/2}}+\frac{iB}{c(c-icx)^{3/2}}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{2a(iA+B)}{3f(c-ic\tan(e+fx))^{3/2}}+\frac{2aB}{cf\sqrt{c-ic\tan(e+fx)}}$$

Mathematica [A] time = 4.47424, size = 98, normalized size = 1.63

$$\frac{2a\cos(e+fx)(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(\cos(2e+3fx)+i\sin(2e+3fx))((2B-iA)\cos(e+fx)-3iB\,\text{si}}{3c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(3/2),x]
```

```
[Out] (2*a*Cos[e + f*x]*(Cos[f*x] - I*Sin[f*x])*(((-I)*A + 2*B)*Cos[e + f*x] - (3
*I)*B*Sin[e + f*x])*(Cos[2*e + 3*f*x] + I*Sin[2*e + 3*f*x])*Sqrt[c - I*c*Ta
n[e + f*x]])/(3*c^2*f)
```

Maple [A] time = 0.067, size = 53, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(-iB\frac{1}{\sqrt{c-ic\tan\left(fx+e\right)}}-\frac{c\,(A-iB)}{3}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{3}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 2*I/f*a/c*(-I*B/(c-I*c*tan(f*x+e))^(1/2)-1/3*c*(A-I*B)/(c-I*c*tan(f*x+e))^(
3/2))
```

Maxima [A] time = 1.15275, size = 61, normalized size = 1.02

$$-\frac{2i\left(3i\left(-ic\tan\left(fx+e\right)+c\right)Ba+(A-iB)ac\right)}{3\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*I*(3*I*(-I*c*tan(f*x + e) + c)*B*a + (A - I*B)*a*c)/((-I*c*tan(f*x + e
) + c)^(3/2)*c*f)
```

Fricas [A] time = 1.0852, size = 197, normalized size = 3.28

$$\frac{\sqrt{2}\left((-iA-B)ae^{\left(4ifx+4ie\right)}+(-2iA+4B)ae^{\left(2ifx+2ie\right)}+(-iA+5B)a\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}}{6c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 1/6*sqrt(2)*((-I*A - B)*a*e^(4*I*f*x + 4*I*e) + (-2*I*A + 4*B)*a*e^(2*I*f*x
 + 2*I*e) + (-I*A + 5*B)*a)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)/(-I*c*tan(f*x + e) +
c)^(3/2), x)
```

3.746 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=62

$$\frac{2aB}{3cf(c-ic\tan(e+fx))^{3/2}}-\frac{2a(B+iA)}{5f(c-ic\tan(e+fx))^{5/2}}$$

```
[Out] (-2*a*(I*A + B))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a*B)/(3*c*f*(c - I
*c*Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.105502, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2aB}{3cf(c-ic\tan(e+fx))^{3/2}}-\frac{2a(B+iA)}{5f(c-ic\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^(5
/2),x]
```

```
[Out] (-2*a*(I*A + B))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a*B)/(3*c*f*(c - I
*c*Tan[e + f*x])^(3/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A-iB}{(c-icx)^{7/2}} + \frac{iB}{c(c-icx)^{5/2}}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{2a(iA+B)}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2aB}{3cf(c-ic\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 7.85796, size = 100, normalized size = 1.61

$$\frac{2a\cos^2(e+fx)(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(\cos(3e+4fx)+i\sin(3e+4fx))((2B-3iA)\cos(e+fx)-5iB}{15c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (2*a*Cos[e + f*x]^2*(Cos[f*x] - I*Sin[f*x])*(((-3*I)*A + 2*B)*Cos[e + f*x]
- (5*I)*B*Sin[e + f*x])*(Cos[3*e + 4*f*x] + I*Sin[3*e + 4*f*x])*Sqrt[c - I*
c*Tan[e + f*x]])/(15*c^3*f)
```

Maple [A] time = 0.069, size = 53, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(-\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{3}{2}}-\frac{c\,(A-iB)}{5}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{5}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 2*I/f*a/c*(-1/3*I*B/(c-I*c*tan(f*x+e))^(3/2)-1/5*c*(A-I*B)/(c-I*c*tan(f*x+e
))^(5/2))
```

Maxima [A] time = 1.14671, size = 63, normalized size = 1.02

$$-\frac{2i\left(5i\left(-ic\tan\left(fx+e\right)+c\right)Ba+\left(3A-3iB\right)ac\right)}{15\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="maxima")
```

```
[Out] -2/15*I*(5*I*(-I*c*tan(f*x + e) + c)*B*a + (3*A - 3*I*B)*a*c)/((-I*c*tan(f*
x + e) + c)^(5/2)*c*f)
```

Fricas [A] time = 1.17192, size = 258, normalized size = 4.16

$$\frac{\sqrt{2}\left(\left(-3iA-3B\right)ae^{\left(6ifx+6ie\right)}+\left(-9iA+B\right)ae^{\left(4ifx+4ie\right)}+\left(-9iA+11B\right)ae^{\left(2ifx+2ie\right)}+\left(-3iA+7B\right)a\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}}{60c^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 1/60*sqrt(2)*((-3*I*A - 3*B)*a*e^(6*I*f*x + 6*I*e) + (-9*I*A + B)*a*e^(4*I*
f*x + 4*I*e) + (-9*I*A + 11*B)*a*e^(2*I*f*x + 2*I*e) + (-3*I*A + 7*B)*a)*sq
rt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)/(-I*c*tan(f*x + e) +
c)^(5/2), x)
```

3.747 $\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=62

$$\frac{2aB}{5cf(c-ic\tan(e+fx))^{5/2}}-\frac{2a(B+iA)}{7f(c-ic\tan(e+fx))^{7/2}}$$

```
[Out] (-2*a*(I*A + B))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (2*a*B)/(5*c*f*(c - I
*c*Tan[e + f*x])^(5/2))
```

Rubi [A] time = 0.103932, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.049, Rules used = {3588, 43}

$$\frac{2aB}{5cf(c-ic\tan(e+fx))^{5/2}}-\frac{2a(B+iA)}{7f(c-ic\tan(e+fx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^(7
/2),x]
```

```
[Out] (-2*a*(I*A + B))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (2*a*B)/(5*c*f*(c - I
*c*Tan[e + f*x])^(5/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 43

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

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(c-icx)^{9/2}}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{A-iB}{(c-icx)^{9/2}}+\frac{iB}{c(c-icx)^{7/2}}\right)dx,x,\tan(e+fx)\right)}{f}$$
$$= -\frac{2a(iA+B)}{7f(c-ic\tan(e+fx))^{7/2}}+\frac{2aB}{5cf(c-ic\tan(e+fx))^{5/2}}$$

Mathematica [A] time = 11.2774, size = 100, normalized size = 1.61

$$\frac{2a\cos^3(e+fx)(\cos(fx)-i\sin(fx))\sqrt{c-ic\tan(e+fx)}(\cos(4e+5fx)+i\sin(4e+5fx))((2B-5iA)\cos(e+fx)-7iB}{35c^4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(7/2),x]
```

```
[Out] (2*a*Cos[e + f*x]^3*(Cos[f*x] - I*Sin[f*x])*(((-5*I)*A + 2*B)*Cos[e + f*x]
- (7*I)*B*Sin[e + f*x])*(Cos[4*e + 5*f*x] + I*Sin[4*e + 5*f*x])*Sqrt[c - I*
c*Tan[e + f*x]])/(35*c^4*f)
```

Maple [A] time = 0.071, size = 53, normalized size = 0.9

$$\frac{2\,ia}{cf}\left(-\frac{c\,(A-iB)}{7}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{7}{2}}-\frac{i}{5}B\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{5}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 2*I/f*a/c*(-1/7*c*(A-I*B)/(c-I*c*tan(f*x+e))^(7/2)-1/5*I*B/(c-I*c*tan(f*x+e
))^(5/2))
```

Maxima [A] time = 1.12567, size = 63, normalized size = 1.02

$$-\frac{2i\left(7i\left(-ic\tan\left(fx+e\right)+c\right)Ba+(5A-5iB)ac\right)}{35\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x, a
lgorithm="maxima")
```

```
[Out] -2/35*I*(7*I*(-I*c*tan(f*x + e) + c)*B*a + (5*A - 5*I*B)*a*c)/((-I*c*tan(f*
x + e) + c)^(7/2)*c*f)
```

Fricas [B] time = 1.40384, size = 320, normalized size = 5.16

$$\frac{\sqrt{2}\left((-5iA-5B)ae^{(8ifx+8ie)}+(-20iA-6B)ae^{(6ifx+6ie)}+(-30iA+12B)ae^{(4ifx+4ie)}+(-20iA+22B)ae^{(2ifx+2ie)}+(-\right.}{280c^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x, a
lgorithm="fricas")
```

```
[Out] 1/280*sqrt(2)*((-5*I*A - 5*B)*a*e^(8*I*f*x + 8*I*e) + (-20*I*A - 6*B)*a*e^(
6*I*f*x + 6*I*e) + (-30*I*A + 12*B)*a*e^(4*I*f*x + 4*I*e) + (-20*I*A + 22*B
)*a*e^(2*I*f*x + 2*I*e) + (-5*I*A + 9*B)*a)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
))/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)/(-I*c*tan(f*x + e) +
c)^(7/2), x)
```

3.748 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=105

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{9/2}}{9cf}+\frac{4a^2(B+iA)(c-ic\tan(e+fx))^{7/2}}{7f}+\frac{2a^2B(c-ic\tan(e+fx))^{11/2}}{11c^2f}$$

```
[Out] (4*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^(7/2))/(7*f) - (2*a^2*(I*A + 3*B)*(
c - I*c*Tan[e + f*x])^(9/2))/(9*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(11/
2))/(11*c^2*f)
```

Rubi [A] time = 0.183202, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{9/2}}{9cf}+\frac{4a^2(B+iA)(c-ic\tan(e+fx))^{7/2}}{7f}+\frac{2a^2B(c-ic\tan(e+fx))^{11/2}}{11c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7
/2),x]
```

```
[Out] (4*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^(7/2))/(7*f) - (2*a^2*(I*A + 3*B)*(
c - I*c*Tan[e + f*x])^(9/2))/(9*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(11/
2))/(11*c^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int (a+iax)(A+Bx)(c-icx)^{5/2}\,dx, x,\right.}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int \left(2a(A-iB)(c-icx)^{5/2} - \frac{a(A-3iB)(c}{c}\right.\right.}{f}$$

$$= \frac{4a^2(iA+B)(c-ic\tan(e+fx))^{7/2}}{7f} - \frac{2a^2(iA+3}{}$$

Mathematica [A] time = 11.1353, size = 119, normalized size = 1.13

$$\frac{a^2c^3\sec^5(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(3e+fx)-i\sin(3e+fx))((-77A+105iB)\sin(2(e+fx))+(93B+121iA)\cos}{693f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(7/2),x]
```

```
[Out] (a^2*c^3*Sec[e + f*x]^5*((121*I)*A - 33*B + ((121*I)*A + 93*B)*Cos[2*(e + f
*x)] + (-77*A + (105*I)*B)*Sin[2*(e + f*x)])*(Cos[3*e + f*x] - I*Sin[3*e +
f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(693*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.067, size = 83, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(\frac{i}{11}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{11}{2}}+\frac{-3\,iBc+Ac}{9}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{9}{2}}-\frac{(-2\,iBc+2\,Ac)\,c}{7}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(1/11*I*B*(c-I*c*tan(f*x+e))^(11/2)+1/9*(-3*I*B*c+A*c)*(c-I*
c*tan(f*x+e))^(9/2)-2/7*(-I*B*c+A*c)*c*(c-I*c*tan(f*x+e))^(7/2))
```

Maxima [A] time = 1.12907, size = 109, normalized size = 1.04

$$-\frac{2i\left(63i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{11}{2}}Ba^2+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}(77A-231iB)a^2c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}(198A-198\right.}{693c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="maxima")
```

```
[Out] -2/693*I*(63*I*(-I*c*tan(f*x + e) + c)^(11/2)*B*a^2 + (-I*c*tan(f*x + e) +
c)^(9/2)*(77*A - 231*I*B)*a^2*c - (-I*c*tan(f*x + e) + c)^(7/2)*(198*A - 19
8*I*B)*a^2*c^2)/(c^2*f)
```

Fricas [A] time = 2.336, size = 423, normalized size = 4.03

$$\frac{\sqrt{2}\left((3168iA+3168B)a^2c^3e^{(4ifx+4ie)}+(3872iA-1056B)a^2c^3e^{(2ifx+2ie)}+(704iA-192B)a^2c^3\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{693\left(fe^{(10ifx+10ie)}+5fe^{(8ifx+8ie)}+10fe^{(6ifx+6ie)}+10fe^{(4ifx+4ie)}+5fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="fricas")
```

```
[Out] 1/693*sqrt(2)*((3168*I*A + 3168*B)*a^2*c^3*e^(4*I*f*x + 4*I*e) + (3872*I*A
- 1056*B)*a^2*c^3*e^(2*I*f*x + 2*I*e) + (704*I*A - 192*B)*a^2*c^3)*sqrt(c/(
e^(2*I*f*x + 2*I*e) + 1))/(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e
) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x +
2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2),
x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="giac")
```

```
[Out] Timed out
```

3.749 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=105

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{7/2}}{7cf}+\frac{4a^2(B+iA)(c-ic\tan(e+fx))^{5/2}}{5f}+\frac{2a^2B(c-ic\tan(e+fx))^{9/2}}{9c^2f}$$

```
[Out] (4*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f) - (2*a^2*(I*A + 3*B)*(
c - I*c*Tan[e + f*x])^(7/2))/(7*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(9/2
))/(9*c^2*f)
```

Rubi [A] time = 0.180887, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{7/2}}{7cf}+\frac{4a^2(B+iA)(c-ic\tan(e+fx))^{5/2}}{5f}+\frac{2a^2B(c-ic\tan(e+fx))^{9/2}}{9c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5
/2),x]
```

```
[Out] (4*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f) - (2*a^2*(I*A + 3*B)*(
c - I*c*Tan[e + f*x])^(7/2))/(7*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(9/2
))/(9*c^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int (a+iax)(A+Bx)(c-icx)^{3/2}\,dx,x\right.}{f}$$

$$= \frac{(ac)\operatorname{Subst}\left(\int \left(2a(A-iB)(c-icx)^{3/2}-\frac{a(A-3iB)(c}{c}\right.\right.}{f}$$

$$= \frac{4a^2(iA+B)(c-ic\tan(e+fx))^{5/2}}{5f} - \frac{2a^2(iA+3}{}$$

Mathematica [A] time = 7.13579, size = 112, normalized size = 1.07

$$\frac{a^2c^2(\sin(2e)+i\cos(2e))\sec^4(e+fx)\sqrt{c-ic\tan(e+fx)}(5(13B+9iA)\sin(2(e+fx))+(81A-61iB)\cos(2(e+fx))+}{315f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (a^2*c^2*Sec[e + f*x]^4*(I*Cos[2*e] + Sin[2*e])*(81*A + (9*I)*B + (81*A - (
61*I)*B)*Cos[2*(e + f*x)] + 5*((9*I)*A + 13*B)*Sin[2*(e + f*x)])*Sqrt[c - I
*c*Tan[e + f*x]])/(315*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.07, size = 83, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(\frac{i}{9}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{9}{2}}+\frac{-3\,iBc+Ac}{7}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}-\frac{(-2\,iBc+2\,Ac)\,c}{5}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(1/9*I*B*(c-I*c*tan(f*x+e))^(9/2)+1/7*(-3*I*B*c+A*c)*(c-I*c*
tan(f*x+e))^(7/2)-2/5*(-I*B*c+A*c)*c*(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [A] time = 1.19194, size = 109, normalized size = 1.04

$$-\frac{2i\left(35i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}Ba^2+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}(45A-135iB)a^2c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}(126A-126\right.}{315c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="maxima")
```

```
[Out] -2/315*I*(35*I*(-I*c*tan(f*x + e) + c)^(9/2)*B*a^2 + (-I*c*tan(f*x + e) + c
)^(7/2)*(45*A - 135*I*B)*a^2*c - (-I*c*tan(f*x + e) + c)^(5/2)*(126*A - 126
*I*B)*a^2*c^2)/(c^2*f)
```

Fricas [A] time = 1.61934, size = 379, normalized size = 3.61

$$\frac{\sqrt{2}\left((1008iA+1008B)a^2c^2e^{\left(4ifx+4ie\right)}+(1296iA-144B)a^2c^2e^{\left(2ifx+2ie\right)}+(288iA-32B)a^2c^2\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}}{315\left(fe^{\left(8ifx+8ie\right)}+4fe^{\left(6ifx+6ie\right)}+6fe^{\left(4ifx+4ie\right)}+4fe^{\left(2ifx+2ie\right)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="fricas")
```

```
[Out] 1/315*sqrt(2)*((1008*I*A + 1008*B)*a^2*c^2*e^(4*I*f*x + 4*I*e) + (1296*I*A
- 144*B)*a^2*c^2*e^(2*I*f*x + 2*I*e) + (288*I*A - 32*B)*a^2*c^2)*sqrt(c/(e^
(2*I*f*x + 2*I*e) + 1))/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) +
6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2),
x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="giac")
```

```
[Out] Timed out
```

3.750 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=105

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{5/2}}{5cf}+\frac{4a^2(B+iA)(c-ic\tan(e+fx))^{3/2}}{3f}+\frac{2a^2B(c-ic\tan(e+fx))^{7/2}}{7c^2f}$$

```
[Out] (4*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f) - (2*a^2*(I*A + 3*B)*(
c - I*c*Tan[e + f*x])^(5/2))/(5*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(7/2
))/(7*c^2*f)
```

Rubi [A] time = 0.181252, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{5/2}}{5cf}+\frac{4a^2(B+iA)(c-ic\tan(e+fx))^{3/2}}{3f}+\frac{2a^2B(c-ic\tan(e+fx))^{7/2}}{7c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3
/2),x]
```

```
[Out] (4*a^2*(I*A + B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f) - (2*a^2*(I*A + 3*B)*(
c - I*c*Tan[e + f*x])^(5/2))/(5*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(7/2
))/(7*c^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)(A+Bx)\sqrt{c-icx}\,dx,x,\text{ta}\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(2a(A-iB)\sqrt{c-icx}-\frac{a(A-3iB)(c-ic}{c}\right.\right.}{f}$$

$$= \frac{4a^2(iA+B)(c-ic\tan(e+fx))^{3/2}}{3f} - \frac{2a^2(iA+3}{}$$

Mathematica [A] time = 5.7058, size = 116, normalized size = 1.1

$$\frac{a^2c\sec^3(e+fx)\sqrt{c-ic\tan(e+fx)}(\sin(e-fx)+i\cos(e-fx))(3(11B+7iA)\sin(2(e+fx))+(49A-37iB)\cos(2(e+}{105f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(3/2),x]
```

```
[Out] (a^2*c*Sec[e + f*x]^3*(I*Cos[e - f*x] + Sin[e - f*x])*(49*A - (7*I)*B + (49
*A - (37*I)*B)*Cos[2*(e + f*x)] + 3*((7*I)*A + 11*B)*Sin[2*(e + f*x)])*Sqrt
[c - I*c*Tan[e + f*x]])/(105*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.066, size = 83, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(\frac{i}{7}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}+\frac{-3\,iBc+Ac}{5}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}-\frac{(-2\,iBc+2\,Ac)\,c}{3}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(1/7*I*B*(c-I*c*tan(f*x+e))^(7/2)+1/5*(-3*I*B*c+A*c)*(c-I*c*
tan(f*x+e))^(5/2)-2/3*(-I*B*c+A*c)*c*(c-I*c*tan(f*x+e))^(3/2))
```

Maxima [A] time = 1.11722, size = 109, normalized size = 1.04

$$-\frac{2i\left(15i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}Ba^2+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}(21A-63iB)a^2c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}(70A-70iB)\right.}{105c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="maxima")
```

```
[Out] -2/105*I*(15*I*(-I*c*tan(f*x + e) + c)^(7/2)*B*a^2 + (-I*c*tan(f*x + e) + c
)^(5/2)*(21*A - 63*I*B)*a^2*c - (-I*c*tan(f*x + e) + c)^(3/2)*(70*A - 70*I*
B)*a^2*c^2)/(c^2*f)
```

Fricas [A] time = 1.30387, size = 331, normalized size = 3.15

$$\frac{\sqrt{2}\left((280iA+280B)a^2ce^{(4ifx+4ie)}+(392iA+56B)a^2ce^{(2ifx+2ie)}+(112iA+16B)a^2c\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{105\left(fe^{(6ifx+6ie)}+3fe^{(4ifx+4ie)}+3fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="fricas")
```

```
[Out] 1/105*sqrt(2)*((280*I*A + 280*B)*a^2*c*e^(4*I*f*x + 4*I*e) + (392*I*A + 56*
B)*a^2*c*e^(2*I*f*x + 2*I*e) + (112*I*A + 16*B)*a^2*c)*sqrt(c/(e^(2*I*f*x +
 2*I*e) + 1))/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I
*f*x + 2*I*e) + f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int Ac\sqrt{-ic\tan\left(e+fx\right)+c}\,dx+\int Ac\sqrt{-ic\tan\left(e+fx\right)+c}\tan^2\left(e+fx\right)dx+\int Bc\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(e+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2),
x)
```

```
[Out] a**2*(Integral(A*c*sqrt(-I*c*tan(e + f*x) + c), x) + Integral(A*c*sqrt(-I*c
*tan(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(B*c*sqrt(-I*c*tan(e + f*x
) + c)*tan(e + f*x), x) + Integral(B*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e +
f*x)**3, x) + Integral(I*A*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x), x) +
 Integral(I*A*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**3, x) + Integral(
I*B*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(I*B*c*sqrt
(-I*c*tan(e + f*x) + c)*tan(e + f*x)**4, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{2}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2*(-I*c*tan(f*x + e)
+ c)^(3/2), x)
```

3.751 $\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,d$

Optimal. Leaf size=103

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{3/2}}{3cf}+\frac{4a^2(B+iA)\sqrt{c-ic\tan(e+fx)}}{f}+\frac{2a^2B(c-ic\tan(e+fx))^{5/2}}{5c^2f}$$

```
[Out] (4*a^2*(I*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/f - (2*a^2*(I*A + 3*B)*(c - I*
c*Tan[e + f*x])^(3/2))/(3*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(5/2))/(5*
c^2*f)
```

Rubi [A] time = 0.163603, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^2(3B+iA)(c-ic\tan(e+fx))^{3/2}}{3cf}+\frac{4a^2(B+iA)\sqrt{c-ic\tan(e+fx)}}{f}+\frac{2a^2B(c-ic\tan(e+fx))^{5/2}}{5c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]
],x]
```

```
[Out] (4*a^2*(I*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/f - (2*a^2*(I*A + 3*B)*(c - I*
c*Tan[e + f*x])^(3/2))/(3*c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(5/2))/(5*
c^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^2(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)(A+Bx)}{\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int\left(\frac{2a(A-iB)}{\sqrt{c-icx}} - \frac{a(A-3iB)\sqrt{c-icx}}{c} - \frac{iaB(c-icx)^{3/}}{c^2}\right.\right.}{f}$$

$$= \frac{4a^2(iA+B)\sqrt{c-ic\tan(e+fx)}}{f} - \frac{2a^2(iA+3B)(c}{}$$

Mathematica [A] time = 4.49815, size = 83, normalized size = 0.81

$$\frac{a^2\sec^2(e+fx)\sqrt{c-ic\tan(e+fx)}((-5A+9iB)\sin(2(e+fx))+(21B+25iA)\cos(2(e+fx))+5(3B+5iA))}{15f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e
+ f*x]],x]
```

```
[Out] (a^2*Sec[e + f*x]^2*(5*((5*I)*A + 3*B) + ((25*I)*A + 21*B)*Cos[2*(e + f*x)]
 + (-5*A + (9*I)*B)*Sin[2*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(15*f)
```

Maple [A] time = 0.072, size = 83, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(\frac{i}{5}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\frac{-3\,iBc+Ac}{3}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}-2\,(-iBc+Ac)\,c\sqrt{c-ic\tan\left(fx+e\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x)
```

```
[Out] -2*I/f*a^2/c^2*(1/5*I*B*(c-I*c*tan(f*x+e))^(5/2)+1/3*(-3*I*B*c+A*c)*(c-I*c*
tan(f*x+e))^(3/2)-2*(-I*B*c+A*c)*c*(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [A] time = 1.16914, size = 109, normalized size = 1.06

$$-\frac{2i\left(3i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}Ba^2+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}(5A-15iB)a^2c-\sqrt{-ic\tan\left(fx+e\right)+c}(30A-30iB)a^2c^2\right)}{15c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x,
 algorithm="maxima")
```

```
[Out] -2/15*I*(3*I*(-I*c*tan(f*x + e) + c)^(5/2)*B*a^2 + (-I*c*tan(f*x + e) + c)^
(3/2)*(5*A - 15*I*B)*a^2*c - sqrt(-I*c*tan(f*x + e) + c)*(30*A - 30*I*B)*a^
2*c^2)/(c^2*f)
```

Fricas [A] time = 1.15521, size = 282, normalized size = 2.74

$$\frac{\sqrt{2}\left((60iA+60B)a^2e^{(4ifx+4ie)}+(100iA+60B)a^2e^{(2ifx+2ie)}+(40iA+24B)a^2\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{15\left(fe^{(4ifx+4ie)}+2fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x,
 algorithm="fricas")
```

```
[Out] 1/15*sqrt(2)*((60*I*A + 60*B)*a^2*e^(4*I*f*x + 4*I*e) + (100*I*A + 60*B)*a^
2*e^(2*I*f*x + 2*I*e) + (40*I*A + 24*B)*a^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) +
1))/(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int A\sqrt{-ic\tan\left(e+fx\right)+c}\,dx+\int -A\sqrt{-ic\tan\left(e+fx\right)+c}\tan^2\left(e+fx\right)dx+\int B\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(e+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e)),
x)
```

```
[Out] a**2*(Integral(A*sqrt(-I*c*tan(e + f*x) + c), x) + Integral(-A*sqrt(-I*c*ta
n(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(B*sqrt(-I*c*tan(e + f*x) + c
)*tan(e + f*x), x) + Integral(-B*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**
3, x) + Integral(2*I*A*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x), x) + Integ
ral(2*I*B*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**2, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^2\sqrt{-ic\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e)),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2*sqrt(-I*c*tan(f*x +
 e) + c), x)
```

3.752 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=101

$$-\frac{2a^2(3B+iA)\sqrt{c-ic\tan(e+fx)}}{cf}-\frac{4a^2(B+iA)}{f\sqrt{c-ic\tan(e+fx)}}+\frac{2a^2B(c-ic\tan(e+fx))^{3/2}}{3c^2f}$$

```
[Out] (-4*a^2*(I*A + B))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (2*a^2*(I*A + 3*B)*Sqrt
[c - I*c*Tan[e + f*x]])/(c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(3/2))/(3*c
^2*f)
```

Rubi [A] time = 0.168383, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^2(3B+iA)\sqrt{c-ic\tan(e+fx)}}{cf}-\frac{4a^2(B+iA)}{f\sqrt{c-ic\tan(e+fx)}}+\frac{2a^2B(c-ic\tan(e+fx))^{3/2}}{3c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e + f*
x]],x]
```

```
[Out] (-4*a^2*(I*A + B))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (2*a^2*(I*A + 3*B)*Sqrt
[c - I*c*Tan[e + f*x]])/(c*f) + (2*a^2*B*(c - I*c*Tan[e + f*x])^(3/2))/(3*c
^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{2a(A-iB)}{(c-icx)^{3/2}} - \frac{a(A-3iB)}{c\sqrt{c-icx}} - \frac{iaB\sqrt{c-icx}}{c^2}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{4a^2(iA+B)}{f\sqrt{c-ic\tan(e+fx)}} - \frac{2a^2(iA+3B)\sqrt{c-ic\tan(e+fx)}}{cf} + \frac{2a^2B(c}{}$$

Mathematica [A] time = 4.86747, size = 138, normalized size = 1.37

$$\frac{a^2\sqrt{c-ic\tan(e+fx)}(\sin(e+3fx)-i\cos(e+3fx))(A+B\tan(e+fx))((-7B-3iA)\sin(2(e+fx))+(9A-13iB)\cos}{3cf(\cos(fx)+i\sin(fx))^2(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[
e + f*x]],x]
```

```
[Out] (a^2*(9*A - (15*I)*B + (9*A - (13*I)*B)*Cos[2*(e + f*x)] + ((-3*I)*A - 7*B)
*Sin[2*(e + f*x)])*((-I)*Cos[e + 3*f*x] + Sin[e + 3*f*x])*(A + B*Tan[e + f*
x])*Sqrt[c - I*c*Tan[e + f*x]])/(3*c*f*(Cos[f*x] + I*Sin[f*x])^2*(A*Cos[e +
 f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.117, size = 93, normalized size = 0.9

$$\frac{-2\,ia^2}{fc^2}\left(\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}} - 3\,iBc\sqrt{c-ic\tan\left(fx+e\right)} + Ac\sqrt{c-ic\tan\left(fx+e\right)} + 2\,\frac{c^2\,(A-iB)}{\sqrt{c-ic\tan\left(fx+e\right)}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(1/3*I*B*(c-I*c*tan(f*x+e))^(3/2)-3*I*B*c*(c-I*c*tan(f*x+e))
^(1/2)+A*c*(c-I*c*tan(f*x+e))^(1/2)+2*c^2*(A-I*B)/(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [A] time = 1.81695, size = 113, normalized size = 1.12

$$-\frac{2i\left(\frac{3(2A-2iB)a^2c}{\sqrt{-ic\tan\left(fx+e\right)+c}}+\frac{i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}Ba^2+\sqrt{-ic\tan\left(fx+e\right)+c}(3A-9iB)a^2c}{c}\right)}{3cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x,
 algorithm="maxima")
```

```
[Out] -2/3*I*(3*(2*A - 2*I*B)*a^2*c/sqrt(-I*c*tan(f*x + e) + c) + (I*(-I*c*tan(f*
x + e) + c)^(3/2)*B*a^2 + sqrt(-I*c*tan(f*x + e) + c)*(3*A - 9*I*B)*a^2*c)/
c)/(c*f)
```

Fricas [A] time = 1.11467, size = 251, normalized size = 2.49

$$\frac{\sqrt{2}\left((-6iA-6B)a^2e^{(4ifx+4ie)}+(-18iA-30B)a^2e^{(2ifx+2ie)}+(-12iA-20B)a^2\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{3\left(cfe^{(2ifx+2ie)}+cf\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x,
 algorithm="fricas")
```

```
[Out] 1/3*sqrt(2)*((-6*I*A - 6*B)*a^2*e^(4*I*f*x + 4*I*e) + (-18*I*A - 30*B)*a^2*
e^(2*I*f*x + 2*I*e) + (-12*I*A - 20*B)*a^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
))/(c*f*e^(2*I*f*x + 2*I*e) + c*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\int \frac{A}{\sqrt{-ic\tan(e+fx)+c}}\,dx+\int -\frac{A\tan^2(e+fx)}{\sqrt{-ic\tan(e+fx)+c}}\,dx+\int \frac{B\tan(e+fx)}{\sqrt{-ic\tan(e+fx)+c}}\,dx+\int -\frac{B\tan^3(e+}{\sqrt{-ic\tan(e+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2),
x)
```

```
[Out] a**2*(Integral(A/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(-A*tan(e + f*x)
**2/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(B*tan(e + f*x)/sqrt(-I*c*tan
(e + f*x) + c), x) + Integral(-B*tan(e + f*x)**3/sqrt(-I*c*tan(e + f*x) + c
), x) + Integral(2*I*A*tan(e + f*x)/sqrt(-I*c*tan(e + f*x) + c), x) + Integ
ral(2*I*B*tan(e + f*x)**2/sqrt(-I*c*tan(e + f*x) + c), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^2}{\sqrt{-ic\tan(fx+e)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2/sqrt(-I*c*tan(f*x +
 e) + c), x)
```

3.753 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=101

$$\frac{2a^2(3B+iA)}{cf\sqrt{c-ic\tan(e+fx)}}-\frac{4a^2(B+iA)}{3f(c-ic\tan(e+fx))^{3/2}}+\frac{2a^2B\sqrt{c-ic\tan(e+fx)}}{c^2f}$$

```
[Out] (-4*a^2*(I*A + B))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a^2*(I*A + 3*B))
/(c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (2*a^2*B*Sqrt[c - I*c*Tan[e + f*x]])/(c
^2*f)
```

Rubi [A] time = 0.180032, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^2(3B+iA)}{cf\sqrt{c-ic\tan(e+fx)}}-\frac{4a^2(B+iA)}{3f(c-ic\tan(e+fx))^{3/2}}+\frac{2a^2B\sqrt{c-ic\tan(e+fx)}}{c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
(3/2),x]
```


```
[Out] (-4*a^2*(I*A + B))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a^2*(I*A + 3*B))
/(c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (2*a^2*B*Sqrt[c - I*c*Tan[e + f*x]])/(c
^2*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{2a(A-iB)}{(c-icx)^{5/2}} - \frac{a(A-3iB)}{c(c-icx)^{3/2}} - \frac{iaB}{c^2\sqrt{c-icx}}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{4a^2(iA+B)}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a^2(iA+3B)}{cf\sqrt{c-ic\tan(e+fx)}} + \frac{2a^2B\sqrt{c-ic\tan(e+fx)}}{c^2f}$$

Mathematica [A] time = 8.50286, size = 112, normalized size = 1.11

$$\frac{a^2\sqrt{c-ic\tan(e+fx)}(\cos(2(e+2fx))+i\sin(2(e+2fx)))(3(A-5iB)\sin(2(e+fx))+(13B+iA)\cos(2(e+fx))+iA+7B)}{3c^2f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^(3/2),x]
```

```
[Out] (a^2*(I*A + 7*B + (I*A + 13*B)*Cos[2*(e + f*x)] + 3*(A - (5*I)*B)*Sin[2*(e
+ f*x)])*(Cos[2*(e + 2*f*x)] + I*Sin[2*(e + 2*f*x)])*Sqrt[c - I*c*Tan[e + f
*x]])/(3*c^2*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.075, size = 80, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(iB\sqrt{c-ic\tan(fx+e)} - c\,(A-3\,iB)\,\frac{1}{\sqrt{c-ic\tan(fx+e)}} + \frac{2\,c^2\,(A-iB)}{3}\left(c-ic\tan(fx+e)\right)^{-\frac{3}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(I*B*(c-I*c*tan(f*x+e))^(1/2)-c*(A-3*I*B)/(c-I*c*tan(f*x+e))
^(1/2)+2/3*c^2*(A-I*B)/(c-I*c*tan(f*x+e))^(3/2))
```

Maxima [A] time = 1.55293, size = 111, normalized size = 1.1

$$-\frac{2i\left(\frac{3i\sqrt{-ic\tan\left(fx+e\right)+c}Ba^2}{c}-\frac{\left(-ic\tan\left(fx+e\right)+c\right)(3A-9iB)a^2-(2A-2iB)a^2c}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\right)}{3cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="maxima")
```

```
[Out] -2/3*I*(3*I*sqrt(-I*c*tan(f*x + e) + c)*B*a^2/c - ((-I*c*tan(f*x + e) + c)*
(3*A - 9*I*B)*a^2 - (2*A - 2*I*B)*a^2*c)/(-I*c*tan(f*x + e) + c)^(3/2))/(c*
f)
```

Fricas [A] time = 1.13623, size = 204, normalized size = 2.02

$$\frac{\sqrt{2}\left((-iA-B)a^2e^{(4ifx+4ie)}+(iA+7B)a^2e^{(2ifx+2ie)}+(2iA+14B)a^2\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{3c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="fricas")
```

```
[Out] 1/3*sqrt(2)*((-I*A - B)*a^2*e^(4*I*f*x + 4*I*e) + (I*A + 7*B)*a^2*e^(2*I*f*
x + 2*I*e) + (2*I*A + 14*B)*a^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(i\,a\tan(fx+e)+a)^2}{(-i\,c\tan(fx+e)+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2/(-I*c*tan(f*x + e)
+ c)^(3/2), x)
```

3.754 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=103

$$\frac{2a^2(3B+iA)}{3cf(c-ic\tan(e+fx))^{3/2}}-\frac{4a^2(B+iA)}{5f(c-ic\tan(e+fx))^{5/2}}-\frac{2a^2B}{c^2f\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] (-4*a^2*(I*A + B))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a^2*(I*A + 3*B))
/(3*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^2*B)/(c^2*f*Sqrt[c - I*c*Tan[e
 + f*x]])
```

Rubi [A] time = 0.179448, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^2(3B+iA)}{3cf(c-ic\tan(e+fx))^{3/2}}-\frac{4a^2(B+iA)}{5f(c-ic\tan(e+fx))^{5/2}}-\frac{2a^2B}{c^2f\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
(5/2),x]
```


```
[Out] (-4*a^2*(I*A + B))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a^2*(I*A + 3*B))
/(3*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^2*B)/(c^2*f*Sqrt[c - I*c*Tan[e
 + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{2a(A-iB)}{(c-icx)^{7/2}} - \frac{a(A-3iB)}{c(c-icx)^{5/2}} - \frac{iaB}{c^2(c-icx)^{3/2}}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{4a^2(iA+B)}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2a^2(iA+3B)}{3cf(c-ic\tan(e+fx))^{3/2}} - \frac{2a}{c^2f\sqrt{c-ic}}$$

Mathematica [A] time = 11.9614, size = 118, normalized size = 1.15

$$\frac{a^2\cos(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(3e+5fx)+i\sin(3e+5fx))(5(A+3iB)\sin(2(e+fx))+(-21B-iA)\cos(2(e+}{15c^3f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^(5/2),x]
```

```
[Out] (a^2*Cos[e + f*x]*((-I)*A + 9*B + ((-I)*A - 21*B)*Cos[2*(e + f*x)] + 5*(A +
 (3*I)*B)*Sin[2*(e + f*x)])*(Cos[3*e + 5*f*x] + I*Sin[3*e + 5*f*x])*Sqrt[c
- I*c*Tan[e + f*x]])/(15*c^3*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.081, size = 80, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(-iB\frac{1}{\sqrt{c-ic\tan\left(fx+e\right)}} - \frac{c\,(A-3\,iB)}{3}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{3}{2}} + \frac{2\,c^2\,(A-iB)}{5}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{5}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(-I*B/(c-I*c*tan(f*x+e))^(1/2)-1/3*c*(A-3*I*B)/(c-I*c*tan(f*
x+e))^(3/2)+2/5*c^2*(A-I*B)/(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [A] time = 1.15955, size = 107, normalized size = 1.04

$$\frac{2i\left(15i\left(-ic\tan\left(fx+e\right)+c\right)^{2}Ba^{2}+\left(-ic\tan\left(fx+e\right)+c\right)(5A-15iB)a^{2}c-(6A-6iB)a^{2}c^{2}\right)}{15\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}c^{2}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="maxima")
```

```
[Out] 2/15*I*(15*I*(-I*c*tan(f*x + e) + c)^2*B*a^2 + (-I*c*tan(f*x + e) + c)*(5*A
 - 15*I*B)*a^2*c - (6*A - 6*I*B)*a^2*c^2)/((-I*c*tan(f*x + e) + c)^(5/2)*c^
2*f)
```

Fricas [A] time = 1.18839, size = 266, normalized size = 2.58

$$\frac{\sqrt{2}\left((-3iA-3B)a^{2}e^{(6ifx+6ie)}+(-4iA+6B)a^{2}e^{(4ifx+4ie)}+(iA-9B)a^{2}e^{(2ifx+2ie)}+(2iA-18B)a^{2}\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{30c^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="fricas")
```

```
[Out] 1/30*sqrt(2)*((-3*I*A - 3*B)*a^2*e^(6*I*f*x + 6*I*e) + (-4*I*A + 6*B)*a^2*e
^(4*I*f*x + 4*I*e) + (I*A - 9*B)*a^2*e^(2*I*f*x + 2*I*e) + (2*I*A - 18*B)*a
^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{2}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2/(-I*c*tan(f*x + e)
+ c)^(5/2), x)
```

3.755 $\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=105

$$\frac{2a^2(3B+iA)}{5cf(c-ic\tan(e+fx))^{5/2}}-\frac{4a^2(B+iA)}{7f(c-ic\tan(e+fx))^{7/2}}-\frac{2a^2B}{3c^2f(c-ic\tan(e+fx))^{3/2}}$$

```
[Out] (-4*a^2*(I*A + B))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (2*a^2*(I*A + 3*B))
/(5*c*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*a^2*B)/(3*c^2*f*(c - I*c*Tan[e +
 f*x])^(3/2))
```

Rubi [A] time = 0.185856, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^2(3B+iA)}{5cf(c-ic\tan(e+fx))^{5/2}}-\frac{4a^2(B+iA)}{7f(c-ic\tan(e+fx))^{7/2}}-\frac{2a^2B}{3c^2f(c-ic\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
(7/2),x]
```


```
[Out] (-4*a^2*(I*A + B))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (2*a^2*(I*A + 3*B))
/(5*c*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*a^2*B)/(3*c^2*f*(c - I*c*Tan[e +
 f*x])^(3/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^2(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)(A+Bx)}{(c-icx)^{9/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{2a(A-iB)}{(c-icx)^{9/2}} - \frac{a(A-3iB)}{c(c-icx)^{7/2}} - \frac{iaB}{c^2(c-icx)^{5/2}}\right) dx, x, \tan(e+fx)\right)}{f}$$
$$= -\frac{4a^2(iA+B)}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{2a^2(iA+3B)}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{2}{3c^2f(c-ic}$$

Mathematica [A] time = 13.199, size = 122, normalized size = 1.16

$$\frac{a^2\cos^2(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(4e+6fx)+i\sin(4e+6fx))(7(3A+iB)\sin(2(e+fx))+(-37B-9iA)\cos(2(e}{105c^4f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^2*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^(7/2),x]
```

```
[Out] (a^2*Cos[e + f*x]^2*((-9*I)*A + 33*B + ((-9*I)*A - 37*B)*Cos[2*(e + f*x)] +
 7*(3*A + I*B)*Sin[2*(e + f*x)])*(Cos[4*e + 6*f*x] + I*Sin[4*e + 6*f*x])*Sq
rt[c - I*c*Tan[e + f*x]])/(105*c^4*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.077, size = 80, normalized size = 0.8

$$\frac{-2\,ia^2}{fc^2}\left(\frac{2\,c^2\,(A-iB)}{7}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{7}{2}} - \frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{3}{2}} - \frac{c\,(A-3\,iB)}{5}\left(c-ic\tan\left(fx+e\right)\right)^{-\frac{5}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] -2*I/f*a^2/c^2*(2/7*c^2*(A-I*B)/(c-I*c*tan(f*x+e))^(7/2)-1/3*I*B/(c-I*c*tan
(f*x+e))^(3/2)-1/5*c*(A-3*I*B)/(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [A] time = 1.1543, size = 107, normalized size = 1.02

$$\frac{2i\left(35i\left(-ic\tan\left(fx+e\right)+c\right)^{2}Ba^{2}+\left(-ic\tan\left(fx+e\right)+c\right)(21A-63iB)a^{2}c-(30A-30iB)a^{2}c^{2}\right)}{105\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}c^{2}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="maxima")
```

```
[Out] 2/105*I*(35*I*(-I*c*tan(f*x + e) + c)^2*B*a^2 + (-I*c*tan(f*x + e) + c)*(21
*A - 63*I*B)*a^2*c - (30*A - 30*I*B)*a^2*c^2)/((-I*c*tan(f*x + e) + c)^(7/2
)*c^2*f)
```

Fricas [A] time = 1.37346, size = 333, normalized size = 3.17

$$\frac{\sqrt{2}\left((-15iA-15B)a^{2}e^{(8ifx+8ie)}+(-39iA+3B)a^{2}e^{(6ifx+6ie)}+(-27iA+29B)a^{2}e^{(4ifx+4ie)}+(3iA-11B)a^{2}e^{(2ifx+2ie)}+\ldots\right.}{420c^{4}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="fricas")
```

```
[Out] 1/420*sqrt(2)*((-15*I*A - 15*B)*a^2*e^(8*I*f*x + 8*I*e) + (-39*I*A + 3*B)*a
^2*e^(6*I*f*x + 6*I*e) + (-27*I*A + 29*B)*a^2*e^(4*I*f*x + 4*I*e) + (3*I*A
- 11*B)*a^2*e^(2*I*f*x + 2*I*e) + (6*I*A - 22*B)*a^2)*sqrt(c/(e^(2*I*f*x +
2*I*e) + 1))/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7/2),
x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^2}{(-ic\tan(fx+e)+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^2*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^2/(-I*c*tan(f*x + e)
+ c)^(7/2), x)
```

3.756 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=144

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{11/2}}{11c^2f}-\frac{8a^3(2B+iA)(c-ic\tan(e+fx))^{9/2}}{9cf}+\frac{8a^3(B+iA)(c-ic\tan(e+fx))^{7/2}}{7f}-2a^3B(c$$

```
[Out] (8*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^(7/2))/(7*f) - (8*a^3*(I*A + 2*B)*(
c - I*c*Tan[e + f*x])^(9/2))/(9*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e +
f*x])^(11/2))/(11*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(13/2))/(13*c^3*
f)
```

Rubi [A] time = 0.210195, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{11/2}}{11c^2f}-\frac{8a^3(2B+iA)(c-ic\tan(e+fx))^{9/2}}{9cf}+\frac{8a^3(B+iA)(c-ic\tan(e+fx))^{7/2}}{7f}-2a^3B(c$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7
/2),x]
```

```
[Out] (8*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^(7/2))/(7*f) - (8*a^3*(I*A + 2*B)*(
c - I*c*Tan[e + f*x])^(9/2))/(9*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e +
f*x])^(11/2))/(11*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(13/2))/(13*c^3*
f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

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

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
&& ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^{5/2}\,dx, x\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(4a^2(A-iB)(c-icx)^{5/2} - \frac{4a^2(A-2i}{}\right.\right.}{}$$

$$= \frac{8a^3(iA+B)(c-ic\tan(e+fx))^{7/2}}{7f} - \frac{8a^3(iA+2}{}$$

Mathematica [A] time = 13.2048, size = 127, normalized size = 0.88

$$-\frac{2a^3c^3(\cos(3e)-i\sin(3e))\sec^5(e+fx)\sqrt{c-ic\tan(e+fx)}(7(169A-86iB)\tan(e+fx)+\cos(2(e+fx))(7(169A-18}{9009f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(7/2),x]
```

```
[Out] (-2*a^3*c^3*Sec[e + f*x]^5*(Cos[3*e] - I*Sin[3*e])*Sqrt[c - I*c*Tan[e + f*x
]]*((-572*I)*A + 737*B + 7*(169*A - (86*I)*B)*Tan[e + f*x] + Cos[2*(e + f*x
)]*((-1391*I)*A - 1279*B + 7*(169*A - (185*I)*B)*Tan[e + f*x])))/(9009*f*(C
os[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.075, size = 121, normalized size = 0.8

$$\frac{2\,ia^3}{fc^3}\left(\frac{i}{13}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{13}{2}} + \frac{-5\,iBc+Ac}{11}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{11}{2}} + \frac{-4\,(-iBc+Ac)\,c+4\,iBc^2}{9}\left(c-ic\tan\left(fx+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(1/13*I*B*(c-I*c*tan(f*x+e))^(13/2)+1/11*(-5*I*B*c+A*c)*(c-I*
c*tan(f*x+e))^(11/2)+1/9*(-4*(-I*B*c+A*c)*c+4*I*B*c^2)*(c-I*c*tan(f*x+e))^(
9/2)+4/7*(-I*B*c+A*c)*c^2*(c-I*c*tan(f*x+e))^(7/2))
```

Maxima [A] time = 1.21198, size = 146, normalized size = 1.01

$$\frac{2i\left(693i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{13}{2}}Ba^3+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{11}{2}}(819A-4095iB)a^3c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}(4004A-\cdots\right.}{9009c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="maxima")
```

```
[Out] 2/9009*I*(693*I*(-I*c*tan(f*x + e) + c)^(13/2)*B*a^3 + (-I*c*tan(f*x + e) +
 c)^(11/2)*(819*A - 4095*I*B)*a^3*c - (-I*c*tan(f*x + e) + c)^(9/2)*(4004*A
 - 8008*I*B)*a^3*c^2 + (-I*c*tan(f*x + e) + c)^(7/2)*(5148*A - 5148*I*B)*a^
3*c^3)/(c^3*f)
```

Fricas [A] time = 3.02649, size = 539, normalized size = 3.74

$$\frac{\sqrt{2}\left((82368iA+82368B)a^3c^3e^{(6ifx+6ie)}+(118976iA-9152B)a^3c^3e^{(4ifx+4ie)}+(43264iA-3328B)a^3c^3e^{(2ifx+2ie)}+(6\cdots\right.}{9009\left(fe^{(12ifx+12ie)}+6fe^{(10ifx+10ie)}+15fe^{(8ifx+8ie)}+20fe^{(6ifx+6ie)}+15fe^{(4ifx+4ie)}+6fe^{(2if\cdots}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="fricas")
```

```
[Out] 1/9009*sqrt(2)*((82368*I*A + 82368*B)*a^3*c^3*e^(6*I*f*x + 6*I*e) + (118976
*I*A - 9152*B)*a^3*c^3*e^(4*I*f*x + 4*I*e) + (43264*I*A - 3328*B)*a^3*c^3*e
^(2*I*f*x + 2*I*e) + (6656*I*A - 512*B)*a^3*c^3)*sqrt(c/(e^(2*I*f*x + 2*I*e
) + 1))/(f*e^(12*I*f*x + 12*I*e) + 6*f*e^(10*I*f*x + 10*I*e) + 15*f*e^(8*I*
f*x + 8*I*e) + 20*f*e^(6*I*f*x + 6*I*e) + 15*f*e^(4*I*f*x + 4*I*e) + 6*f*e^
(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2),
x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="giac")
```

```
[Out] Timed out
```

3.757 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=144

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{9/2}}{9c^2f}-\frac{8a^3(2B+iA)(c-ic\tan(e+fx))^{7/2}}{7cf}+\frac{8a^3(B+iA)(c-ic\tan(e+fx))^{5/2}}{5f}-\frac{2a^3B(c$$

```
[Out] (8*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f) - (8*a^3*(I*A + 2*B)*(
c - I*c*Tan[e + f*x])^(7/2))/(7*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e +
f*x])^(9/2))/(9*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(11/2))/(11*c^3*f)
```

Rubi [A] time = 0.2003, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{9/2}}{9c^2f}-\frac{8a^3(2B+iA)(c-ic\tan(e+fx))^{7/2}}{7cf}+\frac{8a^3(B+iA)(c-ic\tan(e+fx))^{5/2}}{5f}-\frac{2a^3B(c$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5
/2),x]
```

```
[Out] (8*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f) - (8*a^3*(I*A + 2*B)*(
c - I*c*Tan[e + f*x])^(7/2))/(7*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e +
f*x])^(9/2))/(9*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(11/2))/(11*c^3*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^2(A+Bx)(c-icx)^{3/2}\,dx,x\right.}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(4a^2(A-iB)(c-icx)^{3/2}-\frac{4a^2(A-2i}{}\right.\right.}{}$$

$$= \frac{8a^3(iA+B)(c-ic\tan(e+fx))^{5/2}}{5f} - \frac{8a^3(iA+2}{}$$

Mathematica [A] time = 11.8246, size = 139, normalized size = 0.97

$$-\frac{2a^3c^2\sec^4(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(2e-fx)-i\sin(2e-fx))(5(121A-74iB)\tan(e+fx)+\cos(2(e+fx))((6}{3465f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (-2*a^3*c^2*Sec[e + f*x]^4*(Cos[2*e - f*x] - I*Sin[2*e - f*x])*Sqrt[c - I*c
*Tan[e + f*x]]*(9*((-44*I)*A + 31*B) + 5*(121*A - (74*I)*B)*Tan[e + f*x] +
Cos[2*(e + f*x)]*((-781*I)*A - 701*B + (605*A - (685*I)*B)*Tan[e + f*x])))/
(3465*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.071, size = 121, normalized size = 0.8

$$\frac{2\,ia^3}{fc^3}\left(\frac{i}{11}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{11}{2}}+\frac{-5\,iBc+Ac}{9}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{9}{2}}+\frac{-4\,(-iBc+Ac)\,c+4\,iBc^2}{7}\left(c-ic\tan\left(fx+e\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(1/11*I*B*(c-I*c*tan(f*x+e))^(11/2)+1/9*(-5*I*B*c+A*c)*(c-I*c
*tan(f*x+e))^(9/2)+1/7*(-4*(-I*B*c+A*c)*c+4*I*B*c^2)*(c-I*c*tan(f*x+e))^(7/
2)+4/5*(-I*B*c+A*c)*c^2*(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [A] time = 1.1458, size = 146, normalized size = 1.01

$$\frac{2i\left(315i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{11}{2}}Ba^3+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}(385A-1925iB)a^3c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}(1980A-\right.}{3465c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="maxima")
```

```
[Out] 2/3465*I*(315*I*(-I*c*tan(f*x + e) + c)^(11/2)*B*a^3 + (-I*c*tan(f*x + e) +
 c)^(9/2)*(385*A - 1925*I*B)*a^3*c - (-I*c*tan(f*x + e) + c)^(7/2)*(1980*A
- 3960*I*B)*a^3*c^2 + (-I*c*tan(f*x + e) + c)^(5/2)*(2772*A - 2772*I*B)*a^3
*c^3)/(c^3*f)
```

Fricas [A] time = 2.05812, size = 498, normalized size = 3.46

$$\frac{\sqrt{2}\left((22176iA+22176B)a^3c^2e^{(6ifx+6ie)}+(34848iA+3168B)a^3c^2e^{(4ifx+4ie)}+(15488iA+1408B)a^3c^2e^{(2ifx+2ie)}+(28\right.}{3465\left(fe^{(10ifx+10ie)}+5fe^{(8ifx+8ie)}+10fe^{(6ifx+6ie)}+10fe^{(4ifx+4ie)}+5fe^{(2ifx+2ie)}+f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="fricas")
```

```
[Out] 1/3465*sqrt(2)*((22176*I*A + 22176*B)*a^3*c^2*e^(6*I*f*x + 6*I*e) + (34848*
I*A + 3168*B)*a^3*c^2*e^(4*I*f*x + 4*I*e) + (15488*I*A + 1408*B)*a^3*c^2*e^
(2*I*f*x + 2*I*e) + (2816*I*A + 256*B)*a^3*c^2)*sqrt(c/(e^(2*I*f*x + 2*I*e)
 + 1))/(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x
 + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2),
x)
```

```
[Out] Timed out
```

Giac [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="giac")
```

```
[Out] Timed out
```

3.758 $\int (a + ia\tan(e + fx))^3(A + B\tan(e + fx))(c - ic\tan(e + fx))^{3/2}\,dx$

Optimal. Leaf size=144

$$\frac{2a^3(5B + iA)(c - ic\tan(e + fx))^{7/2}}{7c^2f} - \frac{8a^3(2B + iA)(c - ic\tan(e + fx))^{5/2}}{5cf} + \frac{8a^3(B + iA)(c - ic\tan(e + fx))^{3/2}}{3f} - \frac{2a^3B(c$$

```
[Out] (8*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f) - (8*a^3*(I*A + 2*B)*(
c - I*c*Tan[e + f*x])^(5/2))/(5*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e +
f*x])^(7/2))/(7*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(9/2))/(9*c^3*f)
```

Rubi [A] time = 0.200447, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^3(5B + iA)(c - ic\tan(e + fx))^{7/2}}{7c^2f} - \frac{8a^3(2B + iA)(c - ic\tan(e + fx))^{5/2}}{5cf} + \frac{8a^3(B + iA)(c - ic\tan(e + fx))^{3/2}}{3f} - \frac{2a^3B(c$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3
/2),x]
```


```
[Out] (8*a^3*(I*A + B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f) - (8*a^3*(I*A + 2*B)*(
c - I*c*Tan[e + f*x])^(5/2))/(5*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e +
f*x])^(7/2))/(7*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(9/2))/(9*c^3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int (a+iax)^2(A+Bx)\sqrt{c-icx}\,dx,x,t\right.}{f}$$
$$= \frac{(ac)\operatorname{Subst}\left(\int \left(4a^2(A-iB)\sqrt{c-icx}-\frac{4a^2(A-2iB)(}{c}\right.\right.}{}$$
$$= \frac{8a^3(iA+B)(c-ic\tan(e+fx))^{3/2}}{3f} - \frac{8a^3(iA+2}{}$$

Mathematica [A] time = 8.49487, size = 130, normalized size = 0.9

$$-\frac{2a^3c\sec^3(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(e-2fx)-i\sin(e-2fx))((81A-62iB)\tan(e+fx)+\cos(2(e+fx))((81A}{315f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(3/2),x]
```

```
[Out] (-2*a^3*c*Sec[e + f*x]^3*(Cos[e - 2*f*x] - I*Sin[e - 2*f*x])*Sqrt[c - I*c*T
an[e + f*x]]*(7*((-12*I)*A + B) + (81*A - (62*I)*B)*Tan[e + f*x] + Cos[2*(e
 + f*x)]*((-129*I)*A - 113*B + (81*A - (97*I)*B)*Tan[e + f*x])))/(315*f*(Co
s[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.074, size = 121, normalized size = 0.8

$$\frac{2ia^3}{fc^3}\left(\frac{i}{9}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{9}{2}}+\frac{-5iBc+Ac}{7}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}+\frac{-4\left(-iBc+Ac\right)c+4iBc^2}{5}\left(c-ic\tan\left(fx+e\right)\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(1/9*I*B*(c-I*c*tan(f*x+e))^(9/2)+1/7*(-5*I*B*c+A*c)*(c-I*c*t
an(f*x+e))^(7/2)+1/5*(-4*(-I*B*c+A*c)*c+4*I*B*c^2)*(c-I*c*tan(f*x+e))^(5/2)
+4/3*(-I*B*c+A*c)*c^2*(c-I*c*tan(f*x+e))^(3/2))
```

Maxima [A] time = 1.19415, size = 146, normalized size = 1.01

$$\frac{2i\left(35i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}Ba^3+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}(45A-225iB)a^3c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}(252A-504i\right.}{315c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="maxima")
```

```
[Out] 2/315*I*(35*I*(-I*c*tan(f*x + e) + c)^(9/2)*B*a^3 + (-I*c*tan(f*x + e) + c)
^(7/2)*(45*A - 225*I*B)*a^3*c - (-I*c*tan(f*x + e) + c)^(5/2)*(252*A - 504*
I*B)*a^3*c^2 + (-I*c*tan(f*x + e) + c)^(3/2)*(420*A - 420*I*B)*a^3*c^3)/(c^
3*f)
```

Fricas [A] time = 1.49056, size = 437, normalized size = 3.03

$$\frac{\sqrt{2}\left((1680iA+1680B)a^3ce^{(6ifx+6ie)}+(3024iA+1008B)a^3ce^{(4ifx+4ie)}+(1728iA+576B)a^3ce^{(2ifx+2ie)}+(384iA+12\right.}{315\left(fe^{(8ifx+8ie)}+4fe^{(6ifx+6ie)}+6fe^{(4ifx+4ie)}+4fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="fricas")
```

```
[Out] 1/315*sqrt(2)*((1680*I*A + 1680*B)*a^3*c*e^(6*I*f*x + 6*I*e) + (3024*I*A +
1008*B)*a^3*c*e^(4*I*f*x + 4*I*e) + (1728*I*A + 576*B)*a^3*c*e^(2*I*f*x + 2
*I*e) + (384*I*A + 128*B)*a^3*c)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(8*
I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^
(2*I*f*x + 2*I*e) + f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\int Ac\sqrt{-ic\tan\left(e+fx\right)+c}\,dx+\int -Ac\sqrt{-ic\tan\left(e+fx\right)+c}\tan^4\left(e+fx\right)dx+\int Bc\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2),
x)
```

```
[Out] a**3*(Integral(A*c*sqrt(-I*c*tan(e + f*x) + c), x) + Integral(-A*c*sqrt(-I*
c*tan(e + f*x) + c)*tan(e + f*x)**4, x) + Integral(B*c*sqrt(-I*c*tan(e + f*
x) + c)*tan(e + f*x), x) + Integral(-B*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e
+ f*x)**5, x) + Integral(2*I*A*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x),
x) + Integral(2*I*A*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**3, x) + Int
egral(2*I*B*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(2*
I*B*c*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**4, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^3\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3*(-I*c*tan(f*x + e)
+ c)^(3/2), x)
```

3.759 $\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,d$

Optimal. Leaf size=142

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{5/2}}{5c^2f}-\frac{8a^3(2B+iA)(c-ic\tan(e+fx))^{3/2}}{3cf}+\frac{8a^3(B+iA)\sqrt{c-ic\tan(e+fx)}}{f}-\frac{2a^3B(c-$$

```
[Out] (8*a^3*(I*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/f - (8*a^3*(I*A + 2*B)*(c - I*
c*Tan[e + f*x])^(3/2))/(3*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e + f*x])^
(5/2))/(5*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(7/2))/(7*c^3*f)
```

Rubi [A] time = 0.181702, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{5/2}}{5c^2f}-\frac{8a^3(2B+iA)(c-ic\tan(e+fx))^{3/2}}{3cf}+\frac{8a^3(B+iA)\sqrt{c-ic\tan(e+fx)}}{f}-\frac{2a^3B(c-$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]
],x]
```


```
[Out] (8*a^3*(I*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/f - (8*a^3*(I*A + 2*B)*(c - I*
c*Tan[e + f*x])^(3/2))/(3*c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e + f*x])^
(5/2))/(5*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(7/2))/(7*c^3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^3(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int\frac{(a+iax)^2(A+Bx)}{\sqrt{c-icx}}\,dx,x,\tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\text{Subst}\left(\int\left(\frac{4a^2(A-iB)}{\sqrt{c-icx}}-\frac{4a^2(A-2iB)\sqrt{c-icx}}{c}+\frac{a^2(A-5}{}\right.\right.}{f}$$
$$= \frac{8a^3(iA+B)\sqrt{c-ic\tan(e+fx)}}{f}-\frac{8a^3(iA+2B)(c}{}$$

Mathematica [A] time = 6.78404, size = 124, normalized size = 0.87

$$\frac{a^3\sec^2(e+fx)(\cos(3fx)+i\sin(3fx))\sqrt{c-ic\tan(e+fx)}((-98A+100iB)\tan(e+fx)+\cos(2(e+fx))((-98A+130i}{105f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e
+ f*x]],x]
```

```
[Out] (a^3*Sec[e + f*x]^2*(Cos[3*f*x] + I*Sin[3*f*x])*Sqrt[c - I*c*Tan[e + f*x]]*
((280*I)*A + 170*B + (-98*A + (100*I)*B)*Tan[e + f*x] + Cos[2*(e + f*x)]*((
322*I)*A + 290*B + (-98*A + (130*I)*B)*Tan[e + f*x])))/(105*f*(Cos[f*x] + I
*Sin[f*x])^3)
```

Maple [A] time = 0.085, size = 121, normalized size = 0.9

$$\frac{2\,ia^3}{fc^3}\left(\frac{i}{7}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{7}{2}}+\frac{-5\,iBc+Ac}{5}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\frac{-4\,\left(-iBc+Ac\right)c+4\,iBc^2}{3}\left(c-ic\tan\left(fx+e\right)\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x)
```

```
[Out] 2*I/f*a^3/c^3*(1/7*I*B*(c-I*c*tan(f*x+e))^(7/2)+1/5*(-5*I*B*c+A*c)*(c-I*c*t
an(f*x+e))^(5/2)+1/3*(-4*(-I*B*c+A*c)*c+4*I*B*c^2)*(c-I*c*tan(f*x+e))^(3/2)
+4*(-I*B*c+A*c)*c^2*(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [A] time = 1.13744, size = 146, normalized size = 1.03

$$\frac{2i\left(15i\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}Ba^3+\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}(21A-105iB)a^3c-\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}(140A-280iB\right.}{105c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x,
 algorithm="maxima")
```

```
[Out] 2/105*I*(15*I*(-I*c*tan(f*x + e) + c)^(7/2)*B*a^3 + (-I*c*tan(f*x + e) + c)
^(5/2)*(21*A - 105*I*B)*a^3*c - (-I*c*tan(f*x + e) + c)^(3/2)*(140*A - 280*
I*B)*a^3*c^2 + sqrt(-I*c*tan(f*x + e) + c)*(420*A - 420*I*B)*a^3*c^3)/(c^3*
f)
```

Fricas [A] time = 1.20107, size = 390, normalized size = 2.75

$$\frac{\sqrt{2}\left((840iA+840B)a^3e^{(6ifx+6ie)}+(1960iA+1400B)a^3e^{(4ifx+4ie)}+(1568iA+1120B)a^3e^{(2ifx+2ie)}+(448iA+320B)a\right.}{105\left(fe^{(6ifx+6ie)}+3fe^{(4ifx+4ie)}+3fe^{(2ifx+2ie)}+f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x,
 algorithm="fricas")
```

```
[Out] 1/105*sqrt(2)*((840*I*A + 840*B)*a^3*e^(6*I*f*x + 6*I*e) + (1960*I*A + 1400
*B)*a^3*e^(4*I*f*x + 4*I*e) + (1568*I*A + 1120*B)*a^3*e^(2*I*f*x + 2*I*e) +
 (448*I*A + 320*B)*a^3)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(f*e^(6*I*f*x + 6
*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\int A\sqrt{-ic\tan\left(e+fx\right)+c}\,dx+\int -3A\sqrt{-ic\tan\left(e+fx\right)+c}\tan^2\left(e+fx\right)dx+\int B\sqrt{-ic\tan\left(e+fx\right)+c}\tan\left(e\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e)),
x)
```

```
[Out] a**3*(Integral(A*sqrt(-I*c*tan(e + f*x) + c), x) + Integral(-3*A*sqrt(-I*c*
tan(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(B*sqrt(-I*c*tan(e + f*x) +
 c)*tan(e + f*x), x) + Integral(-3*B*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*
x)**3, x) + Integral(3*I*A*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x), x) + I
ntegral(-I*A*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**3, x) + Integral(3*I
*B*sqrt(-I*c*tan(e + f*x) + c)*tan(e + f*x)**2, x) + Integral(-I*B*sqrt(-I*
c*tan(e + f*x) + c)*tan(e + f*x)**4, x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^3\sqrt{-i\,c\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e)),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3*sqrt(-I*c*tan(f*x +
 e) + c), x)
```

3.760 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=140

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{3/2}}{3c^2f}-\frac{8a^3(2B+iA)\sqrt{c-ic\tan(e+fx)}}{cf}-\frac{8a^3(B+iA)}{f\sqrt{c-ic\tan(e+fx)}}-\frac{2a^3B(c-ic\tan(e+fx$$

```
[Out] (-8*a^3*(I*A + B))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (8*a^3*(I*A + 2*B)*Sqrt
[c - I*c*Tan[e + f*x]])/(c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e + f*x])^(
3/2))/(3*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(5/2))/(5*c^3*f)
```

Rubi [A] time = 0.185085, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^3(5B+iA)(c-ic\tan(e+fx))^{3/2}}{3c^2f}-\frac{8a^3(2B+iA)\sqrt{c-ic\tan(e+fx)}}{cf}-\frac{8a^3(B+iA)}{f\sqrt{c-ic\tan(e+fx)}}-\frac{2a^3B(c-ic\tan(e+fx$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e + f*
x]],x]
```



```
[Out] (-8*a^3*(I*A + B))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (8*a^3*(I*A + 2*B)*Sqrt
[c - I*c*Tan[e + f*x]])/(c*f) + (2*a^3*(I*A + 5*B)*(c - I*c*Tan[e + f*x])^(
3/2))/(3*c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(5/2))/(5*c^3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^{3/2}}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{4a^2(A-iB)}{(c-icx)^{3/2}} - \frac{4a^2(A-2iB)}{c\sqrt{c-icx}} + \frac{a^2(A-5iB)\sqrt{c-icx}}{c^2} + \frac{ia^2B(c-icx)^{3/2}}{c^3}\right) c\right.}{f}$$

$$= -\frac{8a^3(iA+B)}{f\sqrt{c-ic\tan(e+fx)}} - \frac{8a^3(iA+2B)\sqrt{c-ic\tan(e+fx)}}{cf} + \frac{2a^3(iA}{}$$

Mathematica [A] time = 7.09158, size = 152, normalized size = 1.09

$$-\frac{2a^3\sqrt{c-ic\tan(e+fx)}(\cos(e+4fx)+i\sin(e+4fx))(A+B\tan(e+fx))((25A-38iB)\tan(e+fx)+\cos(2(e+fx))}{15cf(\cos(fx)+i\sin(fx))^3(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[
e + f*x]],x]
```

```
[Out] (-2*a^3*(Cos[e + 4*f*x] + I*Sin[e + 4*f*x])*(A + B*Tan[e + f*x])*Sqrt[c - I
*c*Tan[e + f*x]]*((60*I)*A + 87*B + (25*A - (38*I)*B)*Tan[e + f*x] + Cos[2*
(e + f*x)]*((55*I)*A + 71*B + (25*A - (41*I)*B)*Tan[e + f*x])))/(15*c*f*(Co
s[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.115, size = 135, normalized size = 1.

$$\frac{2ia^3}{fc^3}\left(\frac{i}{5}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}} - \frac{5i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}c + \frac{Ac}{3}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}} + 8iBc^2\sqrt{c-ic\tan\left(fx+e\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(1/5*I*B*(c-I*c*tan(f*x+e))^(5/2)-5/3*I*B*(c-I*c*tan(f*x+e))^
(3/2)*c+1/3*A*(c-I*c*tan(f*x+e))^(3/2)*c+8*I*B*c^2*(c-I*c*tan(f*x+e))^(1/2)
-4*A*c^2*(c-I*c*tan(f*x+e))^(1/2)-4*c^3*(A-I*B)/(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [A] time = 1.20867, size = 153, normalized size = 1.09

$$-\frac{2i\left(\frac{15\,(4\,A-4i\,B)a^3c}{\sqrt{-i\,c\tan\left(fx+e\right)+c}}-\frac{3i\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}Ba^3+\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}(5\,A-25i\,B)a^3c-\sqrt{-i\,c\tan\left(fx+e\right)+c}(60\,A-120i\,B)a^3c^2}{c^2}\right)}{15\,cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x,
 algorithm="maxima")
```

```
[Out] -2/15*I*(15*(4*A - 4*I*B)*a^3*c/sqrt(-I*c*tan(f*x + e) + c) - (3*I*(-I*c*ta
n(f*x + e) + c)^(5/2)*B*a^3 + (-I*c*tan(f*x + e) + c)^(3/2)*(5*A - 25*I*B)*
a^3*c - sqrt(-I*c*tan(f*x + e) + c)*(60*A - 120*I*B)*a^3*c^2)/c^2)/(c*f)
```

Fricas [A] time = 1.13645, size = 359, normalized size = 2.56

$$\frac{\sqrt{2}\left((-60i\,A-60\,B)a^3e^{\left(6i\,fx+6i\,e\right)}+(-300i\,A-420\,B)a^3e^{\left(4i\,fx+4i\,e\right)}+(-400i\,A-560\,B)a^3e^{\left(2i\,fx+2i\,e\right)}+(-160i\,A-224\,B)a^3\right.}{15\left(cfe^{\left(4i\,fx+4i\,e\right)}+2\,cfe^{\left(2i\,fx+2i\,e\right)}+cf\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x,
 algorithm="fricas")
```

```
[Out] 1/15*sqrt(2)*((-60*I*A - 60*B)*a^3*e^(6*I*f*x + 6*I*e) + (-300*I*A - 420*B)
*a^3*e^(4*I*f*x + 4*I*e) + (-400*I*A - 560*B)*a^3*e^(2*I*f*x + 2*I*e) + (-1
60*I*A - 224*B)*a^3)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c*f*e^(4*I*f*x + 4*
I*e) + 2*c*f*e^(2*I*f*x + 2*I*e) + c*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^{3}\left(\int \frac{A}{\sqrt{-ic\tan\left(e+fx\right)+c}}\,dx+\int -\frac{3A\tan^{2}\left(e+fx\right)}{\sqrt{-ic\tan\left(e+fx\right)+c}}\,dx+\int \frac{B\tan\left(e+fx\right)}{\sqrt{-ic\tan\left(e+fx\right)+c}}\,dx+\int -\frac{3B\tan^{3}\left(e+fx\right)}{\sqrt{-ic\tan\left(e+fx\right)+c}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2),
x)
```

```
[Out] a**3*(Integral(A/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(-3*A*tan(e + f*
x)**2/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(B*tan(e + f*x)/sqrt(-I*c*t
an(e + f*x) + c), x) + Integral(-3*B*tan(e + f*x)**3/sqrt(-I*c*tan(e + f*x)
 + c), x) + Integral(3*I*A*tan(e + f*x)/sqrt(-I*c*tan(e + f*x) + c), x) + I
ntegral(-I*A*tan(e + f*x)**3/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(3*I
*B*tan(e + f*x)**2/sqrt(-I*c*tan(e + f*x) + c), x) + Integral(-I*B*tan(e +
f*x)**4/sqrt(-I*c*tan(e + f*x) + c), x))
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{3}}{\sqrt{-i\,c\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3/sqrt(-I*c*tan(f*x +
 e) + c), x)
```

3.761 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=140

$$\frac{2a^3(5B+iA)\sqrt{c-ic\tan(e+fx)}}{c^2f}+\frac{8a^3(2B+iA)}{cf\sqrt{c-ic\tan(e+fx)}}-\frac{8a^3(B+iA)}{3f(c-ic\tan(e+fx))^{3/2}}-\frac{2a^3B(c-ic\tan(e+fx))^{3/2}}{3c^3f}$$

```
[Out] (-8*a^3*(I*A + B))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (8*a^3*(I*A + 2*B))
/(c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (2*a^3*(I*A + 5*B)*Sqrt[c - I*c*Tan[e +
 f*x]])/(c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(3/2))/(3*c^3*f)
```

Rubi [A] time = 0.198587, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$\frac{2a^3(5B+iA)\sqrt{c-ic\tan(e+fx)}}{c^2f}+\frac{8a^3(2B+iA)}{cf\sqrt{c-ic\tan(e+fx)}}-\frac{8a^3(B+iA)}{3f(c-ic\tan(e+fx))^{3/2}}-\frac{2a^3B(c-ic\tan(e+fx))^{3/2}}{3c^3f}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
(3/2),x]
```

```
[Out] (-8*a^3*(I*A + B))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (8*a^3*(I*A + 2*B))
/(c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (2*a^3*(I*A + 5*B)*Sqrt[c - I*c*Tan[e +
 f*x]])/(c^2*f) - (2*a^3*B*(c - I*c*Tan[e + f*x])^(3/2))/(3*c^3*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{4a^2(A-iB)}{(c-icx)^{5/2}} - \frac{4a^2(A-2iB)}{c(c-icx)^{3/2}} + \frac{a^2(A-5iB)}{c^2\sqrt{c-icx}} + \frac{ia^2B\sqrt{c-icx}}{c^3}\right) dx, x, \mathrm{ta}\right.}{f}$$

$$= -\frac{8a^3(iA+B)}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{8a^3(iA+2B)}{cf\sqrt{c-ic\tan(e+fx)}} + \frac{2a^3(iA+5B)\surd}{}$$

Mathematica [A] time = 12.1703, size = 168, normalized size = 1.2

$$\frac{a^3\sqrt{c-ic\tan(e+fx)}(\cos(2e+5fx)+i\sin(2e+5fx))(A+B\tan(e+fx))(15(3B+iA)\cos(e+fx)+(23B+7iA)\cos}{3c^2f(\cos(fx)+i\sin(fx))^3(A\cos(e+fx)+B\sin(e+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^(3/2),x]
```

```
[Out] (a^3*(15*(I*A + 3*B)*Cos[e + f*x] + ((7*I)*A + 23*B)*Cos[3*(e + f*x)] + 2*(
9*A - (26*I)*B + (9*A - (25*I)*B)*Cos[2*(e + f*x)])*Sin[e + f*x])*(Cos[2*e
+ 5*f*x] + I*Sin[2*e + 5*f*x])*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*
x]])/(3*c^2*f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.076, size = 118, normalized size = 0.8

$$\frac{2\,ia^3}{fc^3}\left(\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}} - 5\,iBc\sqrt{c-ic\tan\left(fx+e\right)} + Ac\sqrt{c-ic\tan\left(fx+e\right)} + 4\,\frac{c^2\,(A-2\,iB)}{\sqrt{c-ic\tan\left(fx+e\right)}} - \frac{4\,c^3\,(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(1/3*I*B*(c-I*c*tan(f*x+e))^(3/2)-5*I*B*c*(c-I*c*tan(f*x+e))^
(1/2)+A*c*(c-I*c*tan(f*x+e))^(1/2)+4*c^2*(A-2*I*B)/(c-I*c*tan(f*x+e))^(1/2)
-4/3*c^3*(A-I*B)/(c-I*c*tan(f*x+e))^(3/2))
```

Maxima [A] time = 1.11399, size = 146, normalized size = 1.04

$$\frac{2i\left(\frac{(-ic\tan(fx+e)+c)(12A-24iB)a^3-(4A-4iB)a^3c}{(-ic\tan(fx+e)+c)^{\frac{3}{2}}}+\frac{i(-ic\tan(fx+e)+c)^{\frac{3}{2}}Ba^3+\sqrt{-ic\tan(fx+e)+c}(3A-15iB)a^3c}{c^2}\right)}{3cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="maxima")
```

```
[Out] 2/3*I*(((-I*c*tan(f*x + e) + c)*(12*A - 24*I*B)*a^3 - (4*A - 4*I*B)*a^3*c)/
(-I*c*tan(f*x + e) + c)^(3/2) + (I*(-I*c*tan(f*x + e) + c)^(3/2)*B*a^3 + sq
rt(-I*c*tan(f*x + e) + c)*(3*A - 15*I*B)*a^3*c)/c^2)/(c*f)
```

Fricas [A] time = 1.18663, size = 309, normalized size = 2.21

$$\frac{\sqrt{2}\left((-2iA-2B)a^3e^{(6ifx+6ie)}+(6iA+18B)a^3e^{(4ifx+4ie)}+(24iA+72B)a^3e^{(2ifx+2ie)}+(16iA+48B)a^3\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{3\left(c^2fe^{(2ifx+2ie)}+c^2f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="fricas")
```

```
[Out] 1/3*sqrt(2)*((-2*I*A - 2*B)*a^3*e^(6*I*f*x + 6*I*e) + (6*I*A + 18*B)*a^3*e^
(4*I*f*x + 4*I*e) + (24*I*A + 72*B)*a^3*e^(2*I*f*x + 2*I*e) + (16*I*A + 48*
B)*a^3)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c^2*f*e^(2*I*f*x + 2*I*e) + c^2*
f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^3}{(-ic\tan(fx+e)+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3/(-I*c*tan(f*x + e)
+ c)^(3/2), x)
```

3.762 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=140

$$-\frac{2a^3(5B+iA)}{c^2f\sqrt{c-ic\tan(e+fx)}}+\frac{8a^3(2B+iA)}{3cf(c-ic\tan(e+fx))^{3/2}}-\frac{8a^3(B+iA)}{5f(c-ic\tan(e+fx))^{5/2}}-\frac{2a^3B\sqrt{c-ic\tan(e+fx)}}{c^3f}$$

```
[Out] (-8*a^3*(I*A + B))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (8*a^3*(I*A + 2*B))
/(3*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^3*(I*A + 5*B))/(c^2*f*Sqrt[c -
 I*c*Tan[e + f*x]]) - (2*a^3*B*Sqrt[c - I*c*Tan[e + f*x]])/(c^3*f)
```

Rubi [A] time = 0.201367, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^3(5B+iA)}{c^2f\sqrt{c-ic\tan(e+fx)}}+\frac{8a^3(2B+iA)}{3cf(c-ic\tan(e+fx))^{3/2}}-\frac{8a^3(B+iA)}{5f(c-ic\tan(e+fx))^{5/2}}-\frac{2a^3B\sqrt{c-ic\tan(e+fx)}}{c^3f}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
(5/2),x]
```


```
[Out] (-8*a^3*(I*A + B))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (8*a^3*(I*A + 2*B))
/(3*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^3*(I*A + 5*B))/(c^2*f*Sqrt[c -
 I*c*Tan[e + f*x]]) - (2*a^3*B*Sqrt[c - I*c*Tan[e + f*x]])/(c^3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
```

```
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(ac)\,\text{Subst}\left(\int \left(\frac{4a^2(A-iB)}{(c-icx)^{7/2}} - \frac{4a^2(A-2iB)}{c(c-icx)^{5/2}} + \frac{a^2(A-5iB)}{c^2(c-icx)^{3/2}} + \frac{ia^2B}{c^3\sqrt{c-icx}}\right) dx, x, \tan \ldots$$

$$= -\frac{8a^3(iA+B)}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{8a^3(iA+2B)}{3cf(c-ic\tan(e+fx))^{3/2}} - \frac{2a^3(i \ldots}{c^2f\sqrt{c-ic \ldots}}$$

Mathematica [A] time = 13.1025, size = 135, normalized size = 0.96

$$\frac{a^3\sqrt{c-ic\tan(e+fx)}(\sin(3(e+2fx)) - i\cos(3(e+2fx)))(3(A-11iB)\cos(e+fx) + (11A-91iB)\cos(3(e+fx)) - 10 \ldots}{15c^3f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^(5/2),x]
```

```
[Out] (a^3*(3*(A - (11*I)*B)*Cos[e + f*x] + (11*A - (91*I)*B)*Cos[3*(e + f*x)] -
(10*I)*(A - (14*I)*B + (A - (17*I)*B)*Cos[2*(e + f*x)])*Sin[e + f*x])*((-I)
*Cos[3*(e + 2*f*x)] + Sin[3*(e + 2*f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(15*c
^3*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.076, size = 105, normalized size = 0.8

$$\frac{2\,ia^3}{fc^3}\left(iB\sqrt{c-ic\tan(fx+e)} - c(A-5\,iB)\frac{1}{\sqrt{c-ic\tan(fx+e)}} + \frac{4\,c^2(A-2\,iB)}{3}\left(c-ic\tan(fx+e)\right)^{-\frac{3}{2}} - \frac{4\,c^3(A-i \ldots}{5} \ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(I*B*(c-I*c*tan(f*x+e))^(1/2)-c*(A-5*I*B)/(c-I*c*tan(f*x+e))^
(1/2)+4/3*c^2*(A-2*I*B)/(c-I*c*tan(f*x+e))^(3/2)-4/5*c^3*(A-I*B)/(c-I*c*tan
(f*x+e))^(5/2))
```

Maxima [A] time = 1.23794, size = 150, normalized size = 1.07

$$-\frac{2i\left(-\frac{15i\sqrt{-ic\tan\left(fx+e\right)+c}Ba^3}{c^2}+\frac{\left(-ic\tan\left(fx+e\right)+c\right)^2(15A-75iB)a^3-\left(-ic\tan\left(fx+e\right)+c\right)(20A-40iB)a^3c+(12A-12iB)a^3c^2}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}c}\right)}{15cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="maxima")
```

```
[Out] -2/15*I*(-15*I*sqrt(-I*c*tan(f*x + e) + c)*B*a^3/c^2 + ((-I*c*tan(f*x + e)
+ c)^2*(15*A - 75*I*B)*a^3 - (-I*c*tan(f*x + e) + c)*(20*A - 40*I*B)*a^3*c
+ (12*A - 12*I*B)*a^3*c^2)/((-I*c*tan(f*x + e) + c)^(5/2)*c))/(c*f)
```

Fricas [A] time = 1.16856, size = 270, normalized size = 1.93

$$\frac{\sqrt{2}\left((-3iA-3B)a^3e^{(6ifx+6ie)}+(iA+11B)a^3e^{(4ifx+4ie)}+(-4iA-44B)a^3e^{(2ifx+2ie)}+(-8iA-88B)a^3\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{15c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="fricas")
```

```
[Out] 1/15*sqrt(2)*((-3*I*A - 3*B)*a^3*e^(6*I*f*x + 6*I*e) + (I*A + 11*B)*a^3*e^(
4*I*f*x + 4*I*e) + (-4*I*A - 44*B)*a^3*e^(2*I*f*x + 2*I*e) + (-8*I*A - 88*B
)*a^3)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))/(c^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{3}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3/(-I*c*tan(f*x + e)
+ c)^(5/2), x)
```

3.763 $\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=142

$$-\frac{2a^3(5B+iA)}{3c^2f(c-ic\tan(e+fx))^{3/2}}+\frac{8a^3(2B+iA)}{5cf(c-ic\tan(e+fx))^{5/2}}-\frac{8a^3(B+iA)}{7f(c-ic\tan(e+fx))^{7/2}}+\frac{2a^3B}{c^3f\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] (-8*a^3*(I*A + B))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (8*a^3*(I*A + 2*B))
/(5*c*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*a^3*(I*A + 5*B))/(3*c^2*f*(c - I
*c*Tan[e + f*x])^(3/2)) + (2*a^3*B)/(c^3*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.205122, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.047, Rules used = {3588, 77}

$$-\frac{2a^3(5B+iA)}{3c^2f(c-ic\tan(e+fx))^{3/2}}+\frac{8a^3(2B+iA)}{5cf(c-ic\tan(e+fx))^{5/2}}-\frac{8a^3(B+iA)}{7f(c-ic\tan(e+fx))^{7/2}}+\frac{2a^3B}{c^3f\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x])^
(7/2),x]
```



```
[Out] (-8*a^3*(I*A + B))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (8*a^3*(I*A + 2*B))
/(5*c*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*a^3*(I*A + 5*B))/(3*c^2*f*(c - I
*c*Tan[e + f*x])^(3/2)) + (2*a^3*B)/(c^3*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
```

```
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^3(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)^2(A+Bx)}{(c-icx)^{9/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(ac)\,\mathrm{Subst}\left(\int \left(\frac{4a^2(A-iB)}{(c-icx)^{9/2}} - \frac{4a^2(A-2iB)}{c(c-icx)^{7/2}} + \frac{a^2(A-5iB)}{c^2(c-icx)^{5/2}} + \frac{ia^2B}{c^3(c-icx)^{3/2}}\right) dx, x, \mathrm{t}\right.}{f}$$
$$= -\frac{8a^3(iA+B)}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{8a^3(iA+2B)}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{2a^3(}{3c^2f(c-ic}$$

Mathematica [A] time = 13.3834, size = 141, normalized size = 0.99

$$\frac{a^3\cos(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(4e+7fx)+i\sin(4e+7fx))(i(A+13iB)\cos(e+fx)+(89B-23iA)\cos(3(e+f}{105c^4f(\cos(fx)+i\sin(fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^3*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e +
f*x])^(7/2),x]
```

```
[Out] (a^3*Cos[e + f*x]*(I*(A + (13*I)*B)*Cos[e + f*x] + ((-23*I)*A + 89*B)*Cos[3
*(e + f*x)] + 14*(A - (2*I)*B + (A - (17*I)*B)*Cos[2*(e + f*x)])*Sin[e + f*
x])*(Cos[4*e + 7*f*x] + I*Sin[4*e + 7*f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(10
5*c^4*f*(Cos[f*x] + I*Sin[f*x])^3)
```

Maple [A] time = 0.08, size = 105, normalized size = 0.7

$$\frac{2ia^3}{fc^3}\left(-iB\frac{1}{\sqrt{c-ic\tan(fx+e)}} - \frac{4c^3(A-iB)}{7}\left(c-ic\tan(fx+e)\right)^{-\frac{7}{2}} - \frac{c(A-5iB)}{3}\left(c-ic\tan(fx+e)\right)^{-\frac{3}{2}} + \frac{4c^2(A-}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 2*I/f*a^3/c^3*(-I*B/(c-I*c*tan(f*x+e))^(1/2)-4/7*c^3*(A-I*B)/(c-I*c*tan(f*x
+e))^(7/2)-1/3*c*(A-5*I*B)/(c-I*c*tan(f*x+e))^(3/2)+4/5*c^2*(A-2*I*B)/(c-I*
c*tan(f*x+e))^(5/2))
```

Maxima [A] time = 1.17561, size = 143, normalized size = 1.01

$$-\frac{2i\left(105i\left(-ic\tan\left(fx+e\right)+c\right)^{3}Ba^{3}+\left(-ic\tan\left(fx+e\right)+c\right)^{2}(35A-175iB)a^{3}c-\left(-ic\tan\left(fx+e\right)+c\right)(84A-168iB\right.}{105\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}c^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="maxima")
```

```
[Out] -2/105*I*(105*I*(-I*c*tan(f*x + e) + c)^3*B*a^3 + (-I*c*tan(f*x + e) + c)^2
*(35*A - 175*I*B)*a^3*c - (-I*c*tan(f*x + e) + c)*(84*A - 168*I*B)*a^3*c^2
+ (60*A - 60*I*B)*a^3*c^3)/((-I*c*tan(f*x + e) + c)^(7/2)*c^3*f)
```

Fricas [A] time = 1.17568, size = 333, normalized size = 2.35

$$\frac{\sqrt{2}\left((-15iA-15B)a^{3}e^{(8ifx+8ie)}+(-18iA+24B)a^{3}e^{(6ifx+6ie)}+(iA-13B)a^{3}e^{(4ifx+4ie)}+(-4iA+52B)a^{3}e^{(2ifx+2ie)}+\right.}{210c^{4}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="fricas")
```

```
[Out] 1/210*sqrt(2)*((-15*I*A - 15*B)*a^3*e^(8*I*f*x + 8*I*e) + (-18*I*A + 24*B)*
a^3*e^(6*I*f*x + 6*I*e) + (I*A - 13*B)*a^3*e^(4*I*f*x + 4*I*e) + (-4*I*A +
52*B)*a^3*e^(2*I*f*x + 2*I*e) + (-8*I*A + 104*B)*a^3)*sqrt(c/(e^(2*I*f*x +
2*I*e) + 1))/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7/2),
x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{3}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^3*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^3/(-I*c*tan(f*x + e)
+ c)^(7/2), x)
```

3.764 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=220

$$\frac{2c^3(-9B+5iA)\sqrt{c-ic\tan(e+fx)}}{af}+\frac{c^2(-9B+5iA)(c-ic\tan(e+fx))^{3/2}}{3af}-\frac{2\sqrt{2}c^{7/2}(-9B+5iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{af}$$

```
[Out] (-2*Sqrt[2]*((5*I)*A - 9*B)*c^(7/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqr
t[2]*Sqrt[c])])/(a*f) + (2*((5*I)*A - 9*B)*c^3*Sqrt[c - I*c*Tan[e + f*x]])/
(a*f) + (((5*I)*A - 9*B)*c^2*(c - I*c*Tan[e + f*x])^(3/2))/(3*a*f) + (((5*I
)*A - 9*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(10*a*f) + ((I*A - B)*(c - I*c*T
an[e + f*x])^(7/2))/(2*a*f*(1 + I*Tan[e + f*x]))
```

Rubi [A] time = 0.275552, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 50, 63, 208}

$$\frac{2c^3(-9B+5iA)\sqrt{c-ic\tan(e+fx)}}{af}+\frac{c^2(-9B+5iA)(c-ic\tan(e+fx))^{3/2}}{3af}-\frac{2\sqrt{2}c^{7/2}(-9B+5iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{af}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[e + f*
x]),x]
```


```
[Out] (-2*Sqrt[2]*((5*I)*A - 9*B)*c^(7/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqr
t[2]*Sqrt[c])])/(a*f) + (2*((5*I)*A - 9*B)*c^3*Sqrt[c - I*c*Tan[e + f*x]])/
(a*f) + (((5*I)*A - 9*B)*c^2*(c - I*c*Tan[e + f*x])^(3/2))/(3*a*f) + (((5*I
)*A - 9*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(10*a*f) + ((I*A - B)*(c - I*c*T
an[e + f*x])^(7/2))/(2*a*f*(1 + I*Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{a+ia\tan(e+fx)}dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{5/2}}{(a+iax)^2}dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{2af(1+i\tan(e+fx))} - \frac{((5A+9iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{5/2}}{a+iax}dx,\right.}{4f}$$

$$= \frac{(5iA-9B)c(c-ic\tan(e+fx))^{5/2}}{10af} + \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{2af(1+i\tan(e+fx))} -$$

$$= \frac{(5iA-9B)c^2(c-ic\tan(e+fx))^{3/2}}{3af} + \frac{(5iA-9B)c(c-ic\tan(e+fx))}{10af}$$

$$= \frac{2(5iA-9B)c^3\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(5iA-9B)c^2(c-ic\tan(e+fx))}{3af}$$

$$= \frac{2(5iA-9B)c^3\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(5iA-9B)c^2(c-ic\tan(e+fx))}{3af}$$

$$= -\frac{2\sqrt{2}(5iA-9B)c^{7/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{af} + \frac{2(5iA-9B)c^3\sqrt{c-ic\tan}}{af}$$

Mathematica [F] time = 180.005, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[
e + f*x]),x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.097, size = 192, normalized size = 0.9

$$\frac{2\,ic}{af}\left(\frac{i}{5}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+iB\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}c+\frac{Ac}{3}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+8\,iBc^2\sqrt{c-ic\tan\left(fx+e\right)}+4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 2*I/f/a*c*(1/5*I*B*(c-I*c*tan(f*x+e))^(5/2)+I*B*(c-I*c*tan(f*x+e))^(3/2)*c+
1/3*A*(c-I*c*tan(f*x+e))^(3/2)*c+8*I*B*c^2*(c-I*c*tan(f*x+e))^(1/2)+4*A*c^2
*(c-I*c*tan(f*x+e))^(1/2)+4*c^3*((-1/2*A-1/2*I*B)*(c-I*c*tan(f*x+e))^(1/2)/
(-c-I*c*tan(f*x+e))-1/4*(5*A+9*I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(
f*x+e))^(1/2)*2^(1/2)/c^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.28195, size = 1261, normalized size = 5.73

$$\frac{15\sqrt{-\frac{\left(800\,A^2+2880i\,AB-2592\,B^2\right)c^7}{a^2f^2}}\left(afe^{\left(6i\,fx+6i\,e\right)}+2\,afe^{\left(4i\,fx+4i\,e\right)}+afe^{\left(2i\,fx+2i\,e\right)}\right)\log\left(\frac{\left(\left(-40i\,A+72\,B\right)c^4+\sqrt{2}\sqrt{-\frac{\left(800\,A^2+2880i\,AB-2592\,B\right.}{a^2f^2}}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="fricas")
```

```
[Out] 1/60*(15*sqrt(-(800*A^2 + 2880*I*A*B - 2592*B^2)*c^7/(a^2*f^2))*(a*f*e^(6*I
*f*x + 6*I*e) + 2*a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))*log(((
-40*I*A + 72*B)*c^4 + sqrt(2)*sqrt(-(800*A^2 + 2880*I*A*B - 2592*B^2)*c^7/(
a^2*f^2))*(a*f*e^(2*I*f*x + 2*I*e) + a*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))
```

```
)*e^(-I*f*x - I*e)/(a*f)) - 15*sqrt(-(800*A^2 + 2880*I*A*B - 2592*B^2)*c^7/
(a^2*f^2))*(a*f*e^(6*I*f*x + 6*I*e) + 2*a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*
I*f*x + 2*I*e))*log(((-40*I*A + 72*B)*c^4 - sqrt(2)*sqrt(-(800*A^2 + 2880*I
*A*B - 2592*B^2)*c^7/(a^2*f^2))*(a*f*e^(2*I*f*x + 2*I*e) + a*f)*sqrt(c/(e^(
2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a*f)) + sqrt(2)*((600*I*A - 1080*
B)*c^3*e^(6*I*f*x + 6*I*e) + (1400*I*A - 2520*B)*c^3*e^(4*I*f*x + 4*I*e) +
(920*I*A - 1656*B)*c^3*e^(2*I*f*x + 2*I*e) + (120*I*A - 120*B)*c^3)*sqrt(c/
(e^(2*I*f*x + 2*I*e) + 1)))/(a*f*e^(6*I*f*x + 6*I*e) + 2*a*f*e^(4*I*f*x + 4
*I*e) + a*f*e^(2*I*f*x + 2*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}{ia\tan\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(7/2)/(I*a*tan(f*x +
 e) + a), x)
```

3.765 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=180

$$\frac{c^2(-7B+3iA)\sqrt{c-ic\tan(e+fx)}}{af}-\frac{\sqrt{2}c^{5/2}(-7B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{af}+\frac{c(-7B+3iA)(c-ic\tan(e+fx))^{3/2}}{6af}$$

```
[Out] -((Sqrt[2]*((3*I)*A - 7*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt
[2]*Sqrt[c])])/(a*f)) + (((3*I)*A - 7*B)*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(a
*f) + (((3*I)*A - 7*B)*c*(c - I*c*Tan[e + f*x])^(3/2))/(6*a*f) + ((I*A - B)
*(c - I*c*Tan[e + f*x])^(5/2))/(2*a*f*(1 + I*Tan[e + f*x]))
```

Rubi [A] time = 0.239907, antiderivative size = 180, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 50, 63, 208}

$$\frac{c^2(-7B+3iA)\sqrt{c-ic\tan(e+fx)}}{af}-\frac{\sqrt{2}c^{5/2}(-7B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{af}+\frac{c(-7B+3iA)(c-ic\tan(e+fx))^{3/2}}{6af}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[e + f*
x]),x]
```


```
[Out] -((Sqrt[2]*((3*I)*A - 7*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt
[2]*Sqrt[c])])/(a*f)) + (((3*I)*A - 7*B)*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(a
*f) + (((3*I)*A - 7*B)*c*(c - I*c*Tan[e + f*x])^(3/2))/(6*a*f) + ((I*A - B)
*(c - I*c*Tan[e + f*x])^(5/2))/(2*a*f*(1 + I*Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{(a+iax)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{2af(1+i\tan(e+fx))} - \frac{((3A+7iB)c)\,\mathrm{Subst}\left(\int \frac{(c-icx)^{3/2}}{a+iax}\,dx \right.}{4f}$$

$$= \frac{(3iA-7B)c(c-ic\tan(e+fx))^{3/2}}{6af} + \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{2af(1+i\tan(e+fx))}$$

$$= \frac{(3iA-7B)c^2\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(3iA-7B)c(c-ic\tan(e+fx))^{3}}{6af}$$

$$= \frac{(3iA-7B)c^2\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(3iA-7B)c(c-ic\tan(e+fx))^{3}}{6af}$$

$$= -\frac{\sqrt{2}(3iA-7B)c^{5/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{af} + \frac{(3iA-7B)c^2\sqrt{c-ic\,\mathrm{t}}}{af}$$

Mathematica [F] time = 180.007, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[
e + f*x]),x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.101, size = 150, normalized size = 0.8

$$\frac{2\,ic}{af}\left(\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+3\,iBc\sqrt{c-ic\tan\left(fx+e\right)}+Ac\sqrt{c-ic\tan\left(fx+e\right)}+4\,c^2\left(\frac{(-A/4-i/4B)\sqrt{c-ic\tan}}{-c-ic\tan\left(fx+e\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 2*I/f/a*c*(1/3*I*B*(c-I*c*tan(f*x+e))^(3/2)+3*I*B*c*(c-I*c*tan(f*x+e))^(1/2
)+A*c*(c-I*c*tan(f*x+e))^(1/2)+4*c^2*((-1/4*A-1/4*I*B)*(c-I*c*tan(f*x+e))^(
1/2)/(-c-I*c*tan(f*x+e))-1/8*(3*A+7*I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c
*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.1653, size = 1057, normalized size = 5.87

$$\frac{3\left(afe^{(4ifx+4ie)}+afe^{(2ifx+2ie)}\right)\sqrt{-\frac{(72A^2+336iAB-392B^2)c^5}{a^2f^2}}\log\left(\frac{\left((-12iA+28B)c^3+\sqrt{2}\left(afe^{(2ifx+2ie)}+af\right)\sqrt{-\frac{(72A^2+336iAB-392B^2)c^5}{a^2f^2}}\sqrt{\frac{c}{e^{(2ifx\cdots}}}\right.}{af}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="fricas")
```

```
[Out] 1/12*(3*(a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))*sqrt(-(72*A^2 +
 336*I*A*B - 392*B^2)*c^5/(a^2*f^2))*log(((-12*I*A + 28*B)*c^3 + sqrt(2)*(a
*f*e^(2*I*f*x + 2*I*e) + a*f)*sqrt(-(72*A^2 + 336*I*A*B - 392*B^2)*c^5/(a^2
*f^2))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a*f)) - 3*(a*f*
e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))*sqrt(-(72*A^2 + 336*I*A*B -
392*B^2)*c^5/(a^2*f^2))*log(((-12*I*A + 28*B)*c^3 - sqrt(2)*(a*f*e^(2*I*f*x
 + 2*I*e) + a*f)*sqrt(-(72*A^2 + 336*I*A*B - 392*B^2)*c^5/(a^2*f^2))*sqrt(c
```

```
/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a*f)) + sqrt(2)*((36*I*A - 8
4*B)*c^2*e^(4*I*f*x + 4*I*e) + (48*I*A - 112*B)*c^2*e^(2*I*f*x + 2*I*e) + (
12*I*A - 12*B)*c^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))/(a*f*e^(4*I*f*x + 4*
I*e) + a*f*e^(2*I*f*x + 2*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}{ia\tan\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(5/2)/(I*a*tan(f*x +
 e) + a), x)
```

3.766 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=144

$$-\frac{c^{3/2}(-5B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{\sqrt{2}af}+\frac{c(-5B+iA)\sqrt{c-ic\tan(e+fx)}}{2af}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{2af(1+i\tan(e+fx))}$$

```
[Out] -(((I*A - 5*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])
])/(Sqrt[2]*a*f)) + ((I*A - 5*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(2*a*f) + ((
I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(2*a*f*(1 + I*Tan[e + f*x]))
```

Rubi [A] time = 0.220348, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 50, 63, 208}

$$-\frac{c^{3/2}(-5B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{\sqrt{2}af}+\frac{c(-5B+iA)\sqrt{c-ic\tan(e+fx)}}{2af}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{2af(1+i\tan(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[e + f*
x]),x]
```


```
[Out] -(((I*A - 5*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])
])/(Sqrt[2]*a*f)) + ((I*A - 5*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(2*a*f) + ((
I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(2*a*f*(1 + I*Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{(a+iax)^2}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{2af(1+i\tan(e+fx))} - \frac{((A+5iB)c)\,\text{Subst}\left(\int \frac{\sqrt{c-icx}}{a+iax}\,dx,x,\text{t}\right.}{4f}$$

$$= \frac{(iA-5B)c\sqrt{c-ic\tan(e+fx)}}{2af} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{2af(1+i\tan(e+fx))} - \frac{((A}{}$$

$$= \frac{(iA-5B)c\sqrt{c-ic\tan(e+fx)}}{2af} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{2af(1+i\tan(e+fx))} - \frac{((i}{}$$

$$= -\frac{(iA-5B)c^{3/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{\sqrt{2}af} + \frac{(iA-5B)c\sqrt{c-ic\tan(e+f}}{2af}$$

Mathematica [F] time = 180.002, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[
e + f*x]),x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.101, size = 109, normalized size = 0.8

$$\frac{2\,ic}{af}\left(iB\sqrt{c-ic\tan\left(fx+e\right)}+c\left(\frac{1}{-c-ic\tan\left(fx+e\right)}\left(-\frac{A}{2}-\frac{i}{2}B\right)\sqrt{c-ic\tan\left(fx+e\right)}-\frac{(A+5\,iB)\sqrt{2}}{4}\text{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{c}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 2*I/f/a*c*(I*B*(c-I*c*tan(f*x+e))^(1/2)+c*((-1/2*A-1/2*I*B)*(c-I*c*tan(f*x+
e))^(1/2)/(-c-I*c*tan(f*x+e))-1/4*(A+5*I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-
```

```
I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.12786, size = 855, normalized size = 5.94

$$\left(af\sqrt{-\frac{\left(2A^2+20iAB-50B^2\right)c^3}{a^2f^2}}e^{(2ifx+2ie)}\log\left(\frac{\left((-2iA+10B)c^2+\sqrt{2}\left(afe^{(2ifx+2ie)}+af\right)\sqrt{-\frac{\left(2A^2+20iAB-50B^2\right)c^3}{a^2f^2}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}\right)e^{(-ifx-ie)}}{af}\right)-af\sqrt{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="fricas")
```

```
[Out] 1/4*(a*f*sqrt(-(2*A^2 + 20*I*A*B - 50*B^2)*c^3/(a^2*f^2))*e^(2*I*f*x + 2*I*
e)*log(((-2*I*A + 10*B)*c^2 + sqrt(2)*(a*f*e^(2*I*f*x + 2*I*e) + a*f)*sqrt(
-(2*A^2 + 20*I*A*B - 50*B^2)*c^3/(a^2*f^2))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
)))*e^(-I*f*x - I*e)/(a*f)) - a*f*sqrt(-(2*A^2 + 20*I*A*B - 50*B^2)*c^3/(a^
2*f^2))*e^(2*I*f*x + 2*I*e)*log(((-2*I*A + 10*B)*c^2 - sqrt(2)*(a*f*e^(2*I*
f*x + 2*I*e) + a*f)*sqrt(-(2*A^2 + 20*I*A*B - 50*B^2)*c^3/(a^2*f^2))*sqrt(c
/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a*f)) + sqrt(2)*((2*I*A - 10
*B)*c*e^(2*I*f*x + 2*I*e) + (2*I*A - 2*B)*c)*sqrt(c/(e^(2*I*f*x + 2*I*e) +
1)))*e^(-2*I*f*x - 2*I*e)/(a*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}{i\,a\tan\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(3/2)/(I*a*tan(f*x +
 e) + a), x)
```

3.767 $\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{a+ia\tan(e+fx)}\,dx$

Optimal. Leaf size=109

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{2af(1+i\tan(e+fx))}+\frac{\sqrt{c}(3B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{2\sqrt{2}af}$$

```
[Out] ((I*A + 3*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])
/(2*Sqrt[2]*a*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(2*a*f*(1 + I*Tan
[e + f*x]))
```

Rubi [A] time = 0.185213, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.093, Rules used = {3588, 78, 63, 208}

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{2af(1+i\tan(e+fx))}+\frac{\sqrt{c}(3B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{2\sqrt{2}af}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e + f*x]
),x]
```

```
[Out] ((I*A + 3*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])
/(2*Sqrt[2]*a*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(2*a*f*(1 + I*Tan
[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{a+ia\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{2af(1+i\tan(e+fx))} + \frac{((A-3iB)c)\,\text{Subst}\left(\int \frac{1}{(a+iax)\sqrt{c-icx}}\,dx, x,\right.}{4f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{2af(1+i\tan(e+fx))} + \frac{(iA+3B)\,\text{Subst}\left(\int \frac{1}{2a-\frac{ax^2}{c}}\,dx, x, \sqrt{c-ic\right.}{2f}$$

$$= \frac{(iA+3B)\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{2\sqrt{2}af} + \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{2af(1+i\tan(e+fx))}$$

Mathematica [A] time = 2.46795, size = 168, normalized size = 1.54

$$\frac{(\cos(fx)+i\sin(fx))(A+B\tan(e+fx))\left(2(A+iB)\cos(e+fx)(\sin(fx)+i\cos(fx))\sqrt{c-ic\tan(e+fx)}+\sqrt{2}\sqrt{c}(3B+i\right.}{4f(a+ia\tan(e+fx))(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e
+ f*x]),x]
```

```
[Out] ((Cos[f*x] + I*Sin[f*x])*(A + B*Tan[e + f*x])*(Sqrt[2]*(I*A + 3*B)*Sqrt[c]*
ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]*(Cos[e] + I*Sin[e]) +
 2*(A + I*B)*Cos[e + f*x]*(I*Cos[f*x] + Sin[f*x])*Sqrt[c - I*c*Tan[e + f*x]
]))/(4*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x]))
```

Maple [A] time = 0.136, size = 88, normalized size = 0.8

$$\frac{2\,ic}{af}\left(\frac{1}{-c-ic\tan\left(fx+e\right)}\left(-\frac{A}{4}-\frac{i}{4}B\right)\sqrt{c-ic\tan\left(fx+e\right)}+\frac{\left(A-3\,iB\right)\sqrt{2}}{8}\mathrm{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{c-ic\tan\left(fx+e\right)}\frac{1}{\sqrt{c}}\right)\frac{1}{\sqrt{c}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 2*I/f/a*c*((-1/4*A-1/4*I*B)*(c-I*c*tan(f*x+e))^(1/2)/(-c-I*c*tan(f*x+e))+1/
8*(A-3*I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^
(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.09983, size = 841, normalized size = 7.72

$$\left(\sqrt{\frac{1}{2}}af\sqrt{-\frac{\left(A^2-6i\,AB-9\,B^2\right)c}{a^2f^2}}e^{\left(2i\,fx+2i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(afe^{\left(2i\,fx+2i\,e\right)}+af\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{\left(A^2-6i\,AB-9\,B^2\right)c}{a^2f^2}}+\left(i\,A+3\,B\right)c\right)e^{\left(-i\,fx-i\,e\right)}}{af}\right)-\sqrt{\frac{1}{2}}af\sqrt{-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, a
lgorithm="fricas")
```

```
[Out] 1/4*(sqrt(1/2)*a*f*sqrt(-(A^2 - 6*I*A*B - 9*B^2)*c/(a^2*f^2))*e^(2*I*f*x +
2*I*e)*log((sqrt(2)*sqrt(1/2)*(a*f*e^(2*I*f*x + 2*I*e) + a*f)*sqrt(c/(e^(2*
I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 6*I*A*B - 9*B^2)*c/(a^2*f^2)) + (I*A + 3*
B)*c)*e^(-I*f*x - I*e)/(a*f)) - sqrt(1/2)*a*f*sqrt(-(A^2 - 6*I*A*B - 9*B^2)
*c/(a^2*f^2))*e^(2*I*f*x + 2*I*e)*log(-(sqrt(2)*sqrt(1/2)*(a*f*e^(2*I*f*x +
 2*I*e) + a*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 6*I*A*B - 9*B
^2)*c/(a^2*f^2)) - (I*A + 3*B)*c)*e^(-I*f*x - I*e)/(a*f)) + sqrt(2)*((I*A -
 B)*e^(2*I*f*x + 2*I*e) + I*A - B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-2
*I*f*x - 2*I*e)/(a*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)\sqrt{-ic\tan(fx+e)+c}}{ia\tan(fx+e)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e)),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(-I*c*tan(f*x + e) + c)/(I*a*tan(f*x + e
) + a), x)
```

3.768 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=141

$$\frac{-B+iA}{2af(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}-\frac{B+3iA}{4af\sqrt{c-ic\tan(e+fx)}}+\frac{(B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a\sqrt{c}f}$$

```
[Out] (((3*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(4*Sq
rt[2]*a*Sqrt[c]*f) - ((3*I)*A + B)/(4*a*f*Sqrt[c - I*c*Tan[e + f*x]]) + (I*
A - B)/(2*a*f*(1 + I*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.219454, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{-B+iA}{2af(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}-\frac{B+3iA}{4af\sqrt{c-ic\tan(e+fx)}}+\frac{(B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a\sqrt{c}f}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]]
),x]
```


```
[Out] (((3*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(4*Sq
rt[2]*a*Sqrt[c]*f) - ((3*I)*A + B)/(4*a*f*Sqrt[c - I*c*Tan[e + f*x]]) + (I*
A - B)/(2*a*f*(1 + I*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{2af(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}} + \frac{((3A-iB)c)\,\text{Subst}\left(\int \frac{}{(a-}\right.}{}$$

$$= -\frac{3iA+B}{4af\sqrt{c-ic\tan(e+fx)}} + \frac{iA-B}{2af(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{3iA+B}{4af\sqrt{c-ic\tan(e+fx)}} + \frac{iA-B}{2af(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}$$

$$= \frac{(3iA+B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a\sqrt{c}f} - \frac{3iA+B}{4af\sqrt{c-ic\tan(e+fx)}} + \frac{}{2af(1-}$$

Mathematica [A] time = 3.62969, size = 160, normalized size = 1.13

$$\frac{e^{-2i(e+fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}\left((B+3iA)e^{2i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)-i\left(1+e^{2i(e+fx)}\right)\left(A\left(-1+2e^{2i(e+fx)}\right)-iB\left(\right.\right.\right.}{4\sqrt{2}acf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*Sqrt[c - I*c*Tan[e +
 f*x]]),x]
```

```
[Out] (Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*((-I)*(1 + E^((2*I)*(e + f*x)))*(A*(-1 +
 2*E^((2*I)*(e + f*x))) - I*B*(1 + 2*E^((2*I)*(e + f*x)))) + ((3*I)*A + B)*
E^((2*I)*(e + f*x))*Sqrt[1 + E^((2*I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)
*(e + f*x))]]))/(4*Sqrt[2]*a*c*E^((2*I)*(e + f*x))*f)
```

Maple [A] time = 0.16, size = 121, normalized size = 0.9

$$\frac{2\,ic}{af}\left(-\frac{1}{4\,c}\left(\frac{1}{-c-ic\tan\left(fx+e\right)}\left(\frac{i}{2}B+\frac{A}{2}\right)\sqrt{c-ic\tan\left(fx+e\right)}-\frac{(3\,A-iB)\sqrt{2}}{4}\text{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{c-ic\tan\left(fx+e\right)}\frac{1}{\sqrt{c}}\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] 2*I/f/a*c*(-1/4/c*((1/2*I*B+1/2*A)*(c-I*c*tan(f*x+e))^(1/2)/(-c-I*c*tan(f*x
+e))-1/4*(3*A-I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(
1/2)/c^(1/2)))-1/4/c*(A-I*B)/(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.11735, size = 903, normalized size = 6.4

$$\left(\sqrt{\frac{1}{2}}acf\sqrt{-\frac{9A^2-6iAB-B^2}{a^2cf^2}}e^{(2ifx+2ie)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(afe^{(2ifx+2ie)}+af\right)\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}\sqrt{-\frac{9A^2-6iAB-B^2}{a^2cf^2}}+3iA+B\right)e^{(-ifx-ie)}}{2af}\right)-\sqrt{\frac{1}{2}}acf\sqrt{-\frac{9A^2-6}{a^2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="fricas")
```

```
[Out] 1/8*(sqrt(1/2)*a*c*f*sqrt(-(9*A^2 - 6*I*A*B - B^2)/(a^2*c*f^2))*e^(2*I*f*x
+ 2*I*e)*log(1/2*(sqrt(2)*sqrt(1/2)*(a*f*e^(2*I*f*x + 2*I*e) + a*f)*sqrt(c/
(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(9*A^2 - 6*I*A*B - B^2)/(a^2*c*f^2)) + 3*I
*A + B)*e^(-I*f*x - I*e)/(a*f)) - sqrt(1/2)*a*c*f*sqrt(-(9*A^2 - 6*I*A*B -
B^2)/(a^2*c*f^2))*e^(2*I*f*x + 2*I*e)*log(-1/2*(sqrt(2)*sqrt(1/2)*(a*f*e^(2
*I*f*x + 2*I*e) + a*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(9*A^2 - 6*I
*A*B - B^2)/(a^2*c*f^2)) - 3*I*A - B)*e^(-I*f*x - I*e)/(a*f)) + sqrt(2)*((-
2*I*A - 2*B)*e^(4*I*f*x + 4*I*e) + (-I*A - 3*B)*e^(2*I*f*x + 2*I*e) + I*A -
```

```
B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-2*I*f*x - 2*I*e)/(a*c*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2)/(a+I*a*tan(f*x+e)),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(i\,a\tan\left(fx+e\right)+a\right)\sqrt{-i\,c\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e)),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)*sqrt(-I*c*tan(f*x +
e) + c)), x)
```

3.769 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=184

$$\frac{(-B+5iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}ac^{3/2}f}+\frac{-B+iA}{2af(1+i\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}-\frac{-B+5iA}{8acf\sqrt{c-ic\tan(e+fx)}}-\frac{}{12af(c}$$

```
[Out] (((5*I)*A - B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(8*Sq
rt[2]*a*c^(3/2)*f) - ((5*I)*A - B)/(12*a*f*(c - I*c*Tan[e + f*x])^(3/2)) +
(I*A - B)/(2*a*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2)) - ((5*I
)*A - B)/(8*a*c*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.26758, antiderivative size = 184, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{(-B+5iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}ac^{3/2}f}+\frac{-B+iA}{2af(1+i\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}-\frac{-B+5iA}{8acf\sqrt{c-ic\tan(e+fx)}}-\frac{}{12af(c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/
2)),x]
```


```
[Out] (((5*I)*A - B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(8*Sq
rt[2]*a*c^(3/2)*f) - ((5*I)*A - B)/(12*a*f*(c - I*c*Tan[e + f*x])^(3/2)) +
(I*A - B)/(2*a*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2)) - ((5*I
)*A - B)/(8*a*c*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^{5/2}}dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+fx))^{3/2}} + \frac{((5A+iB)c)\operatorname{Subst}\left(\int\right.}{}$$

$$= -\frac{5iA-B}{12af(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+f}$$

$$= -\frac{5iA-B}{12af(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+f}$$

$$= -\frac{5iA-B}{12af(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+f}$$

$$= \frac{(5iA-B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}ac^{3/2}f} - \frac{5iA-B}{12af(c-ic\tan(e+fx))^{3/2}} + \frac{}{2af}$$

Mathematica [A] time = 6.11132, size = 239, normalized size = 1.3

$$-\frac{e^{-i(e+2fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}(\cos(fx)+i\sin(fx))(A+B\tan(e+fx))\left(\left(1+e^{2i(e+fx)}\right)\left(iA\left(14e^{2i(e+fx)}+2e^{4i(e+fx)}-3\right)+B\left(2e^{2i(e+\right.\right.\right.}{24\sqrt{2}c^2f(a+ia\tan(e+fx))(A\cos(e+fx)+B\sin}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^(3/2)),x]
```

```
[Out] -(Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*((1 + E^((2*I)*(e + f*x)))*(B*(3 + 2*E^
((2*I)*(e + f*x)) + 2*E^((4*I)*(e + f*x))) + I*A*(-3 + 14*E^((2*I)*(e + f*x
)) + 2*E^((4*I)*(e + f*x)))) + 3*((-5*I)*A + B)*E^((2*I)*(e + f*x))*Sqrt[1
+ E^((2*I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]])*(Cos[f*x] +
I*Sin[f*x])*(A + B*Tan[e + f*x]))/(24*Sqrt[2]*c^2*E^(I*(e + 2*f*x))*f*(A*Co
s[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x]))
```

Maple [A] time = 0.1, size = 141, normalized size = 0.8

$$\frac{2\,ic}{af}\left(-\frac{1}{4\,c^2}\left(\frac{1}{-c-ic\tan\left(fx+e\right)}\left(\frac{A}{4}+\frac{i}{4}B\right)\sqrt{c-ic\tan\left(fx+e\right)}-\frac{(5\,A+iB)\,\sqrt{2}}{8}\mathrm{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{c-ic\tan\left(fx+e\right)}\frac{1}{\sqrt{c}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 2*I/f/a*c*(-1/4/c^2*((1/4*A+1/4*I*B)*(c-I*c*tan(f*x+e))^(1/2)/(-c-I*c*tan(f
*x+e))-1/8*(5*A+I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2
^(1/2)/c^(1/2)))-1/4*A/c^2/(c-I*c*tan(f*x+e))^(1/2)-1/12/c*(A-I*B)/(c-I*c*t
an(f*x+e))^(3/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.21914, size = 1017, normalized size = 5.53

$$\left(3\sqrt{\frac{1}{2}}ac^2f\sqrt{-\frac{25\,A^2+10i\,AB-B^2}{a^2c^3f^2}}e^{\left(2i\,fx+2i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(acfe^{\left(2i\,fx+2i\,e\right)}+acf\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{25\,A^2+10i\,AB-B^2}{a^2c^3f^2}}+5i\,A-B\right)e^{\left(-i\,fx-i\,e\right)}}{4\,acf}\right)-3\sqrt{\frac{1}{2}}ac\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 1/48*(3*sqrt(1/2)*a*c^2*f*sqrt(-(25*A^2 + 10*I*A*B - B^2)/(a^2*c^3*f^2))*e^
(2*I*f*x + 2*I*e)*log(1/4*(sqrt(2)*sqrt(1/2)*(a*c*f*e^(2*I*f*x + 2*I*e) + a
*c*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(25*A^2 + 10*I*A*B - B^2)/(a^
2*c^3*f^2)) + 5*I*A - B)*e^(-I*f*x - I*e)/(a*c*f)) - 3*sqrt(1/2)*a*c^2*f*sq
rt(-(25*A^2 + 10*I*A*B - B^2)/(a^2*c^3*f^2))*e^(2*I*f*x + 2*I*e)*log(-1/4*(
sqrt(2)*sqrt(1/2)*(a*c*f*e^(2*I*f*x + 2*I*e) + a*c*f)*sqrt(c/(e^(2*I*f*x +
2*I*e) + 1))*sqrt(-(25*A^2 + 10*I*A*B - B^2)/(a^2*c^3*f^2)) - 5*I*A + B)*e^
(-I*f*x - I*e)/(a*c*f)) + sqrt(2)*((-2*I*A - 2*B)*e^(6*I*f*x + 6*I*e) + (-1
6*I*A - 4*B)*e^(4*I*f*x + 4*I*e) + (-11*I*A - 5*B)*e^(2*I*f*x + 2*I*e) + 3*
I*A - 3*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-2*I*f*x - 2*I*e)/(a*c^2*f
)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B \tan \left(fx + e\right) + A}{\left(i\,a \tan \left(fx + e\right) + a\right)\left(-i\,c \tan \left(fx + e\right) + c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e) +
 c)^(3/2)), x)
```

3.770 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{-3B+7iA}{16ac^2f\sqrt{c-ic\tan(e+fx)}}+\frac{(-3B+7iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}ac^{5/2}f}-\frac{-3B+7iA}{24acf(c-ic\tan(e+fx))^{3/2}}-\frac{-3B+7i}{20af(c-ic\tan(e}$$

```
[Out] (((7*I)*A - 3*B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(16
*Sqrt[2]*a*c^(5/2)*f) - ((7*I)*A - 3*B)/(20*a*f*(c - I*c*Tan[e + f*x])^(5/2
)) + (I*A - B)/(2*a*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2)) -
((7*I)*A - 3*B)/(24*a*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - ((7*I)*A - 3*B)/(
16*a*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.288617, antiderivative size = 223, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$-\frac{-3B+7iA}{16ac^2f\sqrt{c-ic\tan(e+fx)}}+\frac{(-3B+7iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}ac^{5/2}f}-\frac{-3B+7iA}{24acf(c-ic\tan(e+fx))^{3/2}}-\frac{-3B+7i}{20af(c-ic\tan(e}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/
2)),x]
```

```
[Out] (((7*I)*A - 3*B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(16
*Sqrt[2]*a*c^(5/2)*f) - ((7*I)*A - 3*B)/(20*a*f*(c - I*c*Tan[e + f*x])^(5/2
)) + (I*A - B)/(2*a*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2)) -
((7*I)*A - 3*B)/(24*a*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - ((7*I)*A - 3*B)/(
16*a*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^2(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+fx))^{5/2}} + \frac{((7A+3iB)c)\,\text{Subst}}{}$$

$$= -\frac{7iA-3B}{20af(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+}$$

$$= -\frac{7iA-3B}{20af(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+}$$

$$= -\frac{7iA-3B}{20af(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+}$$

$$= -\frac{7iA-3B}{20af(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{2af(1+i\tan(e+fx))(c-ic\tan(e+}$$

$$= \frac{(7iA-3B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}ac^{5/2}f} - \frac{7iA-3B}{20af(c-ic\tan(e+fx))^{5/2}} +$$

Mathematica [A] time = 7.55901, size = 213, normalized size = 0.96

$$-\frac{e^{-2i(e+fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}\left(\left(1+e^{2i(e+fx)}\right)\left(iA\left(116e^{2i(e+fx)}+32e^{4i(e+fx)}+6e^{6i(e+fx)}-15\right)+3B\left(-8e^{2i(e+fx)}+4e^{4i(e+fx)}+2e^{6i(}\right.\right.\right.}{240\sqrt{2}ac^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^(5/2)),x]
```

```
[Out] -(Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*((1 + E^((2*I)*(e + f*x)))*(3*B*(5 - 8*
E^((2*I)*(e + f*x)) + 4*E^((4*I)*(e + f*x)) + 2*E^((6*I)*(e + f*x))) + I*A*
(-15 + 116*E^((2*I)*(e + f*x)) + 32*E^((4*I)*(e + f*x)) + 6*E^((6*I)*(e + f
*x)))) + 15*((-7*I)*A + 3*B)*E^((2*I)*(e + f*x))*Sqrt[1 + E^((2*I)*(e + f*x
))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]]))/(240*Sqrt[2]*a*c^3*E^((2*I)*(e
 + f*x))*f)
```

Maple [A] time = 0.103, size = 168, normalized size = 0.8

$$\frac{2ic}{af}\left(-\frac{1}{16c^3}\left(\frac{1}{-c-ic\tan\left(fx+e\right)}\left(\frac{i}{2}B+\frac{A}{2}\right)\sqrt{c-ic\tan\left(fx+e\right)}-\frac{(7A+3iB)\sqrt{2}}{4}\mathrm{Artanh}\left(\frac{\sqrt{2}}{2}\sqrt{c-ic\tan\left(fx+e\right)}\frac{1}{\sqrt{}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 2*I/f/a*c*(-1/16/c^3*((1/2*I*B+1/2*A)*(c-I*c*tan(f*x+e))^(1/2)/(-c-I*c*tan(
f*x+e))-1/4*(7*A+3*I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2
)*2^(1/2)/c^(1/2)))-1/12*A/c^2/(c-I*c*tan(f*x+e))^(3/2)-1/16/c^3*(3*A+I*B)/
(c-I*c*tan(f*x+e))^(1/2)-1/20/c*(A-I*B)/(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.36938, size = 1112, normalized size = 4.99

$$\frac{\left(15\sqrt{\frac{1}{2}}ac^3f\sqrt{-\frac{49A^2+42iAB-9B^2}{a^2c^5f^2}}e^{\left(2ifx+2ie\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(ac^2fe^{\left(2ifx+2ie\right)}+ac^2f\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}\sqrt{-\frac{49A^2+42iAB-9B^2}{a^2c^5f^2}}+7iA-3B\right)e^{\left(-ifx-ie\right)}}{8ac^2f}\right)-15\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 1/480*(15*sqrt(1/2)*a*c^3*f*sqrt(-(49*A^2 + 42*I*A*B - 9*B^2)/(a^2*c^5*f^2)
)*e^(2*I*f*x + 2*I*e)*log(1/8*(sqrt(2)*sqrt(1/2)*(a*c^2*f*e^(2*I*f*x + 2*I*
e) + a*c^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(49*A^2 + 42*I*A*B -
9*B^2)/(a^2*c^5*f^2)) + 7*I*A - 3*B)*e^(-I*f*x - I*e)/(a*c^2*f)) - 15*sqrt(
1/2)*a*c^3*f*sqrt(-(49*A^2 + 42*I*A*B - 9*B^2)/(a^2*c^5*f^2))*e^(2*I*f*x +
2*I*e)*log(-1/8*(sqrt(2)*sqrt(1/2)*(a*c^2*f*e^(2*I*f*x + 2*I*e) + a*c^2*f)*
sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(49*A^2 + 42*I*A*B - 9*B^2)/(a^2*c^
5*f^2)) - 7*I*A + 3*B)*e^(-I*f*x - I*e)/(a*c^2*f)) + sqrt(2)*((-6*I*A - 6*B
)*e^(8*I*f*x + 8*I*e) + (-38*I*A - 18*B)*e^(6*I*f*x + 6*I*e) + (-148*I*A +
12*B)*e^(4*I*f*x + 4*I*e) + (-101*I*A + 9*B)*e^(2*I*f*x + 2*I*e) + 15*I*A -
 15*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-2*I*f*x - 2*I*e)/(a*c^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e) +
 c)^(5/2)), x)
```

3.771 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=275

$$-\frac{7c^4(-13B+5iA)\sqrt{c-ic\tan(e+fx)}}{2a^2f}-\frac{7c^3(-13B+5iA)(c-ic\tan(e+fx))^{3/2}}{12a^2f}-\frac{7c^2(-13B+5iA)(c-ic\tan(e+fx))^{5/}}{40a^2f}$$

```
[Out] (7*((5*I)*A - 13*B)*c^(9/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqr
t[c])])/(Sqrt[2]*a^2*f) - (7*((5*I)*A - 13*B)*c^4*Sqrt[c - I*c*Tan[e + f*x]
])/(2*a^2*f) - (7*((5*I)*A - 13*B)*c^3*(c - I*c*Tan[e + f*x])^(3/2))/(12*a^
2*f) - (7*((5*I)*A - 13*B)*c^2*(c - I*c*Tan[e + f*x])^(5/2))/(40*a^2*f) - (
((5*I)*A - 13*B)*c*(c - I*c*Tan[e + f*x])^(7/2))/(8*a^2*f*(1 + I*Tan[e + f*
x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(9/2))/(4*a^2*f*(1 + I*Tan[e + f*x
])^2)
```

Rubi [A] time = 0.301172, antiderivative size = 275, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.14, Rules used = {3588, 78, 47, 50, 63, 208}

$$-\frac{7c^4(-13B+5iA)\sqrt{c-ic\tan(e+fx)}}{2a^2f}-\frac{7c^3(-13B+5iA)(c-ic\tan(e+fx))^{3/2}}{12a^2f}-\frac{7c^2(-13B+5iA)(c-ic\tan(e+fx))^{5/}}{40a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(9/2))/(a + I*a*Tan[e + f*
x])^2,x]
```


```
[Out] (7*((5*I)*A - 13*B)*c^(9/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqr
t[c])])/(Sqrt[2]*a^2*f) - (7*((5*I)*A - 13*B)*c^4*Sqrt[c - I*c*Tan[e + f*x]
])/(2*a^2*f) - (7*((5*I)*A - 13*B)*c^3*(c - I*c*Tan[e + f*x])^(3/2))/(12*a^
2*f) - (7*((5*I)*A - 13*B)*c^2*(c - I*c*Tan[e + f*x])^(5/2))/(40*a^2*f) - (
((5*I)*A - 13*B)*c*(c - I*c*Tan[e + f*x])^(7/2))/(8*a^2*f*(1 + I*Tan[e + f*
x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(9/2))/(4*a^2*f*(1 + I*Tan[e + f*x
])^2)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{7/2}}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{9/2}}{4a^2f(1+i\tan(e+fx))^2} - \frac{((5A+13iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{7/2}}{(a+iax)^2}\,dx\right.}{8f}$$

$$= -\frac{(5iA-13B)c(c-ic\tan(e+fx))^{7/2}}{8a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c-ic\tan(e+fx))^{9/2}}{4a^2f(1+i\tan(e+fx))^2}$$

$$= -\frac{7(5iA-13B)c^2(c-ic\tan(e+fx))^{5/2}}{40a^2f} - \frac{(5iA-13B)c(c-ic\tan(e+}{8a^2f(1+i\tan(e+fx)}$$

$$= -\frac{7(5iA-13B)c^3(c-ic\tan(e+fx))^{3/2}}{12a^2f} - \frac{7(5iA-13B)c^2(c-ic\tan(e}{40a^2f}$$

$$= -\frac{7(5iA-13B)c^4\sqrt{c-ic\tan(e+fx)}}{2a^2f} - \frac{7(5iA-13B)c^3(c-ic\tan(e+}{12a^2f}$$

$$= -\frac{7(5iA-13B)c^4\sqrt{c-ic\tan(e+fx)}}{2a^2f} - \frac{7(5iA-13B)c^3(c-ic\tan(e+}{12a^2f}$$

$$= \frac{7(5iA-13B)c^{9/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{\sqrt{2}a^2f} - \frac{7(5iA-13B)c^4\sqrt{c-ic\tan}}{2a^2f}$$

Mathematica [F] time = 180.005, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(9/2))/(a + I*a*Tan[
e + f*x])^2,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.104, size = 221, normalized size = 0.8

$$\frac{-2\,ic^{2}}{fa^{2}}\left(\frac{i}{5}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\frac{5\,i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}c+\frac{Ac}{3}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+18\,iBc^{2}\sqrt{c-ic\tan\left(fx+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -2*I/f/a^2*c^2*(1/5*I*B*(c-I*c*tan(f*x+e))^(5/2)+5/3*I*B*(c-I*c*tan(f*x+e))
^(3/2)*c+1/3*A*(c-I*c*tan(f*x+e))^(3/2)*c+18*I*B*c^2*(c-I*c*tan(f*x+e))^(1/
2)+6*A*c^2*(c-I*c*tan(f*x+e))^(1/2)+8*c^3*(((-21/16*I*B-13/16*A)*(c-I*c*tan
(f*x+e))^(3/2)+(19/8*I*B*c+11/8*A*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(
f*x+e))^2-7/32*(13*I*B+5*A)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^
(1/2)*2^(1/2)/c^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.68899, size = 1382, normalized size = 5.03

$$\frac{15\sqrt{-\frac{\left(2450\,A^{2}+12740i\,AB-16562\,B^{2}\right)c^{9}}{a^{4}f^{2}}}\left(a^{2}fe^{\left(8i\,fx+8i\,e\right)}+2\,a^{2}fe^{\left(6i\,fx+6i\,e\right)}+a^{2}fe^{\left(4i\,fx+4i\,e\right)}\right)\log\left(\frac{\left((70i\,A-182\,B)c^{5}+\sqrt{2}\sqrt{-\frac{\left(2450\,A^{2}+12740i\right.}{a^{4}}}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="fricas")
```

```
[Out] 1/60*(15*sqrt(-(2450*A^2 + 12740*I*A*B - 16562*B^2)*c^9/(a^4*f^2))*(a^2*f*e
^(8*I*f*x + 8*I*e) + 2*a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e
))*log(((70*I*A - 182*B)*c^5 + sqrt(2)*sqrt(-(2450*A^2 + 12740*I*A*B - 1656
2*B^2)*c^9/(a^4*f^2))*(a^2*f*e^(2*I*f*x + 2*I*e) + a^2*f)*sqrt(c/(e^(2*I*f*
x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^2*f)) - 15*sqrt(-(2450*A^2 + 12740*I*
A*B - 16562*B^2)*c^9/(a^4*f^2))*(a^2*f*e^(8*I*f*x + 8*I*e) + 2*a^2*f*e^(6*I
*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))*log(((70*I*A - 182*B)*c^5 - sqrt
(2)*sqrt(-(2450*A^2 + 12740*I*A*B - 16562*B^2)*c^9/(a^4*f^2))*(a^2*f*e^(2*I
*f*x + 2*I*e) + a^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/
(a^2*f)) + sqrt(2)*((-1050*I*A + 2730*B)*c^4*e^(8*I*f*x + 8*I*e) + (-2450*I
*A + 6370*B)*c^4*e^(6*I*f*x + 6*I*e) + (-1610*I*A + 4186*B)*c^4*e^(4*I*f*x
+ 4*I*e) + (-150*I*A + 390*B)*c^4*e^(2*I*f*x + 2*I*e) + (60*I*A - 60*B)*c^4
)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))/(a^2*f*e^(8*I*f*x + 8*I*e) + 2*a^2*f*e
^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(9/2)/(a+I*a*tan(f*x+e))**2,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}}{\left(i\,a\tan\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(9/2)/(I*a*tan(f*x +
 e) + a)^2, x)
```

3.772 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=238

$$-\frac{5c^3(-11B+3iA)\sqrt{c-ic\tan(e+fx)}}{4a^2f}-\frac{5c^2(-11B+3iA)(c-ic\tan(e+fx))^{3/2}}{24a^2f}+\frac{5c^{7/2}(-11B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+}}{\sqrt{2}\sqrt{c}}\right.}{2\sqrt{2}a^2f}$$

```
[Out] (5*((3*I)*A - 11*B)*c^(7/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqr
t[c])])/(2*Sqrt[2]*a^2*f) - (5*((3*I)*A - 11*B)*c^3*Sqrt[c - I*c*Tan[e + f*
x]])/(4*a^2*f) - (5*((3*I)*A - 11*B)*c^2*(c - I*c*Tan[e + f*x])^(3/2))/(24*
a^2*f) - (((3*I)*A - 11*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(8*a^2*f*(1 + I*
Tan[e + f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(4*a^2*f*(1 + I*T
an[e + f*x])^2)
```

Rubi [A] time = 0.272166, antiderivative size = 238, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.14, Rules used = {3588, 78, 47, 50, 63, 208}

$$-\frac{5c^3(-11B+3iA)\sqrt{c-ic\tan(e+fx)}}{4a^2f}-\frac{5c^2(-11B+3iA)(c-ic\tan(e+fx))^{3/2}}{24a^2f}+\frac{5c^{7/2}(-11B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+}}{\sqrt{2}\sqrt{c}}\right.}{2\sqrt{2}a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[e + f*
x])^2,x]
```


```
[Out] (5*((3*I)*A - 11*B)*c^(7/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqr
t[c])])/(2*Sqrt[2]*a^2*f) - (5*((3*I)*A - 11*B)*c^3*Sqrt[c - I*c*Tan[e + f*
x]])/(4*a^2*f) - (5*((3*I)*A - 11*B)*c^2*(c - I*c*Tan[e + f*x])^(3/2))/(24*
a^2*f) - (((3*I)*A - 11*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(8*a^2*f*(1 + I*
Tan[e + f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(4*a^2*f*(1 + I*T
an[e + f*x])^2)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
```

```
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{5/2}}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{4a^2f(1+i\tan(e+fx))^2} - \frac{((3A+11iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{5/2}}{(a+iax)^2}\,dx,\right.}{8f}$$

$$= -\frac{(3iA-11B)c(c-ic\tan(e+fx))^{5/2}}{8a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{4a^2f(1+i\tan(e+fx))^2}$$

$$= -\frac{5(3iA-11B)c^2(c-ic\tan(e+fx))^{3/2}}{24a^2f} - \frac{(3iA-11B)c(c-ic\tan(e+}{8a^2f(1+i\tan(e+fx)}$$

$$= -\frac{5(3iA-11B)c^3\sqrt{c-ic\tan(e+fx)}}{4a^2f} - \frac{5(3iA-11B)c^2(c-ic\tan(e+}{24a^2f}$$

$$= -\frac{5(3iA-11B)c^3\sqrt{c-ic\tan(e+fx)}}{4a^2f} - \frac{5(3iA-11B)c^2(c-ic\tan(e+}{24a^2f}$$

$$= \frac{5(3iA-11B)c^{7/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{2\sqrt{2}a^2f} - \frac{5(3iA-11B)c^3\sqrt{c-ic\tan}}{4a^2f}$$

Mathematica [F] time = 180.005, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[
e + f*x])^2,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.112, size = 179, normalized size = 0.8

$$\frac{-2ic^2}{fa^2}\left(\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+5iBc\sqrt{c-ic\tan\left(fx+e\right)}+Ac\sqrt{c-ic\tan\left(fx+e\right)}+2c^2\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -2*I/f/a^2*c^2*(1/3*I*B*(c-I*c*tan(f*x+e))^(3/2)+5*I*B*c*(c-I*c*tan(f*x+e))
^(1/2)+A*c*(c-I*c*tan(f*x+e))^(1/2)+2*c^2*(((-17/8*I*B-9/8*A)*(c-I*c*tan(f*
x+e))^(3/2)+(15/4*I*B*c+7/4*A*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+
e))^2-5/16*(11*I*B+3*A)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2
)*2^(1/2)/c^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.64429, size = 1215, normalized size = 5.11

$$3\sqrt{\frac{1}{2}}\left(a^2fe^{(6ifx+6ie)}+a^2fe^{(4ifx+4ie)}\right)\sqrt{-\frac{(225A^2+1650iAB-3025B^2)c^7}{a^4f^2}}\log\left(\frac{\left((15iA-55B)c^4+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^2fe^{(2ifx+2ie)}+a^2f\right)\sqrt{-\frac{(225A^2+1650iA\ldots}{a^4f^2\ldots}}\right.}{a^2f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="fricas")
```

```
[Out] 1/12*(3*sqrt(1/2)*(a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))*s
qrt(-(225*A^2 + 1650*I*A*B - 3025*B^2)*c^7/(a^4*f^2))*log(((15*I*A - 55*B)*
c^4 + sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) + a^2*f)*sqrt(-(225*A^2
+ 1650*I*A*B - 3025*B^2)*c^7/(a^4*f^2))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*
```

```
e^(-I*f*x - I*e)/(a^2*f)) - 3*sqrt(1/2)*(a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*
e^(4*I*f*x + 4*I*e))*sqrt(-(225*A^2 + 1650*I*A*B - 3025*B^2)*c^7/(a^4*f^2))
*log(((15*I*A - 55*B)*c^4 - sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) +
a^2*f)*sqrt(-(225*A^2 + 1650*I*A*B - 3025*B^2)*c^7/(a^4*f^2))*sqrt(c/(e^(2*
I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^2*f)) + sqrt(2)*((-45*I*A + 165*B
)*c^3*e^(6*I*f*x + 6*I*e) + (-60*I*A + 220*B)*c^3*e^(4*I*f*x + 4*I*e) + (-9
*I*A + 33*B)*c^3*e^(2*I*f*x + 2*I*e) + (6*I*A - 6*B)*c^3)*sqrt(c/(e^(2*I*f*
x + 2*I*e) + 1)))/(a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2)/(a+I*a*tan(f*x+e))**2,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(7/2)/(I*a*tan(f*x +
 e) + a)^2, x)
```

3.773 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=199

$$-\frac{3c^2(-9B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^2f}+\frac{3c^{5/2}(-9B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a^2f}-\frac{c(-9B+iA)(c-ic\tan(e+fx))^{3/2}}{8a^2f(1+i\tan(e+fx))}+$$

```
[Out] (3*(I*A - 9*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])
])/(4*Sqrt[2]*a^2*f) - (3*(I*A - 9*B)*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(8*a^
2*f) - ((I*A - 9*B)*c*(c - I*c*Tan[e + f*x])^(3/2))/(8*a^2*f*(1 + I*Tan[e +
 f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(5/2))/(4*a^2*f*(1 + I*Tan[e +
f*x])^2)
```

Rubi [A] time = 0.24501, antiderivative size = 199, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.14, Rules used = {3588, 78, 47, 50, 63, 208}

$$-\frac{3c^2(-9B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^2f}+\frac{3c^{5/2}(-9B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a^2f}-\frac{c(-9B+iA)(c-ic\tan(e+fx))^{3/2}}{8a^2f(1+i\tan(e+fx))}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[e + f*
x])^2,x]
```


```
[Out] (3*(I*A - 9*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])
])/(4*Sqrt[2]*a^2*f) - (3*(I*A - 9*B)*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(8*a^
2*f) - ((I*A - 9*B)*c*(c - I*c*Tan[e + f*x])^(3/2))/(8*a^2*f*(1 + I*Tan[e +
 f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(5/2))/(4*a^2*f*(1 + I*Tan[e +
f*x])^2)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^2}dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{(a+iax)^3}dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{4a^2f(1+i\tan(e+fx))^2} - \frac{((A+9iB)c)\operatorname{Subst}\left(\int \frac{(c-icx)^{3/2}}{(a+iax)^2}dx,\right.}{8f}$$

$$= -\frac{(iA-9B)c(c-ic\tan(e+fx))^{3/2}}{8a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{4a^2f(1+i\tan(e+fx))^2}$$

$$= -\frac{3(iA-9B)c^2\sqrt{c-ic\tan(e+fx)}}{8a^2f} - \frac{(iA-9B)c(c-ic\tan(e+fx))^3}{8a^2f(1+i\tan(e+fx))}$$

$$= -\frac{3(iA-9B)c^2\sqrt{c-ic\tan(e+fx)}}{8a^2f} - \frac{(iA-9B)c(c-ic\tan(e+fx))^3}{8a^2f(1+i\tan(e+fx))}$$

$$= \frac{3(iA-9B)c^{5/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a^2f} - \frac{3(iA-9B)c^2\sqrt{c-ic\tan(e}}{8a^2f}$$

Mathematica [F] time = 180.004, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[
e + f*x])^2,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.108, size = 138, normalized size = 0.7

$$\frac{-2\,ic^2}{fa^2}\left(iB\sqrt{c-ic\tan\left(fx+e\right)}+c\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^2}\left(\left(-\frac{13\,i}{8}B-\frac{5\,A}{8}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(\frac{11\,i}{4}Bc+\frac{3\,Ac}{4}\right)\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -2*I/f/a^2*c^2*(I*B*(c-I*c*tan(f*x+e))^(1/2)+c*(((-13/8*I*B-5/8*A)*(c-I*c*t
an(f*x+e))^(3/2)+(11/4*I*B*c+3/4*A*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan
(f*x+e))^2-3/16*(9*I*B+A)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1
/2)*2^(1/2)/c^(1/2))))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.41553, size = 1011, normalized size = 5.08

$$\left(\sqrt{\frac{1}{2}}a^2 f\sqrt{-\frac{(9A^2+162iAB-729B^2)c^5}{a^4f^2}}e^{(4ifx+4ie)}\log\left(\frac{\left((3iA-27B)c^3+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^2fe^{(2ifx+2ie)}+a^2f\right)\sqrt{-\frac{(9A^2+162iAB-729B^2)c^5}{a^4f^2}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}\right)e^{(-ifx-ie}}{2a^2f}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="fricas")
```

```
[Out] 1/8*(sqrt(1/2)*a^2*f*sqrt(-(9*A^2 + 162*I*A*B - 729*B^2)*c^5/(a^4*f^2))*e^(
4*I*f*x + 4*I*e)*log(1/2*((3*I*A - 27*B)*c^3 + sqrt(2)*sqrt(1/2)*(a^2*f*e^(
2*I*f*x + 2*I*e) + a^2*f)*sqrt(-(9*A^2 + 162*I*A*B - 729*B^2)*c^5/(a^4*f^2)
)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^2*f)) - sqrt(1/2)*
a^2*f*sqrt(-(9*A^2 + 162*I*A*B - 729*B^2)*c^5/(a^4*f^2))*e^(4*I*f*x + 4*I*e
)*log(1/2*((3*I*A - 27*B)*c^3 - sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e
) + a^2*f)*sqrt(-(9*A^2 + 162*I*A*B - 729*B^2)*c^5/(a^4*f^2))*sqrt(c/(e^(2*
I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^2*f)) + sqrt(2)*((-3*I*A + 27*B)*
c^2*e^(4*I*f*x + 4*I*e) + (-I*A + 9*B)*c^2*e^(2*I*f*x + 2*I*e) + (2*I*A - 2
*B)*c^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-4*I*f*x - 4*I*e)/(a^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2)/(a+I*a*tan(f*x+e))**2,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(5/2)/(I*a*tan(f*x +
 e) + a)^2, x)
```

3.774 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=160

$$-\frac{c^{3/2}(7B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}a^2f}+\frac{c(7B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^2f(1+i\tan(e+fx))}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{4a^2f(1+i\tan(e+fx))^2}$$

```
[Out] -((I*A + 7*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]
)/(8*Sqrt[2]*a^2*f) + ((I*A + 7*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(8*a^2*f*(
1 + I*Tan[e + f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(4*a^2*f*(1
 + I*Tan[e + f*x])^2)
```

Rubi [A] time = 0.226024, antiderivative size = 160, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 47, 63, 208}

$$-\frac{c^{3/2}(7B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}a^2f}+\frac{c(7B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^2f(1+i\tan(e+fx))}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{4a^2f(1+i\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[e + f*
x])^2,x]
```

```
[Out] -((I*A + 7*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]
)/(8*Sqrt[2]*a^2*f) + ((I*A + 7*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(8*a^2*f*(
1 + I*Tan[e + f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(4*a^2*f*(1
 + I*Tan[e + f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{(a+iax)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{4a^2f(1+i\tan(e+fx))^2} + \frac{((A-7iB)c)\,\mathrm{Subst}\left(\int \frac{\sqrt{c-icx}}{(a+iax)^2}\,dx, x,\right.}{8f}$$

$$= \frac{(iA+7B)c\sqrt{c-ic\tan(e+fx)}}{8a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{4a^2f(1+i\tan(e+fx))^2} - \frac{((A}{}$$

$$= \frac{(iA+7B)c\sqrt{c-ic\tan(e+fx)}}{8a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{4a^2f(1+i\tan(e+fx))^2} - \frac{((i}{}$$

$$= -\frac{(iA+7B)c^{3/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}a^2f} + \frac{(iA+7B)c\sqrt{c-ic\tan(e+f}}{8a^2f(1+i\tan(e+fx))}$$

Mathematica [A] time = 3.86559, size = 205, normalized size = 1.28

$$\frac{\sec(e+fx)(\cos(fx)+i\sin(fx))^2(A+B\tan(e+fx))\left(\sqrt{2}c^{3/2}(A-7iB)(\sin(2e)-i\cos(2e))\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)+2c\right.}{16f(a+ia\tan(e+fx))^2(A\cos(e+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[
e + f*x])^2,x]
```

```
[Out] (Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*x])*(Sqrt[2]*(A -
(7*I)*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]*((-I
)*Cos[2*e] + Sin[2*e]) + 2*c*Cos[e + f*x]*(Cos[2*f*x] - I*Sin[2*f*x])*(((3*
I)*A + 5*B)*Cos[e + f*x] + (A + (9*I)*B)*Sin[e + f*x])*Sqrt[c - I*c*Tan[e +
 f*x]]))/(16*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2)
```

Maple [A] time = 0.099, size = 117, normalized size = 0.7

$$\frac{-2\,ic^2}{fa^2}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^2}\left(\left(-\frac{9\,i}{16}B-\frac{A}{16}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(\frac{7\,i}{8}Bc-\frac{Ac}{8}\right)\sqrt{c-ic\tan\left(fx+e\right)}\right)+\frac{(-7\,iB+A}{32}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -2*I/f/a^2*c^2*(((-9/16*I*B-1/16*A)*(c-I*c*tan(f*x+e))^(3/2)+(7/8*I*B*c-1/8
*A*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^2+1/32*(-7*I*B+A)*2^(1/
2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.44929, size = 973, normalized size = 6.08

$$\frac{\left(\sqrt{\frac{1}{2}}a^2 f\sqrt{-\frac{(A^2-14i\,AB-49\,B^2)c^3}{a^4 f^2}}e^{(4i\,fx+4i\,e)}\log\left(\frac{\left((-i\,A-7\,B)c^2+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^2 fe^{(2i\,fx+2i\,e)}+a^2 f\right)\sqrt{\frac{c}{e^{(2i\,fx+2i\,e)}+1}}\sqrt{-\frac{(A^2-14i\,AB-49\,B^2)c^3}{a^4 f^2}}\right)e^{(-i\,fx-i\,e)}}{4\,a^2 f}\right)-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="fricas")
```

```
[Out] 1/16*(sqrt(1/2)*a^2*f*sqrt(-(A^2 - 14*I*A*B - 49*B^2)*c^3/(a^4*f^2))*e^(4*I
*f*x + 4*I*e)*log(1/4*((-I*A - 7*B)*c^2 + sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f
*x + 2*I*e) + a^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 14*I*A*
B - 49*B^2)*c^3/(a^4*f^2)))*e^(-I*f*x - I*e)/(a^2*f)) - sqrt(1/2)*a^2*f*sqr
t(-(A^2 - 14*I*A*B - 49*B^2)*c^3/(a^4*f^2))*e^(4*I*f*x + 4*I*e)*log(1/4*((-
I*A - 7*B)*c^2 - sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) + a^2*f)*sqrt
(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 14*I*A*B - 49*B^2)*c^3/(a^4*f^2)
```

```
))*e^(-I*f*x - I*e)/(a^2*f)) + sqrt(2)*((I*A + 7*B)*c*e^(4*I*f*x + 4*I*e) +
 (3*I*A + 5*B)*c*e^(2*I*f*x + 2*I*e) + (2*I*A - 2*B)*c)*sqrt(c/(e^(2*I*f*x
+ 2*I*e) + 1)))*e^(-4*I*f*x - 4*I*e)/(a^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2)/(a+I*a*tan(f*x+e))**2,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(3/2)/(I*a*tan(f*x +
 e) + a)^2, x)
```

3.775 $\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=159

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{4a^2f(1+i\tan(e+fx))^2}+\frac{(5B+3iA)\sqrt{c-ic\tan(e+fx)}}{16a^2f(1+i\tan(e+fx))}+\frac{\sqrt{c}(5B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}a^2f}$$

```
[Out] (((3*I)*A + 5*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(16*Sqrt[2]*a^2*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(4*a^2*f*(
1 + I*Tan[e + f*x])^2) + (((3*I)*A + 5*B)*Sqrt[c - I*c*Tan[e + f*x]])/(16*a
^2*f*(1 + I*Tan[e + f*x]))
```

Rubi [A] time = 0.212286, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{4a^2f(1+i\tan(e+fx))^2}+\frac{(5B+3iA)\sqrt{c-ic\tan(e+fx)}}{16a^2f(1+i\tan(e+fx))}+\frac{\sqrt{c}(5B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e + f*x]
)^2,x]
```


```
[Out] (((3*I)*A + 5*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(16*Sqrt[2]*a^2*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(4*a^2*f*(
1 + I*Tan[e + f*x])^2) + (((3*I)*A + 5*B)*Sqrt[c - I*c*Tan[e + f*x]])/(16*a
^2*f*(1 + I*Tan[e + f*x]))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^2}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^3\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{4a^2f(1+i\tan(e+fx))^2} + \frac{((3A-5iB)c)\,\mathrm{Subst}\left(\int \frac{1}{(a+iax)^2\sqrt{c-icx}}\,dx\right.}{8f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{4a^2f(1+i\tan(e+fx))^2} + \frac{(3iA+5B)\sqrt{c-ic\tan(e+fx)}}{16a^2f(1+i\tan(e+fx))} + \frac{((3A}{}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{4a^2f(1+i\tan(e+fx))^2} + \frac{(3iA+5B)\sqrt{c-ic\tan(e+fx)}}{16a^2f(1+i\tan(e+fx))} + \frac{(3iA}{}$$

$$= \frac{(3iA+5B)\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}a^2f} + \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{4a^2f(1+i\tan(e+fx))^2}$$

Mathematica [A] time = 2.84846, size = 206, normalized size = 1.3

$$\frac{\sec(e+fx)(\cos(fx)+i\sin(fx))^2(A+B\tan(e+fx))\left(2\cos(e+fx)(\cos(2fx)-i\sin(2fx))\sqrt{c-ic\tan(e+fx)}((-3A+\right.}{32f(a+ia\tan(e+fx))^2(A\cos(e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e
+ f*x])^2,x]
```

```
[Out] (Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])^2*(A + B*Tan[e + f*x])*(Sqrt[2]*((3*I
)*A + 5*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]*(C
os[2*e] + I*Sin[2*e]) + 2*Cos[e + f*x]*(Cos[2*f*x] - I*Sin[2*f*x])*(((7*I)*
A + B)*Cos[e + f*x] + (-3*A + (5*I)*B)*Sin[e + f*x])*Sqrt[c - I*c*Tan[e + f
*x]]))/(32*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^2)
```

Maple [A] time = 0.144, size = 121, normalized size = 0.8

$$\frac{-2\,ic^2}{fa^2}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^2}\left(\frac{3\,A-5\,iB}{32\,c}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(-\frac{5\,A}{16}+\frac{3\,i}{16}B\right)\sqrt{c-ic\tan\left(fx+e\right)}\right)-\frac{(3\,A-5\,iB}{64}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -2*I/f/a^2*c^2*((1/32/c*(3*A-5*I*B)*(c-I*c*tan(f*x+e))^(3/2)+(-5/16*A+3/16*
I*B)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^2-1/64/c^(3/2)*(3*A-5*I*
B)*2^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.43613, size = 961, normalized size = 6.04

$$\left(\sqrt{\frac{1}{2}}a^2 f\sqrt{-\frac{\left(9\,A^2-30i\,AB-25\,B^2\right)c}{a^4f^2}}e^{\left(4i\,fx+4i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^2fe^{\left(2i\,fx+2i\,e\right)}+a^2f\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{\left(9\,A^2-30i\,AB-25\,B^2\right)c}{a^4f^2}}+(3i\,A+5\,B)c\right)e^{\left(-i\,fx-i\,e\right)}}{8\,a^2f}\right)-\sqrt{\vphantom{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x,
 algorithm="fricas")
```

```
[Out] 1/32*(sqrt(1/2)*a^2*f*sqrt(-(9*A^2 - 30*I*A*B - 25*B^2)*c/(a^4*f^2))*e^(4*I
*f*x + 4*I*e)*log(1/8*(sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) + a^2*f
)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(9*A^2 - 30*I*A*B - 25*B^2)*c/(a^
4*f^2)) + (3*I*A + 5*B)*c)*e^(-I*f*x - I*e)/(a^2*f)) - sqrt(1/2)*a^2*f*sqrt
(-(9*A^2 - 30*I*A*B - 25*B^2)*c/(a^4*f^2))*e^(4*I*f*x + 4*I*e)*log(-1/8*(sq
rt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) + a^2*f)*sqrt(c/(e^(2*I*f*x + 2*
I*e) + 1))*sqrt(-(9*A^2 - 30*I*A*B - 25*B^2)*c/(a^4*f^2)) - (3*I*A + 5*B)*c
```

```
)*e^(-I*f*x - I*e)/(a^2*f)) + sqrt(2)*((5*I*A + 3*B)*e^(4*I*f*x + 4*I*e) +
(7*I*A + B)*e^(2*I*f*x + 2*I*e) + 2*I*A - 2*B)*sqrt(c/(e^(2*I*f*x + 2*I*e)
+ 1)))*e^(-4*I*f*x - 4*I*e)/(a^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{-ic\tan\left(fx+e\right)+c}}{\left(ia\tan\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(-I*c*tan(f*x + e) + c)/(I*a*tan(f*x + e
) + a)^2, x)
```

3.776 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=195

$$\frac{-B+iA}{4a^2f(1+i\tan(e+fx))^2\sqrt{c-ic\tan(e+fx)}}-\frac{3(3B+5iA)}{32a^2f\sqrt{c-ic\tan(e+fx)}}+\frac{3B+5iA}{16a^2f(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] (3*((5*I)*A + 3*B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(
32*Sqrt[2]*a^2*Sqrt[c]*f) - (3*((5*I)*A + 3*B))/(32*a^2*f*Sqrt[c - I*c*Tan[
e + f*x]]) + (I*A - B)/(4*a^2*f*(1 + I*Tan[e + f*x])^2*Sqrt[c - I*c*Tan[e +
 f*x]]) + ((5*I)*A + 3*B)/(16*a^2*f*(1 + I*Tan[e + f*x])*Sqrt[c - I*c*Tan[e
 + f*x]])
```

Rubi [A] time = 0.247676, antiderivative size = 195, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{-B+iA}{4a^2f(1+i\tan(e+fx))^2\sqrt{c-ic\tan(e+fx)}}-\frac{3(3B+5iA)}{32a^2f\sqrt{c-ic\tan(e+fx)}}+\frac{3B+5iA}{16a^2f(1+i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*Sqrt[c - I*c*Tan[e + f*x
]]),x]
```

```
[Out] (3*((5*I)*A + 3*B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(
32*Sqrt[2]*a^2*Sqrt[c]*f) - (3*((5*I)*A + 3*B))/(32*a^2*f*Sqrt[c - I*c*Tan[
e + f*x]]) + (I*A - B)/(4*a^2*f*(1 + I*Tan[e + f*x])^2*Sqrt[c - I*c*Tan[e +
 f*x]]) + ((5*I)*A + 3*B)/(16*a^2*f*(1 + I*Tan[e + f*x])*Sqrt[c - I*c*Tan[e
 + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2\sqrt{c-ic\tan(e+fx)}} + \frac{((5A-3iB)c)\,\text{Subst}\left(\int\right.}{}$$

$$= \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2\sqrt{c-ic\tan(e+fx)}} + \frac{5iA+}{16a^2f(1+i\tan(e+fx)}$$

$$= -\frac{3(5iA+3B)}{32a^2f\sqrt{c-ic\tan(e+fx)}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2\sqrt{c-ic\tan(e+}}$$

$$= -\frac{3(5iA+3B)}{32a^2f\sqrt{c-ic\tan(e+fx)}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2\sqrt{c-ic\tan(e+}}$$

$$= \frac{3(5iA+3B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{32\sqrt{2}a^2\sqrt{c}f} - \frac{3(5iA+3B)}{32a^2f\sqrt{c-ic\tan(e+fx)}} + \frac{}{4a^2}$$

Mathematica [A] time = 4.74789, size = 160, normalized size = 0.82

$$\frac{\sqrt{c-ic\tan(e+fx)}(\sin(e+fx)+i\cos(e+fx))\left(3(5A-3iB)e^{i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)-2\cos(e+fx\right.}{64a^2cf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*Sqrt[c - I*c*Tan[e
 + f*x]]),x]
```

```
[Out] ((I*Cos[e + f*x] + Sin[e + f*x])*(3*(5*A - (3*I)*B)*E^(I*(e + f*x))*Sqrt[1
+ E^((2*I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]] - 2*Cos[e + f
*x]*(-9*A - I*B + 2*(3*A - (5*I)*B)*Cos[2*(e + f*x)] + 2*((5*I)*A + 3*B)*Si
n[2*(e + f*x)]))*Sqrt[c - I*c*Tan[e + f*x]])/(64*a^2*c*f)
```

Maple [A] time = 0.161, size = 152, normalized size = 0.8

$$\frac{-2\,ic^2}{fa^2}\left(\frac{1}{8\,c^2}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^2}\left(\left(-\frac{i}{8}B+\frac{7\,A}{8}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(-\frac{9\,Ac}{4}-\frac{i}{4}Bc\right)\sqrt{c-ic\tan\left(fx+e\right)}\right)-\frac{(-9}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -2*I/f/a^2*c^2*(1/8/c^2*(((-1/8*I*B+7/8*A)*(c-I*c*tan(f*x+e))^(3/2)+(-9/4*A
*c-1/4*I*B*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^2-3/16*(-3*I*B+
5*A)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))
-1/8/c^2*(-A+I*B)/(c-I*c*tan(f*x+e))^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.54952, size = 1031, normalized size = 5.29

$$\left(\sqrt{\frac{1}{2}}a^2cf\sqrt{-\frac{225\,A^2-270i\,AB-81\,B^2}{a^4cf^2}}e^{\left(4i\,fx+4i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^2fe^{\left(2i\,fx+2i\,e\right)}+a^2f\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{225\,A^2-270i\,AB-81\,B^2}{a^4cf^2}}+15i\,A+9\,B\right)e^{\left(-i\,fx-i\,e\right)}}{16\,a^2f}\right)-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="fricas")
```

```
[Out] 1/64*(sqrt(1/2)*a^2*c*f*sqrt(-(225*A^2 - 270*I*A*B - 81*B^2)/(a^4*c*f^2))*e
^(4*I*f*x + 4*I*e)*log(1/16*(sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) +
 a^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(225*A^2 - 270*I*A*B - 81*B
^2)/(a^4*c*f^2)) + 15*I*A + 9*B)*e^(-I*f*x - I*e)/(a^2*f)) - sqrt(1/2)*a^2*
c*f*sqrt(-(225*A^2 - 270*I*A*B - 81*B^2)/(a^4*c*f^2))*e^(4*I*f*x + 4*I*e)*l
og(-1/16*(sqrt(2)*sqrt(1/2)*(a^2*f*e^(2*I*f*x + 2*I*e) + a^2*f)*sqrt(c/(e^(
2*I*f*x + 2*I*e) + 1))*sqrt(-(225*A^2 - 270*I*A*B - 81*B^2)/(a^4*c*f^2)) -
```

```
15*I*A - 9*B)*e^(-I*f*x - I*e)/(a^2*f)) + sqrt(2)*((-8*I*A - 8*B)*e^(6*I*f*
x + 6*I*e) + (I*A - 9*B)*e^(4*I*f*x + 4*I*e) + (11*I*A - 3*B)*e^(2*I*f*x +
2*I*e) + 2*I*A - 2*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-4*I*f*x - 4*I*
e)/(a^2*c*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2)/(a+I*a*tan(f*x+e))**2,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{2}\sqrt{-ic\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^2,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^2*sqrt(-I*c*tan(f*x
+ e) + c)), x)
```

3.777 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=226

$$\frac{5(B+7iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{64\sqrt{2}a^2c^{3/2}f}+\frac{-B+iA}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{3/2}}-\frac{5(B+7iA)}{64a^2cf\sqrt{c-ic\tan(e+fx)}}-96$$

```
[Out] (5*((7*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(64
*Sqrt[2]*a^2*c^(3/2)*f) - (5*((7*I)*A + B))/(96*a^2*f*(c - I*c*Tan[e + f*x]
)^(3/2)) + (I*A - B)/(4*a^2*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])
^(3/2)) + ((7*I)*A + B)/(16*a^2*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^(3/2)) - (5*((7*I)*A + B))/(64*a^2*c*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.290363, antiderivative size = 226, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{5(B+7iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{64\sqrt{2}a^2c^{3/2}f}+\frac{-B+iA}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{3/2}}-\frac{5(B+7iA)}{64a^2cf\sqrt{c-ic\tan(e+fx)}}-96$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])^(
3/2)),x]
```


```
[Out] (5*((7*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(64
*Sqrt[2]*a^2*c^(3/2)*f) - (5*((7*I)*A + B))/(96*a^2*f*(c - I*c*Tan[e + f*x]
)^(3/2)) + (I*A - B)/(4*a^2*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])
^(3/2)) + ((7*I)*A + B)/(16*a^2*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f*x
])^(3/2)) - (5*((7*I)*A + B))/(64*a^2*c*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{3/2}} + \frac{((7A-iB)c)\,\text{Subs}}{}$$

$$= \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{3/2}} + \frac{}{16a^2f(1+i\tan(e}$$

$$= -\frac{5(7iA+B)}{96a^2f(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= -\frac{5(7iA+B)}{96a^2f(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= -\frac{5(7iA+B)}{96a^2f(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= \frac{5(7iA+B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{64\sqrt{2}a^2c^{3/2}f} - \frac{5(7iA+B)}{96a^2f(c-ic\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 5.91634, size = 204, normalized size = 0.9

$$\frac{e^{-4i(e+fx)}\sqrt{c-ic\tan(e+fx)}\left(15(B+7iA)e^{4i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)-i\left(1+e^{2i(e+fx)}\right)\left(A\left(-39e^{2i(e+fx}\right.\right.\right.}{384a^2c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])^(3/2)),x]
```

```
[Out] (((-I)*(1 + E^((2*I)*(e + f*x)))*((-I)*B*(6 + 15*E^((2*I)*(e + f*x)) + 32*E
^((4*I)*(e + f*x)) + 8*E^((6*I)*(e + f*x))) + A*(-6 - 39*E^((2*I)*(e + f*x)
) + 80*E^((4*I)*(e + f*x)) + 8*E^((6*I)*(e + f*x)))) + 15*((7*I)*A + B)*E^(
(4*I)*(e + f*x))*Sqrt[1 + E^((2*I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e
 + f*x))]])*Sqrt[c - I*c*Tan[e + f*x]])/(384*a^2*c^2*E^((4*I)*(e + f*x))*f)
```

Maple [A] time = 0.109, size = 179, normalized size = 0.8

$$\frac{-2\,ic^{2}}{f\,a^{2}}\left(\frac{1}{16\,c^{3}}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^{2}}\left(\left(\frac{3\,i}{8}B+\frac{11\,A}{8}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(-\frac{13\,Ac}{4}-\frac{5\,i}{4}Bc\right)\sqrt{c-ic\tan\left(fx+e\right)}\right)-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -2*I/f/a^2*c^2*(1/16/c^3*(((3/8*I*B+11/8*A)*(c-I*c*tan(f*x+e))^(3/2)+(-13/4
*A*c-5/4*I*B*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^2-5/16*(7*A-I
*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))-
1/16/c^3*(-3*A+I*B)/(c-I*c*tan(f*x+e))^(1/2)-1/24/c^2*(-A+I*B)/(c-I*c*tan(f
*x+e))^(3/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.53654, size = 1139, normalized size = 5.04

$$\frac{\left(3\,\sqrt{\frac{1}{2}}a^{2}c^{2}f\sqrt{-\frac{1225\,A^{2}-350i\,AB-25\,B^{2}}{a^{4}c^{3}f^{2}}}e^{\left(4i\,fx+4i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^{2}cfe^{\left(2i\,fx+2i\,e\right)}+a^{2}cf\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{1225\,A^{2}-350i\,AB-25\,B^{2}}{a^{4}c^{3}f^{2}}}+35i\,A+5\,B\right)e^{\left(-i\,fx-i\,e\right)}}{32\,a^{2}cf}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="fricas")
```

```
[Out] 1/384*(3*sqrt(1/2)*a^2*c^2*f*sqrt(-(1225*A^2 - 350*I*A*B - 25*B^2)/(a^4*c^3
*f^2))*e^(4*I*f*x + 4*I*e)*log(1/32*(sqrt(2)*sqrt(1/2)*(a^2*c*f*e^(2*I*f*x
+ 2*I*e) + a^2*c*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(1225*A^2 - 350
*I*A*B - 25*B^2)/(a^4*c^3*f^2)) + 35*I*A + 5*B)*e^(-I*f*x - I*e)/(a^2*c*f))
 - 3*sqrt(1/2)*a^2*c^2*f*sqrt(-(1225*A^2 - 350*I*A*B - 25*B^2)/(a^4*c^3*f^2
))*e^(4*I*f*x + 4*I*e)*log(-1/32*(sqrt(2)*sqrt(1/2)*(a^2*c*f*e^(2*I*f*x + 2
*I*e) + a^2*c*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(1225*A^2 - 350*I*
A*B - 25*B^2)/(a^4*c^3*f^2)) - 35*I*A - 5*B)*e^(-I*f*x - I*e)/(a^2*c*f)) +
sqrt(2)*((-8*I*A - 8*B)*e^(8*I*f*x + 8*I*e) + (-88*I*A - 40*B)*e^(6*I*f*x +
 6*I*e) + (-41*I*A - 47*B)*e^(4*I*f*x + 4*I*e) + (45*I*A - 21*B)*e^(2*I*f*x
 + 2*I*e) + 6*I*A - 6*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-4*I*f*x - 4
*I*e)/(a^2*c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e))**(3/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(i\,a\tan\left(fx+e\right)+a\right)^{2}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^2*(-I*c*tan(f*x + e)
 + c)^(3/2)), x)
```

3.778 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=273

$$-\frac{7(-B+9iA)}{128a^2c^2f\sqrt{c-ic\tan(e+fx)}}+\frac{7(-B+9iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{128\sqrt{2}a^2c^{5/2}f}+\frac{-B+iA}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{5/2}}$$

```
[Out] (7*((9*I)*A - B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(12
8*Sqrt[2]*a^2*c^(5/2)*f) - (7*((9*I)*A - B))/(160*a^2*f*(c - I*c*Tan[e + f*
x])^(5/2)) + (I*A - B)/(4*a^2*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x
])^(5/2)) + ((9*I)*A - B)/(16*a^2*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f
*x])^(5/2)) - (7*((9*I)*A - B))/(192*a^2*c*f*(c - I*c*Tan[e + f*x])^(3/2))
- (7*((9*I)*A - B))/(128*a^2*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.315856, antiderivative size = 273, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$-\frac{7(-B+9iA)}{128a^2c^2f\sqrt{c-ic\tan(e+fx)}}+\frac{7(-B+9iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{128\sqrt{2}a^2c^{5/2}f}+\frac{-B+iA}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x])^(
5/2)),x]
```


```
[Out] (7*((9*I)*A - B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(12
8*Sqrt[2]*a^2*c^(5/2)*f) - (7*((9*I)*A - B))/(160*a^2*f*(c - I*c*Tan[e + f*
x])^(5/2)) + (I*A - B)/(4*a^2*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Tan[e + f*x
])^(5/2)) + ((9*I)*A - B)/(16*a^2*f*(1 + I*Tan[e + f*x])*(c - I*c*Tan[e + f
*x])^(5/2)) - (7*((9*I)*A - B))/(192*a^2*c*f*(c - I*c*Tan[e + f*x])^(3/2))
- (7*((9*I)*A - B))/(128*a^2*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
```

```
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^2(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^3(c-icx)^{7/2}}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{5/2}} + \frac{((9A+iB)c)\,\mathrm{Subst}}{}$$

$$= \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan(e+fx))^{5/2}} + \frac{}{16a^2f(1+i\tan(e+}$$

$$= -\frac{7(9iA-B)}{160a^2f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= -\frac{7(9iA-B)}{160a^2f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= -\frac{7(9iA-B)}{160a^2f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= -\frac{7(9iA-B)}{160a^2f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{4a^2f(1+i\tan(e+fx))^2(c-ic\tan}$$

$$= \frac{7(9iA-B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{128\sqrt{2}a^2c^{5/2}f} - \frac{7(9iA-B)}{160a^2f(c-ic\tan(e+fx))^{5/2}} +$$

Mathematica [A] time = 9.1252, size = 209, normalized size = 0.77

$$\frac{\sqrt{c-ic\tan(e+fx)}(\cos(e+fx)+i\sin(e+fx))\left(105i(9A+iB)e^{-i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)+2\cos(e+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^2*(c - I*c*Tan[e + f
*x])^(5/2)),x]
```

```
[Out] ((Cos[e + f*x] + I*Sin[e + f*x])*(((105*I)*(9*A + I*B)*Sqrt[1 + E^((2*I)*(e
 + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]])/E^(I*(e + f*x)) + 2*Cos[e
 + f*x]*((-864*I)*A - 64*B + ((87*I)*A - 223*B)*Cos[2*(e + f*x)] + (6*I)*(A
 + (9*I)*B)*Cos[4*(e + f*x)] + 423*A*Sin[2*(e + f*x)] + (47*I)*B*Sin[2*(e +
 f*x)] + 54*A*Sin[4*(e + f*x)] + (6*I)*B*Sin[4*(e + f*x)]))*Sqrt[c - I*c*Ta
```

```
n[e + f*x]])/(3840*a^2*c^3*f)
```

Maple [A] time = 0.118, size = 199, normalized size = 0.7

$$\frac{-2\,ic^{2}}{f a^{2}}\left(\frac{1}{16\,c^{4}}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^{2}}\left(\left(\frac{7\,i}{16}B+\frac{15\,A}{16}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(-\frac{9\,i}{8}Bc-\frac{17\,Ac}{8}\right)\sqrt{c-ic\tan\left(fx+e\right)}\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -2*I/f/a^2*c^2*(1/16/c^4*(((7/16*I*B+15/16*A)*(c-I*c*tan(f*x+e))^(3/2)+(-9/
8*I*B*c-17/8*A*c)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^2-7/32*(I*B
+9*A)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2))
)+3/16*A/c^4/(c-I*c*tan(f*x+e))^(1/2)-1/48/c^3*(-3*A+I*B)/(c-I*c*tan(f*x+e)
)^(3/2)-1/40/c^2*(-A+I*B)/(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.82368, size = 1233, normalized size = 4.52

$$\left(15\,\sqrt{\frac{1}{2}}a^{2}c^{3}f\sqrt{-\frac{3969\,A^{2}+882i\,AB-49\,B^{2}}{a^{4}c^{5}f^{2}}}e^{\left(4i\,fx+4i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^{2}c^{2}fe^{\left(2i\,fx+2i\,e\right)}+a^{2}c^{2}f\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{3969\,A^{2}+882i\,AB-49\,B^{2}}{a^{4}c^{5}f^{2}}}+63i\,A-7\,B\right)e^{\left(-\right.}}{64\,a^{2}c^{2}f}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="fricas")
```

```
[Out] 1/3840*(15*sqrt(1/2)*a^2*c^3*f*sqrt(-(3969*A^2 + 882*I*A*B - 49*B^2)/(a^4*c
^5*f^2))*e^(4*I*f*x + 4*I*e)*log(1/64*(sqrt(2)*sqrt(1/2)*(a^2*c^2*f*e^(2*I*
f*x + 2*I*e) + a^2*c^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(3969*A^2
 + 882*I*A*B - 49*B^2)/(a^4*c^5*f^2)) + 63*I*A - 7*B)*e^(-I*f*x - I*e)/(a^2
*c^2*f)) - 15*sqrt(1/2)*a^2*c^3*f*sqrt(-(3969*A^2 + 882*I*A*B - 49*B^2)/(a^
4*c^5*f^2))*e^(4*I*f*x + 4*I*e)*log(-1/64*(sqrt(2)*sqrt(1/2)*(a^2*c^2*f*e^(
2*I*f*x + 2*I*e) + a^2*c^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(3969
*A^2 + 882*I*A*B - 49*B^2)/(a^4*c^5*f^2)) - 63*I*A + 7*B)*e^(-I*f*x - I*e)/
(a^2*c^2*f)) + sqrt(2)*((-24*I*A - 24*B)*e^(10*I*f*x + 10*I*e) + (-192*I*A
- 112*B)*e^(8*I*f*x + 8*I*e) + (-1032*I*A - 152*B)*e^(6*I*f*x + 6*I*e) + (-
609*I*A - 199*B)*e^(4*I*f*x + 4*I*e) + (285*I*A - 165*B)*e^(2*I*f*x + 2*I*e
) + 30*I*A - 30*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-4*I*f*x - 4*I*e)/
(a^2*c^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**2/(c-I*c*tan(f*x+e))**(5/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{2}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^2/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^2*(-I*c*tan(f*x + e)
 + c)^(5/2)), x)
```

3.779 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=291

$$\frac{35c^4(-5B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^3f}+\frac{35c^3(-5B+iA)(c-ic\tan(e+fx))^{3/2}}{48a^3f}+\frac{7c^2(-5B+iA)(c-ic\tan(e+fx))^{5/2}}{16a^3f(1+i\tan(e+fx))}-\frac{35}{}$$

```
[Out] (-35*(I*A - 5*B)*c^(9/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(4*Sqrt[2]*a^3*f) + (35*(I*A - 5*B)*c^4*Sqrt[c - I*c*Tan[e + f*x]])/(8
*a^3*f) + (35*(I*A - 5*B)*c^3*(c - I*c*Tan[e + f*x])^(3/2))/(48*a^3*f) + (7
*(I*A - 5*B)*c^2*(c - I*c*Tan[e + f*x])^(5/2))/(16*a^3*f*(1 + I*Tan[e + f*x
])) - ((I*A - 5*B)*c*(c - I*c*Tan[e + f*x])^(7/2))/(8*a^3*f*(1 + I*Tan[e +
f*x])^2) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(9/2))/(6*a^3*f*(1 + I*Tan[e +
 f*x])^3)
```

Rubi [A] time = 0.304555, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.14, Rules used = {3588, 78, 47, 50, 63, 208}

$$\frac{35c^4(-5B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^3f}+\frac{35c^3(-5B+iA)(c-ic\tan(e+fx))^{3/2}}{48a^3f}+\frac{7c^2(-5B+iA)(c-ic\tan(e+fx))^{5/2}}{16a^3f(1+i\tan(e+fx))}-\frac{35}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(9/2))/(a + I*a*Tan[e + f*
x])^3,x]
```


```
[Out] (-35*(I*A - 5*B)*c^(9/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(4*Sqrt[2]*a^3*f) + (35*(I*A - 5*B)*c^4*Sqrt[c - I*c*Tan[e + f*x]])/(8
*a^3*f) + (35*(I*A - 5*B)*c^3*(c - I*c*Tan[e + f*x])^(3/2))/(48*a^3*f) + (7
*(I*A - 5*B)*c^2*(c - I*c*Tan[e + f*x])^(5/2))/(16*a^3*f*(1 + I*Tan[e + f*x
])) - ((I*A - 5*B)*c*(c - I*c*Tan[e + f*x])^(7/2))/(8*a^3*f*(1 + I*Tan[e +
f*x])^2) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(9/2))/(6*a^3*f*(1 + I*Tan[e +
 f*x])^3)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{7/2}}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{9/2}}{6a^3f(1+i\tan(e+fx))^3} - \frac{((A+5iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{7/2}}{(a+iax)^3}\,dx, x\right.}{4f}$$

$$= -\frac{(iA-5B)c(c-ic\tan(e+fx))^{7/2}}{8a^3f(1+i\tan(e+fx))^2} + \frac{(iA-B)(c-ic\tan(e+fx))^{9/2}}{6a^3f(1+i\tan(e+fx))^3} +$$

$$= \frac{7(iA-5B)c^2(c-ic\tan(e+fx))^{5/2}}{16a^3f(1+i\tan(e+fx))} - \frac{(iA-5B)c(c-ic\tan(e+fx))^{7/}}{8a^3f(1+i\tan(e+fx))^2}$$

$$= \frac{35(iA-5B)c^3(c-ic\tan(e+fx))^{3/2}}{48a^3f} + \frac{7(iA-5B)c^2(c-ic\tan(e+fx}{16a^3f(1+i\tan(e+fx))}$$

$$= \frac{35(iA-5B)c^4\sqrt{c-ic\tan(e+fx)}}{8a^3f} + \frac{35(iA-5B)c^3(c-ic\tan(e+fx)}{48a^3f}$$

$$= \frac{35(iA-5B)c^4\sqrt{c-ic\tan(e+fx)}}{8a^3f} + \frac{35(iA-5B)c^3(c-ic\tan(e+fx)}{48a^3f}$$

$$= -\frac{35(iA-5B)c^{9/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{4\sqrt{2}a^3f} + \frac{35(iA-5B)c^4\sqrt{c-ic\tan}}{8a^3f}$$

Mathematica [F] time = 180.006, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(9/2))/(a + I*a*Tan[
e + f*x])^3,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.116, size = 206, normalized size = 0.7

$$\frac{2\,ic^3}{fa^3}\left(\frac{i}{3}B\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+7\,iBc\sqrt{c-ic\tan\left(fx+e\right)}+Ac\sqrt{c-ic\tan\left(fx+e\right)}+8\,c^2\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 2*I/f/a^3*c^3*(1/3*I*B*(c-I*c*tan(f*x+e))^(3/2)+7*I*B*c*(c-I*c*tan(f*x+e))^
(1/2)+A*c*(c-I*c*tan(f*x+e))^(1/2)+8*c^2*(((-81/64*I*B-29/64*A)*(c-I*c*tan(
f*x+e))^(5/2)+(53/12*I*B*c+17/12*A*c)*(c-I*c*tan(f*x+e))^(3/2)+(-63/16*I*B*
c^2-19/16*A*c^2)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^3-35/128*(A+
5*I*B)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)
)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.60265, size = 1305, normalized size = 4.48

$$3\sqrt{\frac{1}{2}}\left(a^3fe^{\left(8i\,fx+8i\,e\right)}+a^3fe^{\left(6i\,fx+6i\,e\right)}\right)\sqrt{-\frac{\left(1225\,A^2+12250i\,AB-30625\,B^2\right)c^9}{a^6f^2}}\log\left(\frac{\left(\left(-35i\,A+175\,B\right)c^5+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3fe^{\left(2i\,fx+2i\,e\right)}+a^3f\right)\sqrt{-\frac{\left(1225\,A^2\cdots\right.}{}}\right.}{2\,a^3f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="fricas")
```

```
[Out] 1/24*(3*sqrt(1/2)*(a^3*f*e^(8*I*f*x + 8*I*e) + a^3*f*e^(6*I*f*x + 6*I*e))*s
qrt(-(1225*A^2 + 12250*I*A*B - 30625*B^2)*c^9/(a^6*f^2))*log(1/2*((-35*I*A
+ 175*B)*c^5 + sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*I*e) + a^3*f)*sqrt(-
(1225*A^2 + 12250*I*A*B - 30625*B^2)*c^9/(a^6*f^2))*sqrt(c/(e^(2*I*f*x + 2*
I*e) + 1)))*e^(-I*f*x - I*e)/(a^3*f)) - 3*sqrt(1/2)*(a^3*f*e^(8*I*f*x + 8*I
*e) + a^3*f*e^(6*I*f*x + 6*I*e))*sqrt(-(1225*A^2 + 12250*I*A*B - 30625*B^2)
*c^9/(a^6*f^2))*log(1/2*((-35*I*A + 175*B)*c^5 - sqrt(2)*sqrt(1/2)*(a^3*f*e
^(2*I*f*x + 2*I*e) + a^3*f)*sqrt(-(1225*A^2 + 12250*I*A*B - 30625*B^2)*c^9/
(a^6*f^2))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^3*f)) + s
qrt(2)*((105*I*A - 525*B)*c^4*e^(8*I*f*x + 8*I*e) + (140*I*A - 700*B)*c^4*e
^(6*I*f*x + 6*I*e) + (21*I*A - 105*B)*c^4*e^(4*I*f*x + 4*I*e) + (-6*I*A + 3
0*B)*c^4*e^(2*I*f*x + 2*I*e) + (8*I*A - 8*B)*c^4)*sqrt(c/(e^(2*I*f*x + 2*I*
e) + 1)))/(a^3*f*e^(8*I*f*x + 8*I*e) + a^3*f*e^(6*I*f*x + 6*I*e))
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(9/2)/(a+I*a*tan(f*x+e))**3,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(9/2)/(I*a*tan(f*x +
 e) + a)^3, x)
```

3.780 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=252

$$\frac{5c^3(-13B+iA)\sqrt{c-ic\tan(e+fx)}}{16a^3f}+\frac{5c^2(-13B+iA)(c-ic\tan(e+fx))^{3/2}}{48a^3f(1+i\tan(e+fx))}-\frac{5c^{7/2}(-13B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}a^3f}$$

```
[Out] (-5*(I*A - 13*B)*c^(7/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(8*Sqrt[2]*a^3*f) + (5*(I*A - 13*B)*c^3*Sqrt[c - I*c*Tan[e + f*x]])/(1
6*a^3*f) + (5*(I*A - 13*B)*c^2*(c - I*c*Tan[e + f*x])^(3/2))/(48*a^3*f*(1 +
 I*Tan[e + f*x])) - ((I*A - 13*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(24*a^3*f
*(1 + I*Tan[e + f*x])^2) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(6*a^3*
f*(1 + I*Tan[e + f*x])^3)
```

Rubi [A] time = 0.271302, antiderivative size = 252, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.14, Rules used = {3588, 78, 47, 50, 63, 208}

$$\frac{5c^3(-13B+iA)\sqrt{c-ic\tan(e+fx)}}{16a^3f}+\frac{5c^2(-13B+iA)(c-ic\tan(e+fx))^{3/2}}{48a^3f(1+i\tan(e+fx))}-\frac{5c^{7/2}(-13B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}a^3f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[e + f*
x])^3,x]
```


```
[Out] (-5*(I*A - 13*B)*c^(7/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(8*Sqrt[2]*a^3*f) + (5*(I*A - 13*B)*c^3*Sqrt[c - I*c*Tan[e + f*x]])/(1
6*a^3*f) + (5*(I*A - 13*B)*c^2*(c - I*c*Tan[e + f*x])^(3/2))/(48*a^3*f*(1 +
 I*Tan[e + f*x])) - ((I*A - 13*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(24*a^3*f
*(1 + I*Tan[e + f*x])^2) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(6*a^3*
f*(1 + I*Tan[e + f*x])^3)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
```

```
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{5/2}}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{6a^3f(1+i\tan(e+fx))^3} - \frac{((A+13iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{5/2}}{(a+iax)^3}\,dx, x\right.}{12f}$$

$$= -\frac{(iA-13B)c(c-ic\tan(e+fx))^{5/2}}{24a^3f(1+i\tan(e+fx))^2} + \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{6a^3f(1+i\tan(e+fx))^3}$$

$$= \frac{5(iA-13B)c^2(c-ic\tan(e+fx))^{3/2}}{48a^3f(1+i\tan(e+fx))} - \frac{(iA-13B)c(c-ic\tan(e+fx)}{24a^3f(1+i\tan(e+fx))^2}$$

$$= \frac{5(iA-13B)c^3\sqrt{c-ic\tan(e+fx)}}{16a^3f} + \frac{5(iA-13B)c^2(c-ic\tan(e+fx)}{48a^3f(1+i\tan(e+fx))}$$

$$= \frac{5(iA-13B)c^3\sqrt{c-ic\tan(e+fx)}}{16a^3f} + \frac{5(iA-13B)c^2(c-ic\tan(e+fx)}{48a^3f(1+i\tan(e+fx))}$$

$$= -\frac{5(iA-13B)c^{7/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{8\sqrt{2}a^3f} + \frac{5(iA-13B)c^3\sqrt{c-ic\tan}}{16a^3f}$$

Mathematica [F] time = 180.003, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[
e + f*x])^3,x]
```

```
[Out] $Aborted
```

Maple [A] time = 0.119, size = 167, normalized size = 0.7

$$\frac{2\,ic^3}{fa^3}\left(iB\sqrt{c-ic\tan\left(fx+e\right)}+c\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\left(\left(-\frac{47\,i}{16}B-\frac{11\,A}{16}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\left(\frac{29\,i}{3}Bc+\frac{5\,Ac}{3}\right)(c\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 2*I/f/a^3*c^3*(I*B*(c-I*c*tan(f*x+e))^(1/2)+c*(((-47/16*I*B-11/16*A)*(c-I*c
*tan(f*x+e))^(5/2)+(29/3*I*B*c+5/3*A*c)*(c-I*c*tan(f*x+e))^(3/2)+(-33/4*I*B
*c^2-5/4*A*c^2)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^3-5/32*(13*I*
B+A)*2^(1/2)/c^(1/2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))
)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.58213, size = 1092, normalized size = 4.33

$$\frac{\left(3\sqrt{\frac{1}{2}}a^3 f\sqrt{-\frac{(25A^2+650iAB-4225B^2)c^7}{a^6f^2}}e^{(6ifx+6ie)}\log\left(\left(\frac{(-5iA+65B)c^4+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3fe^{(2ifx+2ie)}+a^3f\right)\sqrt{-\frac{(25A^2+650iAB-4225B^2)c^7}{a^6f^2}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}}{4a^3f}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="fricas")
```

```
[Out] 1/48*(3*sqrt(1/2)*a^3*f*sqrt(-(25*A^2 + 650*I*A*B - 4225*B^2)*c^7/(a^6*f^2)
)*e^(6*I*f*x + 6*I*e)*log(1/4*((-5*I*A + 65*B)*c^4 + sqrt(2)*sqrt(1/2)*(a^3
*f*e^(2*I*f*x + 2*I*e) + a^3*f)*sqrt(-(25*A^2 + 650*I*A*B - 4225*B^2)*c^7/(
a^6*f^2))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^3*f)) - 3*
sqrt(1/2)*a^3*f*sqrt(-(25*A^2 + 650*I*A*B - 4225*B^2)*c^7/(a^6*f^2))*e^(6*I
```

```
*f*x + 6*I*e)*log(1/4*((-5*I*A + 65*B)*c^4 - sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*
I*f*x + 2*I*e) + a^3*f)*sqrt(-(25*A^2 + 650*I*A*B - 4225*B^2)*c^7/(a^6*f^2)
)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-I*f*x - I*e)/(a^3*f)) + sqrt(2)*((
15*I*A - 195*B)*c^3*e^(6*I*f*x + 6*I*e) + (5*I*A - 65*B)*c^3*e^(4*I*f*x + 4
*I*e) + (-2*I*A + 26*B)*c^3*e^(2*I*f*x + 2*I*e) + (8*I*A - 8*B)*c^3)*sqrt(c
/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-6*I*f*x - 6*I*e)/(a^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2)/(a+I*a*tan(f*x+e))**3,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(7/2)/(I*a*tan(f*x +
 e) + a)^3, x)
```

3.781 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=213

$$-\frac{c^2(11B+iA)\sqrt{c-ic\tan(e+fx)}}{16a^3f(1+i\tan(e+fx))}+\frac{c^{5/2}(11B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}a^3f}+\frac{c(11B+iA)(c-ic\tan(e+fx))^{3/2}}{24a^3f(1+i\tan(e+fx))^2}+\frac{(-B\ldots}{6\ldots}$$

```
[Out] ((I*A + 11*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]
)/(16*Sqrt[2]*a^3*f) - ((I*A + 11*B)*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(16*a^
3*f*(1 + I*Tan[e + f*x])) + ((I*A + 11*B)*c*(c - I*c*Tan[e + f*x])^(3/2))/(
24*a^3*f*(1 + I*Tan[e + f*x])^2) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(5/2))
/(6*a^3*f*(1 + I*Tan[e + f*x])^3)
```

Rubi [A] time = 0.248603, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 47, 63, 208}

$$-\frac{c^2(11B+iA)\sqrt{c-ic\tan(e+fx)}}{16a^3f(1+i\tan(e+fx))}+\frac{c^{5/2}(11B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}a^3f}+\frac{c(11B+iA)(c-ic\tan(e+fx))^{3/2}}{24a^3f(1+i\tan(e+fx))^2}+\frac{(-B\ldots}{6\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[e + f*
x])^3,x]
```


```
[Out] ((I*A + 11*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]
)/(16*Sqrt[2]*a^3*f) - ((I*A + 11*B)*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(16*a^
3*f*(1 + I*Tan[e + f*x])) + ((I*A + 11*B)*c*(c - I*c*Tan[e + f*x])^(3/2))/(
24*a^3*f*(1 + I*Tan[e + f*x])^2) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(5/2))
/(6*a^3*f*(1 + I*Tan[e + f*x])^3)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{(a+iax)^4}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{6a^3f(1+i\tan(e+fx))^3} + \frac{((A-11iB)c)\,\mathrm{Subst}\left(\int \frac{(c-icx)^{3/2}}{(a+iax)^3}\,dx\right.}{12f}$$

$$= \frac{(iA+11B)c(c-ic\tan(e+fx))^{3/2}}{24a^3f(1+i\tan(e+fx))^2} + \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{6a^3f(1+i\tan(e+fx))^3}$$

$$= -\frac{(iA+11B)c^2\sqrt{c-ic\tan(e+fx)}}{16a^3f(1+i\tan(e+fx))} + \frac{(iA+11B)c(c-ic\tan(e+fx))}{24a^3f(1+i\tan(e+fx))^2}$$

$$= -\frac{(iA+11B)c^2\sqrt{c-ic\tan(e+fx)}}{16a^3f(1+i\tan(e+fx))} + \frac{(iA+11B)c(c-ic\tan(e+fx))}{24a^3f(1+i\tan(e+fx))^2}$$

$$= \frac{(iA+11B)c^{5/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{16\sqrt{2}a^3f} - \frac{(iA+11B)c^2\sqrt{c-ic\tan(e}{16a^3f(1+i\tan(e+fx}$$

Mathematica [A] time = 7.38131, size = 227, normalized size = 1.07

$$\frac{\sec^2(e+fx)(\cos(fx)+i\sin(fx))^3(A+B\tan(e+fx))\left(\frac{2}{3}c^2\cos(e+fx)(\cos(3fx)-i\sin(3fx))\sqrt{c-ic\tan(e+fx)}((11A\right.}{32f(a+ia\tan(e+f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[
e + f*x])^3,x]
```

```
[Out] (Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x])*(Sqrt[2]*(I*
A + 11*B)*c^(5/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]*(Co
s[3*e] + I*Sin[3*e]) + (2*c^2*Cos[e + f*x]*(Cos[3*f*x] - I*Sin[3*f*x])*((2*
I)*A + 22*B + ((5*I)*A - 41*B)*Cos[2*(e + f*x)] + (11*A - (25*I)*B)*Sin[2*(
e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/3))/(32*f*(A*Cos[e + f*x] + B*Sin[e
+ f*x])*(a + I*a*Tan[e + f*x])^3)
```

Maple [A] time = 0.11, size = 146, normalized size = 0.7

$$\frac{2\,ic^3}{fa^3}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\left(\left(-\frac{21\,i}{32}B-\frac{A}{32}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\left(\frac{11\,i}{6}Bc-\frac{Ac}{6}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(-\frac{11\,i}{8}Bc^2\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 2*I/f/a^3*c^3*(((-21/32*I*B-1/32*A)*(c-I*c*tan(f*x+e))^(5/2)+(11/6*I*B*c-1/
6*A*c)*(c-I*c*tan(f*x+e))^(3/2)+(-11/8*I*B*c^2+1/8*A*c^2)*(c-I*c*tan(f*x+e)
)^(1/2))/(-c-I*c*tan(f*x+e))^3+1/64*(-11*I*B+A)*2^(1/2)/c^(1/2)*arctanh(1/2
*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.47521, size = 1054, normalized size = 4.95

$$\left(3\sqrt{\frac{1}{2}}a^3 f\sqrt{-\frac{\left(A^2-22i\,AB-121\,B^2\right)c^5}{a^6f^2}}e^{\left(6i\,fx+6i\,e\right)}\log\left(\frac{\left((i\,A+11\,B)c^3+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3fe^{\left(2i\,fx+2i\,e\right)}+a^3f\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{\left(A^2-22i\,AB-121\,B^2\right)c^5}{a^6f^2}}\right)e^{\left(-i\,fx-i\,e\right)}}{8\,a^3f}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="fricas")
```

```
[Out] 1/96*(3*sqrt(1/2)*a^3*f*sqrt(-(A^2 - 22*I*A*B - 121*B^2)*c^5/(a^6*f^2))*e^(
6*I*f*x + 6*I*e)*log(1/8*((I*A + 11*B)*c^3 + sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*
I*f*x + 2*I*e) + a^3*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 22*I
*A*B - 121*B^2)*c^5/(a^6*f^2)))*e^(-I*f*x - I*e)/(a^3*f)) - 3*sqrt(1/2)*a^3
*f*sqrt(-(A^2 - 22*I*A*B - 121*B^2)*c^5/(a^6*f^2))*e^(6*I*f*x + 6*I*e)*log(
1/8*((I*A + 11*B)*c^3 - sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*I*e) + a^3*
f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 22*I*A*B - 121*B^2)*c^5/(
a^6*f^2)))*e^(-I*f*x - I*e)/(a^3*f)) + sqrt(2)*((-3*I*A - 33*B)*c^2*e^(6*I*
f*x + 6*I*e) + (-I*A - 11*B)*c^2*e^(4*I*f*x + 4*I*e) + (10*I*A + 14*B)*c^2*
e^(2*I*f*x + 2*I*e) + (8*I*A - 8*B)*c^2)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))
*e^(-6*I*f*x - 6*I*e)/(a^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2)/(a+I*a*tan(f*x+e))**3,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(5/2)/(I*a*tan(f*x +
 e) + a)^3, x)
```

3.782 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=211

$$-\frac{c^{3/2}(3B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{32\sqrt{2}a^3f}-\frac{c(3B+iA)\sqrt{c-ic\tan(e+fx)}}{32a^3f(1+i\tan(e+fx))}+\frac{c(3B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^3f(1+i\tan(e+fx))^2}+\frac{(-B+iA)(c}{6a^3f(1-}$$

```
[Out] -((I*A + 3*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]
)/(32*Sqrt[2]*a^3*f) + ((I*A + 3*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(8*a^3*f*
(1 + I*Tan[e + f*x])^2) - ((I*A + 3*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(32*a^
3*f*(1 + I*Tan[e + f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(6*a^3
*f*(1 + I*Tan[e + f*x])^3)
```

Rubi [A] time = 0.250308, antiderivative size = 211, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.14, Rules used = {3588, 78, 47, 51, 63, 208}

$$-\frac{c^{3/2}(3B+iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{32\sqrt{2}a^3f}-\frac{c(3B+iA)\sqrt{c-ic\tan(e+fx)}}{32a^3f(1+i\tan(e+fx))}+\frac{c(3B+iA)\sqrt{c-ic\tan(e+fx)}}{8a^3f(1+i\tan(e+fx))^2}+\frac{(-B+iA)(c}{6a^3f(1-}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[e + f*
x])^3,x]
```

```
[Out] -((I*A + 3*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]
)/(32*Sqrt[2]*a^3*f) + ((I*A + 3*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(8*a^3*f*
(1 + I*Tan[e + f*x])^2) - ((I*A + 3*B)*c*Sqrt[c - I*c*Tan[e + f*x]])/(32*a^
3*f*(1 + I*Tan[e + f*x])) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(6*a^3
*f*(1 + I*Tan[e + f*x])^3)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{(a+iax)^4}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{6a^3f(1+i\tan(e+fx))^3} + \frac{((A-3iB)c)\,\text{Subst}\left(\int \frac{\sqrt{c-icx}}{(a+iax)^3}\,dx,x,\right.}{4f}$$

$$= \frac{(iA+3B)c\sqrt{c-ic\tan(e+fx)}}{8a^3f(1+i\tan(e+fx))^2} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{6a^3f(1+i\tan(e+fx))^3} - \frac{((A}{}$$

$$= \frac{(iA+3B)c\sqrt{c-ic\tan(e+fx)}}{8a^3f(1+i\tan(e+fx))^2} - \frac{(iA+3B)c\sqrt{c-ic\tan(e+fx)}}{32a^3f(1+i\tan(e+fx))} + \frac{(iA}{}$$

$$= \frac{(iA+3B)c\sqrt{c-ic\tan(e+fx)}}{8a^3f(1+i\tan(e+fx))^2} - \frac{(iA+3B)c\sqrt{c-ic\tan(e+fx)}}{32a^3f(1+i\tan(e+fx))} + \frac{(iA}{}$$

$$= -\frac{(iA+3B)c^{3/2}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{32\sqrt{2}a^3f} + \frac{(iA+3B)c\sqrt{c-ic\tan(e+f}}{8a^3f(1+i\tan(e+fx))^2}$$

Mathematica [A] time = 5.54083, size = 224, normalized size = 1.06

$$\frac{\sec^2(e+fx)(\cos(fx)+i\sin(fx))^3(A+B\tan(e+fx))\left(\sqrt{2}c^{3/2}(A-3iB)(\sin(3e)-i\cos(3e))\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)+\frac{2}{3}c\right.}{64f(a+ia\tan(e+fx))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[
e + f*x])^3,x]
```

```
[Out] (Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x])*(Sqrt[2]*(A
- (3*I)*B)*c^(3/2)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]*((
-I)*Cos[3*e] + Sin[3*e]) + (2*c*Cos[e + f*x]*(Cos[3*f*x] - I*Sin[3*f*x])*(2
*((7*I)*A + 5*B) + ((11*I)*A + B)*Cos[2*(e + f*x)] + (5*A + (17*I)*B)*Sin[2
*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/3))/(64*f*(A*Cos[e + f*x] + B*Sin[
e + f*x])*(a + I*a*Tan[e + f*x])^3)
```

Maple [A] time = 0.111, size = 140, normalized size = 0.7

$$\frac{2ic^3}{fa^3}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\left(\frac{A-3iB}{64c}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\left(-\frac{A}{12}-\frac{i}{12}B\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}-\frac{c\left(A-3iB\right)}{16}\sqrt{c}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 2*I/f/a^3*c^3*((1/64/c*(A-3*I*B)*(c-I*c*tan(f*x+e))^(5/2)+(-1/12*A-1/12*I*B
)*(c-I*c*tan(f*x+e))^(3/2)-1/16*c*(A-3*I*B)*(c-I*c*tan(f*x+e))^(1/2))/(-c-I
*c*tan(f*x+e))^3-1/128/c^(3/2)*(A-3*I*B)*2^(1/2)*arctanh(1/2*(c-I*c*tan(f*x
+e))^(1/2)*2^(1/2)/c^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.46579, size = 1030, normalized size = 4.88

$$\frac{\left(3\sqrt{\frac{1}{2}}a^3f\sqrt{-\frac{\left(A^2-6iAB-9B^2\right)c^3}{a^6f^2}}e^{\left(6ifx+6ie\right)}\log\left(\frac{\left(\left(-iA-3B\right)c^2+\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3fe^{\left(2ifx+2ie\right)}+a^3f\right)\sqrt{\frac{c}{e^{\left(2ifx+2ie\right)}+1}}\sqrt{-\frac{\left(A^2-6iAB-9B^2\right)c^3}{a^6f^2}}\right)e^{\left(-ifx-ie\right)}}{16a^3f}\right)-3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="fricas")
```

```
[Out] 1/192*(3*sqrt(1/2)*a^3*f*sqrt(-(A^2 - 6*I*A*B - 9*B^2)*c^3/(a^6*f^2))*e^(6*
I*f*x + 6*I*e)*log(1/16*((-I*A - 3*B)*c^2 + sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I
*f*x + 2*I*e) + a^3*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 6*I*A
*B - 9*B^2)*c^3/(a^6*f^2)))*e^(-I*f*x - I*e)/(a^3*f)) - 3*sqrt(1/2)*a^3*f*s
qrt(-(A^2 - 6*I*A*B - 9*B^2)*c^3/(a^6*f^2))*e^(6*I*f*x + 6*I*e)*log(1/16*((
-I*A - 3*B)*c^2 - sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*I*e) + a^3*f)*sqr
t(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(A^2 - 6*I*A*B - 9*B^2)*c^3/(a^6*f^2))
)*e^(-I*f*x - I*e)/(a^3*f)) + sqrt(2)*((3*I*A + 9*B)*c*e^(6*I*f*x + 6*I*e)
+ (17*I*A + 19*B)*c*e^(4*I*f*x + 4*I*e) + (22*I*A + 2*B)*c*e^(2*I*f*x + 2*I
*e) + (8*I*A - 8*B)*c)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-6*I*f*x - 6*I
*e)/(a^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2)/(a+I*a*tan(f*x+e))**3,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(3/2)/(I*a*tan(f*x +
 e) + a)^3, x)
```

3.783 $\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^3}\,dx$

Optimal. Leaf size=209

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3}+\frac{(7B+5iA)\sqrt{c-ic\tan(e+fx)}}{64a^3f(1+i\tan(e+fx))}+\frac{(7B+5iA)\sqrt{c-ic\tan(e+fx)}}{48a^3f(1+i\tan(e+fx))^2}+\frac{\sqrt{c}(7B+5iA)\tan}{64\sqrt{}}$$

```
[Out] (((5*I)*A + 7*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(64*Sqrt[2]*a^3*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(6*a^3*f*(
1 + I*Tan[e + f*x])^3) + (((5*I)*A + 7*B)*Sqrt[c - I*c*Tan[e + f*x]])/(48*a
^3*f*(1 + I*Tan[e + f*x])^2) + (((5*I)*A + 7*B)*Sqrt[c - I*c*Tan[e + f*x]])
/(64*a^3*f*(1 + I*Tan[e + f*x]))
```

Rubi [A] time = 0.239506, antiderivative size = 209, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3}+\frac{(7B+5iA)\sqrt{c-ic\tan(e+fx)}}{64a^3f(1+i\tan(e+fx))}+\frac{(7B+5iA)\sqrt{c-ic\tan(e+fx)}}{48a^3f(1+i\tan(e+fx))^2}+\frac{\sqrt{c}(7B+5iA)\tan}{64\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e + f*x]
)^3,x]
```

```
[Out] (((5*I)*A + 7*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c
])])/(64*Sqrt[2]*a^3*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(6*a^3*f*(
1 + I*Tan[e + f*x])^3) + (((5*I)*A + 7*B)*Sqrt[c - I*c*Tan[e + f*x]])/(48*a
^3*f*(1 + I*Tan[e + f*x])^2) + (((5*I)*A + 7*B)*Sqrt[c - I*c*Tan[e + f*x]])
/(64*a^3*f*(1 + I*Tan[e + f*x]))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^3}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^4\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3} + \frac{((5A-7iB)c)\operatorname{Subst}\left(\int \frac{1}{(a+iax)^3\sqrt{c-icx}}\,dx\right.}{12f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3} + \frac{(5iA+7B)\sqrt{c-ic\tan(e+fx)}}{48a^3f(1+i\tan(e+fx))^2} + \frac{((5A}{}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3} + \frac{(5iA+7B)\sqrt{c-ic\tan(e+fx)}}{48a^3f(1+i\tan(e+fx))^2} + \frac{(5iA}{64}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3} + \frac{(5iA+7B)\sqrt{c-ic\tan(e+fx)}}{48a^3f(1+i\tan(e+fx))^2} + \frac{(5iA}{64}$$

$$= \frac{(5iA+7B)\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{64\sqrt{2}a^3f} + \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{6a^3f(1+i\tan(e+fx))^3}$$

Mathematica [A] time = 3.70111, size = 225, normalized size = 1.08

$$\frac{\sec^2(e+fx)(\cos(fx)+i\sin(fx))^3(A+B\tan(e+fx))\left(\frac{2}{3}\cos(e+fx)(\sin(3fx)+i\cos(3fx))\sqrt{c-ic\tan(e+fx)}(5(7B\right.}{128f(a+ia\tan(e+fx}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e
+ f*x])^3,x]
```

```
[Out] (Sec[e + f*x]^2*(Cos[f*x] + I*Sin[f*x])^3*(A + B*Tan[e + f*x])*(Sqrt[2]*((5
*I)*A + 7*B)*Sqrt[c]*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])]*
(Cos[3*e] + I*Sin[3*e]) + (2*Cos[e + f*x]*(I*Cos[3*f*x] + Sin[3*f*x])*(26*A
 + (2*I)*B + (41*A - (19*I)*B)*Cos[2*(e + f*x)] + 5*((5*I)*A + 7*B)*Sin[2*(
e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/3))/(128*f*(A*Cos[e + f*x] + B*Sin[e
 + f*x])*(a + I*a*Tan[e + f*x])^3)
```

Maple [A] time = 0.146, size = 148, normalized size = 0.7

$$\frac{2\,ic^3}{fa^3}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\left(-\frac{5\,A-7\,iB}{128\,c^2}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\frac{5\,A-7\,iB}{24\,c}\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\left(-\frac{11\,A}{32}+\frac{9\,i}{32}B\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 2*I/f/a^3*c^3*((-1/128/c^2*(5*A-7*I*B)*(c-I*c*tan(f*x+e))^(5/2)+1/24/c*(5*A
-7*I*B)*(c-I*c*tan(f*x+e))^(3/2)+(-11/32*A+9/32*I*B)*(c-I*c*tan(f*x+e))^(1/
2))/(-c-I*c*tan(f*x+e))^3+1/256/c^(5/2)*(5*A-7*I*B)*2^(1/2)*arctanh(1/2*(c-
I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.49838, size = 1035, normalized size = 4.95

$$\left(3\,\sqrt{\frac{1}{2}}a^3f\sqrt{-\frac{\left(25\,A^2-70i\,AB-49\,B^2\right)c}{a^6f^2}}e^{\left(6i\,fx+6i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3fe^{\left(2i\,fx+2i\,e\right)}+a^3f\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{\left(25\,A^2-70i\,AB-49\,B^2\right)c}{a^6f^2}}+\left(5i\,A+7\,B\right)c\right)e^{\left(-i\,fx-i\,e\right)}}{32\,a^3f}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x,
 algorithm="fricas")
```

```
[Out] 1/384*(3*sqrt(1/2)*a^3*f*sqrt(-(25*A^2 - 70*I*A*B - 49*B^2)*c/(a^6*f^2))*e^
(6*I*f*x + 6*I*e)*log(1/32*(sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*I*e) +
a^3*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(25*A^2 - 70*I*A*B - 49*B^2)
*c/(a^6*f^2)) + (5*I*A + 7*B)*c)*e^(-I*f*x - I*e)/(a^3*f)) - 3*sqrt(1/2)*a^
3*f*sqrt(-(25*A^2 - 70*I*A*B - 49*B^2)*c/(a^6*f^2))*e^(6*I*f*x + 6*I*e)*log
(-1/32*(sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*I*e) + a^3*f)*sqrt(c/(e^(2*
I*f*x + 2*I*e) + 1))*sqrt(-(25*A^2 - 70*I*A*B - 49*B^2)*c/(a^6*f^2)) - (5*I
*A + 7*B)*c)*e^(-I*f*x - I*e)/(a^3*f)) + sqrt(2)*((33*I*A + 27*B)*e^(6*I*f*
x + 6*I*e) + (59*I*A + 25*B)*e^(4*I*f*x + 4*I*e) + (34*I*A - 10*B)*e^(2*I*f
*x + 2*I*e) + 8*I*A - 8*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-6*I*f*x -
 6*I*e)/(a^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{-i\,c\tan\left(fx+e\right)+c}}{\left(i\,a\tan\left(fx+e\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(-I*c*tan(f*x + e) + c)/(I*a*tan(f*x + e
) + a)^3, x)
```

3.784 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=245

$$\frac{-B+iA}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}}-\frac{5(5B+7iA)}{128a^3f\sqrt{c-ic\tan(e+fx)}}+\frac{5(5B+7iA)}{192a^3f(1+i\tan(e+fx))\sqrt{c-ic\tan(e+f}}$$

```
[Out] (5*((7*I)*A + 5*B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(
128*Sqrt[2]*a^3*Sqrt[c]*f) - (5*((7*I)*A + 5*B))/(128*a^3*f*Sqrt[c - I*c*Ta
n[e + f*x]]) + (I*A - B)/(6*a^3*f*(1 + I*Tan[e + f*x])^3*Sqrt[c - I*c*Tan[e
 + f*x]]) + ((7*I)*A + 5*B)/(48*a^3*f*(1 + I*Tan[e + f*x])^2*Sqrt[c - I*c*T
an[e + f*x]]) + (5*((7*I)*A + 5*B))/(192*a^3*f*(1 + I*Tan[e + f*x])*Sqrt[c
- I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.273547, antiderivative size = 245, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{-B+iA}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}}-\frac{5(5B+7iA)}{128a^3f\sqrt{c-ic\tan(e+fx)}}+\frac{5(5B+7iA)}{192a^3f(1+i\tan(e+fx))\sqrt{c-ic\tan(e+f}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*Sqrt[c - I*c*Tan[e + f*x
]]),x]
```

```
[Out] (5*((7*I)*A + 5*B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(
128*Sqrt[2]*a^3*Sqrt[c]*f) - (5*((7*I)*A + 5*B))/(128*a^3*f*Sqrt[c - I*c*Ta
n[e + f*x]]) + (I*A - B)/(6*a^3*f*(1 + I*Tan[e + f*x])^3*Sqrt[c - I*c*Tan[e
 + f*x]]) + ((7*I)*A + 5*B)/(48*a^3*f*(1 + I*Tan[e + f*x])^2*Sqrt[c - I*c*T
an[e + f*x]]) + (5*((7*I)*A + 5*B))/(192*a^3*f*(1 + I*Tan[e + f*x])*Sqrt[c
- I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
```

```
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}} + \frac{((7A-5iB)c)\,\text{Subst}\left(\int\right.}{}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}} + \frac{7iA+}{48a^3f(1+i\tan(e+fx)}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+fx)}} + \frac{7iA+}{48a^3f(1+i\tan(e+fx)}$$

$$= -\frac{5(7iA+5B)}{128a^3f\sqrt{c-ic\tan(e+fx)}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+}}$$

$$= -\frac{5(7iA+5B)}{128a^3f\sqrt{c-ic\tan(e+fx)}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3\sqrt{c-ic\tan(e+}}$$

$$= \frac{5(7iA+5B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{128\sqrt{2}a^3\sqrt{c}f} - \frac{5(7iA+5B)}{128a^3f\sqrt{c-ic\tan(e+fx)}} + \frac{}{6a}$$

Mathematica [A] time = 5.547, size = 181, normalized size = 0.74

$$\frac{\sqrt{c-ic\tan(e+fx)}(\cos(2(e+fx))-i\sin(2(e+fx)))\left(15(5B+7iA)e^{2i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)+2\cos\right.}{768a^3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*Sqrt[c - I*c*Tan[e
 + f*x]]),x]
```

```
[Out] ((Cos[2*(e + f*x)] - I*Sin[2*(e + f*x)])*(15*((7*I)*A + 5*B)*E^((2*I)*(e +
f*x))*Sqrt[1 + E^((2*I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]]
+ 2*Cos[e + f*x]*(((125*I)*A + 7*B)*Cos[e + f*x] + ((-40*I)*A - 56*B)*Cos[3
*(e + f*x)] + (7*A - (5*I)*B)*(-7*Sin[e + f*x] + 8*Sin[3*(e + f*x)])))*Sqrt
[c - I*c*Tan[e + f*x]])/(768*a^3*c*f)
```

Maple [A] time = 0.165, size = 179, normalized size = 0.7

$$\frac{2 i c^{3}}{f a^{3}}\left(-\frac{1}{16 c^{3}}\left(\frac{1}{\left(-c-i c \tan\left(f x+e\right)\right)^{3}}\left(\left(-\frac{9 i}{16}B+\frac{19 A}{16}\right)\left(c-i c \tan\left(f x+e\right)\right)^{\frac{5}{2}}+\left(\frac{7 i}{3}B c-\frac{17 A c}{3}\right)\left(c-i c \tan\left(f x+e\right)\right)^{\frac{3}{2}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^3,x)
```

```
[Out] 2*I/f/a^3*c^3*(-1/16/c^3*(((-9/16*I*B+19/16*A)*(c-I*c*tan(f*x+e))^(5/2)+(7/
3*I*B*c-17/3*A*c)*(c-I*c*tan(f*x+e))^(3/2)+(-7/4*I*B*c^2+29/4*A*c^2)*(c-I*c
*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^3-5/32*(-5*I*B+7*A)*2^(1/2)/c^(1/2)
*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))-1/16/c^3*(A-I*B)/(c
-I*c*tan(f*x+e))^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.59236, size = 1118, normalized size = 4.56

$$\frac{\left(3 \sqrt{\frac{1}{2}} a^{3} c f \sqrt{-\frac{1225 A^{2}-1750 i A B-625 B^{2}}{a^{6} c f^{2}}} e^{\left(6 i f x+6 i e\right)} \log\left(\frac{\left(\sqrt{2} \sqrt{\frac{1}{2}}\left(a^{3} f e^{\left(2 i f x+2 i e\right)}+a^{3} f\right) \sqrt{\frac{c}{e^{\left(2 i f x+2 i e\right)}+1}} \sqrt{-\frac{1225 A^{2}-1750 i A B-625 B^{2}}{a^{6} c f^{2}}}+35 i A+25 B\right) e^{\left(-i\right.}}{64 a^{3} f}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="fricas")
```

```
[Out] 1/768*(3*sqrt(1/2)*a^3*c*f*sqrt(-(1225*A^2 - 1750*I*A*B - 625*B^2)/(a^6*c*f
^2))*e^(6*I*f*x + 6*I*e)*log(1/64*(sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*
I*e) + a^3*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(1225*A^2 - 1750*I*A*
B - 625*B^2)/(a^6*c*f^2)) + 35*I*A + 25*B)*e^(-I*f*x - I*e)/(a^3*f)) - 3*sq
rt(1/2)*a^3*c*f*sqrt(-(1225*A^2 - 1750*I*A*B - 625*B^2)/(a^6*c*f^2))*e^(6*I
*f*x + 6*I*e)*log(-1/64*(sqrt(2)*sqrt(1/2)*(a^3*f*e^(2*I*f*x + 2*I*e) + a^3
*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(1225*A^2 - 1750*I*A*B - 625*B^
2)/(a^6*c*f^2)) - 35*I*A - 25*B)*e^(-I*f*x - I*e)/(a^3*f)) + sqrt(2)*((-48*
I*A - 48*B)*e^(8*I*f*x + 8*I*e) + (39*I*A - 27*B)*e^(6*I*f*x + 6*I*e) + (12
5*I*A + 7*B)*e^(4*I*f*x + 4*I*e) + (46*I*A - 22*B)*e^(2*I*f*x + 2*I*e) + 8*
I*A - 8*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-6*I*f*x - 6*I*e)/(a^3*c*f
)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2)/(a+I*a*tan(f*x+e))**3,
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{3}\sqrt{-ic\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^3,x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^3*sqrt(-I*c*tan(f*x
+ e) + c)), x)
```

3.785 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=274

$$\frac{35(B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{256\sqrt{2}a^3c^{3/2}f}+\frac{-B+iA}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}}-\frac{35(B+3iA)}{256a^3cf\sqrt{c-ic\tan(e+fx)}}-$$

```
[Out] (35*((3*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(2
56*Sqrt[2]*a^3*c^(3/2)*f) - (35*((3*I)*A + B))/(384*a^3*f*(c - I*c*Tan[e +
f*x])^(3/2)) + (I*A - B)/(6*a^3*f*(1 + I*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^(3/2)) + ((3*I)*A + B)/(16*a^3*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Tan[e
 + f*x])^(3/2)) + (7*((3*I)*A + B))/(64*a^3*f*(1 + I*Tan[e + f*x])*(c - I*c
*Tan[e + f*x])^(3/2)) - (35*((3*I)*A + B))/(256*a^3*c*f*Sqrt[c - I*c*Tan[e
+ f*x]])
```

Rubi [A] time = 0.309907, antiderivative size = 274, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$\frac{35(B+3iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{256\sqrt{2}a^3c^{3/2}f}+\frac{-B+iA}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}}-\frac{35(B+3iA)}{256a^3cf\sqrt{c-ic\tan(e+fx)}}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^(
3/2)),x]
```


```
[Out] (35*((3*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(2
56*Sqrt[2]*a^3*c^(3/2)*f) - (35*((3*I)*A + B))/(384*a^3*f*(c - I*c*Tan[e +
f*x])^(3/2)) + (I*A - B)/(6*a^3*f*(1 + I*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^(3/2)) + ((3*I)*A + B)/(16*a^3*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Tan[e
 + f*x])^(3/2)) + (7*((3*I)*A + B))/(64*a^3*f*(1 + I*Tan[e + f*x])*(c - I*c
*Tan[e + f*x])^(3/2)) - (35*((3*I)*A + B))/(256*a^3*c*f*Sqrt[c - I*c*Tan[e
+ f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}} + \frac{((3A-iB)c)\operatorname{Subs}}{}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}} + \frac{}{16a^3f(1+i\tan(e}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{3/2}} + \frac{}{16a^3f(1+i\tan(e}$$

$$= -\frac{35(3iA+B)}{384a^3f(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\operatorname{ta}}$$

$$= -\frac{35(3iA+B)}{384a^3f(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\operatorname{ta}}$$

$$= -\frac{35(3iA+B)}{384a^3f(c-ic\tan(e+fx))^{3/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\operatorname{ta}}$$

$$= \frac{35(3iA+B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{256\sqrt{2}a^3c^{3/2}f} - \frac{35(3iA+B)}{384a^3f(c-ic\tan(e+fx))^{3/}}$$

Mathematica [A] time = 7.99622, size = 206, normalized size = 0.75

$$\frac{\sqrt{c-ic\tan(e+fx)}(\sin(e+fx)+i\cos(e+fx))\left(105(3A-iB)e^{i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)-2\cos(e+\ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^(3/2)),x]
```

```
[Out] ((I*Cos[e + f*x] + Sin[e + f*x])*(105*(3*A - I*B)*E^(I*(e + f*x))*Sqrt[1 +
E^((2*I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]] - 2*Cos[e + f*x
]*(-165*A - (9*I)*B + 2*(79*A - (69*I)*B)*Cos[2*(e + f*x)] + 8*(A - (3*I)*B
)*Cos[4*(e + f*x)] + (258*I)*A*Sin[2*(e + f*x)] + 86*B*Sin[2*(e + f*x)] + (
24*I)*A*Sin[4*(e + f*x)] + 8*B*Sin[4*(e + f*x)]))*Sqrt[c - I*c*Tan[e + f*x]
```

```
])/(1536*a^3*c^2*f)
```

Maple [A] time = 0.115, size = 206, normalized size = 0.8

$$\frac{2\,ic^3}{f a^3}\left(-\frac{1}{16\,c^4}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\left(\left(-\frac{3\,i}{32}B+\frac{41\,A}{32}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\left(\frac{i}{6}Bc-\frac{35\,Ac}{6}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 2*I/f/a^3*c^3*(-1/16/c^4*(((-3/32*I*B+41/32*A)*(c-I*c*tan(f*x+e))^(5/2)+(1/
6*I*B*c-35/6*A*c)*(c-I*c*tan(f*x+e))^(3/2)+(55/8*A*c^2+3/8*I*B*c^2)*(c-I*c*
tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^3-35/64*(3*A-I*B)*2^(1/2)/c^(1/2)*ar
ctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))-1/16/c^4*(2*A-I*B)/(c-
I*c*tan(f*x+e))^(1/2)-1/48/c^3*(A-I*B)/(c-I*c*tan(f*x+e))^(3/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.51609, size = 1233, normalized size = 4.5

$$\left(3\sqrt{\frac{1}{2}}a^3c^2f\sqrt{-\frac{11025\,A^2-7350i\,AB-1225\,B^2}{a^6c^3f^2}}e^{\left(6i\,fx+6i\,e\right)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3cfe^{\left(2i\,fx+2i\,e\right)}+a^3cf\right)\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{-\frac{11025\,A^2-7350i\,AB-1225\,B^2}{a^6c^3f^2}}+105i\,A+35\right.}{128\,a^3cf}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="fricas")
```

```
[Out] 1/1536*(3*sqrt(1/2)*a^3*c^2*f*sqrt(-(11025*A^2 - 7350*I*A*B - 1225*B^2)/(a^
6*c^3*f^2))*e^(6*I*f*x + 6*I*e)*log(1/128*(sqrt(2)*sqrt(1/2)*(a^3*c*f*e^(2*
I*f*x + 2*I*e) + a^3*c*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(11025*A^
2 - 7350*I*A*B - 1225*B^2)/(a^6*c^3*f^2)) + 105*I*A + 35*B)*e^(-I*f*x - I*e
)/(a^3*c*f)) - 3*sqrt(1/2)*a^3*c^2*f*sqrt(-(11025*A^2 - 7350*I*A*B - 1225*B
^2)/(a^6*c^3*f^2))*e^(6*I*f*x + 6*I*e)*log(-1/128*(sqrt(2)*sqrt(1/2)*(a^3*c
*f*e^(2*I*f*x + 2*I*e) + a^3*c*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(
11025*A^2 - 7350*I*A*B - 1225*B^2)/(a^6*c^3*f^2)) - 105*I*A - 35*B)*e^(-I*f
*x - I*e)/(a^3*c*f)) + sqrt(2)*((-16*I*A - 16*B)*e^(10*I*f*x + 10*I*e) + (-
224*I*A - 128*B)*e^(8*I*f*x + 8*I*e) + (-43*I*A - 121*B)*e^(6*I*f*x + 6*I*e
) + (215*I*A - 35*B)*e^(4*I*f*x + 4*I*e) + (58*I*A - 34*B)*e^(2*I*f*x + 2*I
*e) + 8*I*A - 8*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-6*I*f*x - 6*I*e)/
(a^3*c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**(3/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(i\,a\tan\left(fx+e\right)+a\right)^{3}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(3/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^3*(-I*c*tan(f*x + e)
 + c)^(3/2)), x)
```

3.786 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=311

$$-\frac{21(B+11iA)}{512a^3c^2f\sqrt{c-ic\tan(e+fx)}}+\frac{21(B+11iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{512\sqrt{2}a^3c^{5/2}f}+\frac{-B+iA}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}}$$

```
[Out] (21*((11*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(
512*Sqrt[2]*a^3*c^(5/2)*f) - (21*((11*I)*A + B))/(640*a^3*f*(c - I*c*Tan[e
+ f*x])^(5/2)) + (I*A - B)/(6*a^3*f*(1 + I*Tan[e + f*x])^3*(c - I*c*Tan[e +
 f*x])^(5/2)) + ((11*I)*A + B)/(48*a^3*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Ta
n[e + f*x])^(5/2)) + (3*((11*I)*A + B))/(64*a^3*f*(1 + I*Tan[e + f*x])*(c -
 I*c*Tan[e + f*x])^(5/2)) - (7*((11*I)*A + B))/(256*a^3*c*f*(c - I*c*Tan[e
+ f*x])^(3/2)) - (21*((11*I)*A + B))/(512*a^3*c^2*f*Sqrt[c - I*c*Tan[e + f*
x]])
```

Rubi [A] time = 0.349697, antiderivative size = 311, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.116, Rules used = {3588, 78, 51, 63, 208}

$$-\frac{21(B+11iA)}{512a^3c^2f\sqrt{c-ic\tan(e+fx)}}+\frac{21(B+11iA)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{512\sqrt{2}a^3c^{5/2}f}+\frac{-B+iA}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f*x])^(
5/2)),x]
```

```
[Out] (21*((11*I)*A + B)*ArcTanh[Sqrt[c - I*c*Tan[e + f*x]]/(Sqrt[2]*Sqrt[c])])/(
512*Sqrt[2]*a^3*c^(5/2)*f) - (21*((11*I)*A + B))/(640*a^3*f*(c - I*c*Tan[e
+ f*x])^(5/2)) + (I*A - B)/(6*a^3*f*(1 + I*Tan[e + f*x])^3*(c - I*c*Tan[e +
 f*x])^(5/2)) + ((11*I)*A + B)/(48*a^3*f*(1 + I*Tan[e + f*x])^2*(c - I*c*Ta
n[e + f*x])^(5/2)) + (3*((11*I)*A + B))/(64*a^3*f*(1 + I*Tan[e + f*x])*(c -
 I*c*Tan[e + f*x])^(5/2)) - (7*((11*I)*A + B))/(256*a^3*c*f*(c - I*c*Tan[e
+ f*x])^(3/2)) - (21*((11*I)*A + B))/(512*a^3*c^2*f*Sqrt[c - I*c*Tan[e + f*
x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^4(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}} + \frac{((11A-iB)c)\operatorname{Sub}}{}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}} + \frac{}{48a^3f(1+i\tan(e}$$

$$= \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\tan(e+fx))^{5/2}} + \frac{}{48a^3f(1+i\tan(e}$$

$$= -\frac{21(11iA+B)}{640a^3f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\,\mathrm{ta}}$$

$$= -\frac{21(11iA+B)}{640a^3f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\,\mathrm{ta}}$$

$$= -\frac{21(11iA+B)}{640a^3f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\,\mathrm{ta}}$$

$$= -\frac{21(11iA+B)}{640a^3f(c-ic\tan(e+fx))^{5/2}} + \frac{iA-B}{6a^3f(1+i\tan(e+fx))^3(c-ic\,\mathrm{ta}}$$

$$= \frac{21(11iA+B)\tanh^{-1}\left(\frac{\sqrt{c-ic\tan(e+fx)}}{\sqrt{2}\sqrt{c}}\right)}{512\sqrt{2}a^3c^{5/2}f} - \frac{21(11iA+B)}{640a^3f(c-ic\tan(e+fx))^{5}}$$

Mathematica [A] time = 12.2013, size = 256, normalized size = 0.82

$$\frac{e^{-6i(e+fx)}\sqrt{c-ic\tan(e+fx)}\left(315(B+11iA)e^{6i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)-i\left(1+e^{2i(e+fx)}\right)\left(A\left(-310e^{2i(e}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^3*(c - I*c*Tan[e + f
*x])^(5/2)),x]
```

```
[Out] (((-I)*(1 + E^((2*I)*(e + f*x)))*((-I)*B*(40 + 190*E^((2*I)*(e + f*x)) + 31
5*E^((4*I)*(e + f*x)) + 688*E^((6*I)*(e + f*x)) + 256*E^((8*I)*(e + f*x)) +
```

```
 48*E^((10*I)*(e + f*x))) + A*(-40 - 310*E^((2*I)*(e + f*x)) - 1335*E^((4*I
)*(e + f*x)) + 2768*E^((6*I)*(e + f*x)) + 416*E^((8*I)*(e + f*x)) + 48*E^((
10*I)*(e + f*x)))) + 315*((11*I)*A + B)*E^((6*I)*(e + f*x))*Sqrt[1 + E^((2*
I)*(e + f*x))]*ArcTanh[Sqrt[1 + E^((2*I)*(e + f*x))]])*Sqrt[c - I*c*Tan[e +
 f*x]])/(15360*a^3*c^3*E^((6*I)*(e + f*x))*f)
```

Maple [A] time = 0.117, size = 233, normalized size = 0.8

$$\frac{2\,ic^3}{f a^3}\left(-\frac{1}{32\,c^5}\left(\frac{1}{\left(-c-ic\tan\left(fx+e\right)\right)^3}\left(\left(\frac{11\,i}{32}B+\frac{71\,A}{32}\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{5}{2}}+\left(-\frac{59\,Ac}{6}-\frac{11\,i}{6}Bc\right)\left(c-ic\tan\left(fx+e\right)\right)^{\frac{3}{2}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 2*I/f/a^3*c^3*(-1/32/c^5*(((11/32*I*B+71/32*A)*(c-I*c*tan(f*x+e))^(5/2)+(-5
9/6*A*c-11/6*I*B*c)*(c-I*c*tan(f*x+e))^(3/2)+(21/8*I*B*c^2+89/8*A*c^2)*(c-I
*c*tan(f*x+e))^(1/2))/(-c-I*c*tan(f*x+e))^3-21/64*(-I*B+11*A)*2^(1/2)/c^(1/
2)*arctanh(1/2*(c-I*c*tan(f*x+e))^(1/2)*2^(1/2)/c^(1/2)))-1/32/c^5*(5*A-I*B
)/(c-I*c*tan(f*x+e))^(1/2)-1/48/c^4*(2*A-I*B)/(c-I*c*tan(f*x+e))^(3/2)-1/80
/c^3*(A-I*B)/(c-I*c*tan(f*x+e))^(5/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.80242, size = 1319, normalized size = 4.24

$$\frac{\left(15\sqrt{\frac{1}{2}}a^3c^3f\sqrt{-\frac{53361\,A^2-9702i\,AB-441\,B^2}{a^6c^5f^2}}e^{(6i\,fx+6i\,e)}\log\left(\frac{\left(\sqrt{2}\sqrt{\frac{1}{2}}\left(a^3c^2fe^{(2i\,fx+2i\,e)}+a^3c^2f\right)\sqrt{\frac{c}{e^{(2i\,fx+2i\,e)}+1}}\sqrt{-\frac{53361\,A^2-9702i\,AB-441\,B^2}{a^6c^5f^2}}+231i\,A+\right.}{256\,a^3c^2f}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="fricas")
```

```
[Out] 1/15360*(15*sqrt(1/2)*a^3*c^3*f*sqrt(-(53361*A^2 - 9702*I*A*B - 441*B^2)/(a
^6*c^5*f^2))*e^(6*I*f*x + 6*I*e)*log(1/256*(sqrt(2)*sqrt(1/2)*(a^3*c^2*f*e^
(2*I*f*x + 2*I*e) + a^3*c^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(-(533
61*A^2 - 9702*I*A*B - 441*B^2)/(a^6*c^5*f^2)) + 231*I*A + 21*B)*e^(-I*f*x -
 I*e)/(a^3*c^2*f)) - 15*sqrt(1/2)*a^3*c^3*f*sqrt(-(53361*A^2 - 9702*I*A*B -
 441*B^2)/(a^6*c^5*f^2))*e^(6*I*f*x + 6*I*e)*log(-1/256*(sqrt(2)*sqrt(1/2)*
(a^3*c^2*f*e^(2*I*f*x + 2*I*e) + a^3*c^2*f)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
))*sqrt(-(53361*A^2 - 9702*I*A*B - 441*B^2)/(a^6*c^5*f^2)) - 231*I*A - 21*B
)*e^(-I*f*x - I*e)/(a^3*c^2*f)) + sqrt(2)*((-48*I*A - 48*B)*e^(12*I*f*x + 1
2*I*e) + (-464*I*A - 304*B)*e^(10*I*f*x + 10*I*e) + (-3184*I*A - 944*B)*e^(
8*I*f*x + 8*I*e) + (-1433*I*A - 1003*B)*e^(6*I*f*x + 6*I*e) + (1645*I*A - 5
05*B)*e^(4*I*f*x + 4*I*e) + (350*I*A - 230*B)*e^(2*I*f*x + 2*I*e) + 40*I*A
- 40*B)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)))*e^(-6*I*f*x - 6*I*e)/(a^3*c^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**3/(c-I*c*tan(f*x+e))**(5/2),
x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{3}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^3/(c-I*c*tan(f*x+e))^(5/2),x,
 algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^3*(-I*c*tan(f*x + e)
 + c)^(5/2)), x)
```

3.787 $\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=272

$$-\frac{5\sqrt{a}c^{7/2}(-3B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}-\frac{5c^3(-3B+4iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}-\frac{5c^2(-3B+$$

```
[Out] (-5*Sqrt[a]*((4*I)*A - 3*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*
x]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) - (5*((4*I)*A - 3*B)*c^3*
Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) - (5*((4*I)*A
- 3*B)*c^2*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(24*f)
- (((4*I)*A - 3*B)*c*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/2
))/(12*f) + (B*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(7/2))/(4*
f)
```

Rubi [A] time = 0.329006, antiderivative size = 272, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 50, 63, 217, 203}

$$-\frac{5\sqrt{a}c^{7/2}(-3B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}-\frac{5c^3(-3B+4iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}-\frac{5c^2(-3B+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^
(7/2),x]
```


```
[Out] (-5*Sqrt[a]*((4*I)*A - 3*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*
x]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) - (5*((4*I)*A - 3*B)*c^3*
Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) - (5*((4*I)*A
- 3*B)*c^2*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(24*f)
- (((4*I)*A - 3*B)*c*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/2
))/(12*f) + (B*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(7/2))/(4*
f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(A+Bx)(c-icx)^{5/2}}{\sqrt{a+iax}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{7/2}}{4f} + \frac{(a}{}$$

$$= -\frac{(4iA-3B)c\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+}{12f}$$

$$= -\frac{5(4iA-3B)c^2\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e}{24f}$$

$$= -\frac{5(4iA-3B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(}{8f}$$

$$= -\frac{5(4iA-3B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(}{8f}$$

$$= -\frac{5(4iA-3B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(}{8f}$$

$$= -\frac{5\sqrt{a}(4iA-3B)c^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} -$$

Mathematica [A] time = 9.30935, size = 257, normalized size = 0.94

$$\frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))\left(\frac{5c^4(3B-4iA)e^{-i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\tan^{-1}\left(e^{i(e+fx)}\right)}{\sqrt{\frac{c}{1+e^{2i(e+fx)}}}} + \frac{1}{24}c^3\sec^{\frac{7}{2}}(e+fx)\sqrt{c-ic\tan(e+fx}\right.}{4f\sec^{\frac{3}{2}}(e+fx)(A\cos(e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*(c - I*c*Tan[e +
f*x])^(7/2),x]
```

```
[Out] (Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*((5*((-4*I)*A + 3*B)*c^4*S
qrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(E^
```

```
(I*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) + (c^3*Sec[e + f*x]^(7/2)*
(64*((-4*I)*A + 3*B)*Cos[e + f*x] + 96*((-I)*A + B)*Cos[3*(e + f*x)] - 6*(1
2*A + (13*I)*B + (12*A + (17*I)*B)*Cos[2*(e + f*x)])*Sin[e + f*x])*Sqrt[c -
 I*c*Tan[e + f*x]])/24))/(4*f*Sec[e + f*x]^(3/2)*(A*Cos[e + f*x] + B*Sin[e
+ f*x]))
```

Maple [A] time = 0.173, size = 349, normalized size = 1.3

$$\frac{c^3}{24f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(6\,iB\left(\tan\left(fx+e\right)\right)^3\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+8\,iA\left(\tan\left(\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 1/24/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*c^3*(6*I*B*t
an(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+8*I*A*tan(f*x+e)^2*(a*
c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+45*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-45*I*B*(a*c)^(1/2)*(a*c*(1+
tan(f*x+e)^2))^(1/2)*tan(f*x+e)-24*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2)-88*I*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)+60*A*ln((a*
c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-36*
A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+72*B*(a*c)^(1/2)*(a*c
*(1+tan(f*x+e)^2))^(1/2))/(a*c)^(1/2)/(a*c*(1+tan(f*x+e)^2))^(1/2)
```

Maxima [B] time = 7.75012, size = 1798, normalized size = 6.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] -((23040*A + 17280*I*B)*c^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + (84480*A + 63360*I*B)*c^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + (112128*A + 84096*I*B)*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e),
```

```
cos(2*f*x + 2*e))) + (50688*A + 56448*I*B)*c^3*cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + 5760*(4*I*A - 3*B)*c^3*sin(7/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) + 21120*(4*I*A - 3*B)*c^3*sin(5/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) + 28032*(4*I*A - 3*B)*c^3*sin(3/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1152*(44*I*A - 49*B)*c^3*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((11520*A + 8640*I*B)*c^3*cos(8*
f*x + 8*e) + (46080*A + 34560*I*B)*c^3*cos(6*f*x + 6*e) + (69120*A + 51840*
I*B)*c^3*cos(4*f*x + 4*e) + (46080*A + 34560*I*B)*c^3*cos(2*f*x + 2*e) + 28
80*(4*I*A - 3*B)*c^3*sin(8*f*x + 8*e) + 11520*(4*I*A - 3*B)*c^3*sin(6*f*x +
 6*e) + 17280*(4*I*A - 3*B)*c^3*sin(4*f*x + 4*e) + 11520*(4*I*A - 3*B)*c^3*
sin(2*f*x + 2*e) + (11520*A + 8640*I*B)*c^3)*arctan2(cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + 1) + ((11520*A + 8640*I*B)*c^3*cos(8*f*x + 8*e) + (46080*A + 34
560*I*B)*c^3*cos(6*f*x + 6*e) + (69120*A + 51840*I*B)*c^3*cos(4*f*x + 4*e)
+ (46080*A + 34560*I*B)*c^3*cos(2*f*x + 2*e) + 2880*(4*I*A - 3*B)*c^3*sin(8
*f*x + 8*e) + 11520*(4*I*A - 3*B)*c^3*sin(6*f*x + 6*e) + 17280*(4*I*A - 3*B
)*c^3*sin(4*f*x + 4*e) + 11520*(4*I*A - 3*B)*c^3*sin(2*f*x + 2*e) + (11520*
A + 8640*I*B)*c^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (1440*(4
*I*A - 3*B)*c^3*cos(8*f*x + 8*e) + 5760*(4*I*A - 3*B)*c^3*cos(6*f*x + 6*e)
+ 8640*(4*I*A - 3*B)*c^3*cos(4*f*x + 4*e) + 5760*(4*I*A - 3*B)*c^3*cos(2*f*
x + 2*e) - (5760*A + 4320*I*B)*c^3*sin(8*f*x + 8*e) - (23040*A + 17280*I*B)
*c^3*sin(6*f*x + 6*e) - (34560*A + 25920*I*B)*c^3*sin(4*f*x + 4*e) - (23040
*A + 17280*I*B)*c^3*sin(2*f*x + 2*e) + 1440*(4*I*A - 3*B)*c^3)*log(cos(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 1) + (1440*(-4*I*A + 3*B)*c^3*cos(8*f*x + 8*e) + 5760*(-4*I*A
+ 3*B)*c^3*cos(6*f*x + 6*e) + 8640*(-4*I*A + 3*B)*c^3*cos(4*f*x + 4*e) + 57
60*(-4*I*A + 3*B)*c^3*cos(2*f*x + 2*e) + (5760*A + 4320*I*B)*c^3*sin(8*f*x
+ 8*e) + (23040*A + 17280*I*B)*c^3*sin(6*f*x + 6*e) + (34560*A + 25920*I*B)
*c^3*sin(4*f*x + 4*e) + (23040*A + 17280*I*B)*c^3*sin(2*f*x + 2*e) + 1440*(
-4*I*A + 3*B)*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-4608*I
*cos(8*f*x + 8*e) - 18432*I*cos(6*f*x + 6*e) - 27648*I*cos(4*f*x + 4*e) - 1
8432*I*cos(2*f*x + 2*e) + 4608*sin(8*f*x + 8*e) + 18432*sin(6*f*x + 6*e) +
27648*sin(4*f*x + 4*e) + 18432*sin(2*f*x + 2*e) - 4608*I))
```

Fricas [B] time = 1.61683, size = 1628, normalized size = 5.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/48*(4*((-60*I*A + 45*B)*c^3*e^(6*I*f*x + 6*I*e) + (-220*I*A + 165*B)*c^3*
e^(4*I*f*x + 4*I*e) + (-292*I*A + 219*B)*c^3*e^(2*I*f*x + 2*I*e) + (-132*I*
A + 147*B)*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*
e) + 1))*e^(I*f*x + I*e) - 3*sqrt((400*A^2 + 600*I*A*B - 225*B^2)*a*c^7/f^2
)*(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e
) + f)*log(2*(((-80*I*A + 60*B)*c^3*e^(2*I*f*x + 2*I*e) + (-80*I*A + 60*B)*
c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^
(I*f*x + I*e) + 2*sqrt((400*A^2 + 600*I*A*B - 225*B^2)*a*c^7/f^2)*(f*e^(2*I
*f*x + 2*I*e) - f))/((-20*I*A + 15*B)*c^3*e^(2*I*f*x + 2*I*e) + (-20*I*A +
15*B)*c^3)) + 3*sqrt((400*A^2 + 600*I*A*B - 225*B^2)*a*c^7/f^2)*(f*e^(6*I*f
*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)*log(2*
(((-80*I*A + 60*B)*c^3*e^(2*I*f*x + 2*I*e) + (-80*I*A + 60*B)*c^3)*sqrt(a/(
e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)
 - 2*sqrt((400*A^2 + 600*I*A*B - 225*B^2)*a*c^7/f^2)*(f*e^(2*I*f*x + 2*I*e)
 - f))/((-20*I*A + 15*B)*c^3*e^(2*I*f*x + 2*I*e) + (-20*I*A + 15*B)*c^3)))/
(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e)
+ f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\sqrt{i\,a\tan\left(fx+e\right)+a}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e
) + c)^(7/2), x)
```

3.788 $\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=217

$$-\frac{\sqrt{a}c^{5/2}(-2B+3iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}-\frac{c^2(-2B+3iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}-\frac{c(-2B+3iA)\sqrt{}}{}$$

```
[Out] -((Sqrt[a]*((3*I)*A - 2*B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x
]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) - (((3*I)*A - 2*B)*c^2*Sqrt[a
 + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) - (((3*I)*A - 2*B)*c
*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(6*f) + (B*Sqrt[a
 + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/2))/(3*f)
```

Rubi [A] time = 0.295699, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 50, 63, 217, 203}

$$-\frac{\sqrt{a}c^{5/2}(-2B+3iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}-\frac{c^2(-2B+3iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}-\frac{c(-2B+3iA)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^
(5/2),x]
```

```
[Out] -((Sqrt[a]*((3*I)*A - 2*B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x
]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) - (((3*I)*A - 2*B)*c^2*Sqrt[a
 + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) - (((3*I)*A - 2*B)*c
*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(6*f) + (B*Sqrt[a
 + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/2))/(3*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{\sqrt{a+iax}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}}{3f} + \frac{(a(3}{}$$

$$= -\frac{(3iA-2B)c\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+f}{6f}$$

$$= -\frac{(3iA-2B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+}}{2f}$$

$$= -\frac{(3iA-2B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+}}{2f}$$

$$= -\frac{(3iA-2B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+}}{2f}$$

$$= -\frac{\sqrt{a}(3iA-2B)c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f} - \frac{(3i}{}$$

Mathematica [A] time = 6.64861, size = 226, normalized size = 1.04

$$\frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))\left(\frac{c^3(2B-3iA)e^{-i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\tan^{-1}\left(e^{i(e+fx)}\right)}{\sqrt{\frac{c}{1+e^{2i(e+fx)}}}} + \frac{1}{12}c^2\sec^{\frac{5}{2}}(e+fx)\sqrt{c-ic\tan(e+fx)}(-\right.}{f\sec^{\frac{3}{2}}(e+fx)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*(c - I*c*Tan[e +
f*x])^(5/2),x]
```

```
[Out] (Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*((((-3*I)*A + 2*B)*c^3*Sqr
t[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(E^(I
*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) + (c^2*Sec[e + f*x]^(5/2)*((
-12*I)*A + 8*B + 12*((-I)*A + B)*Cos[2*(e + f*x)] - 3*(A + (2*I)*B)*Sin[2*(
e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/12))/(f*Sec[e + f*x]^(3/2)*(A*Cos[e
```

```
+ f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.154, size = 285, normalized size = 1.3

$$-\frac{c^2}{6f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(-6\,iB\ln\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}\right)\frac{1}{\sqrt{\cdot}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/6/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*c^2*(-6*I*B*
ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a
*c+6*I*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+2*B*tan(f*x+e)
^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+12*I*A*(a*c)^(1/2)*(a*c*(1+tan(
f*x+e)^2))^(1/2)-9*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^
(1/2))/(a*c)^(1/2))*a*c+3*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*
x+e)-10*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c)^(1/2)/(a*c*(1+tan
(f*x+e)^2))^(1/2)
```

Maxima [B] time = 3.48267, size = 1455, normalized size = 6.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] -((216*A + 144*I*B)*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) + (576*A + 384*I*B)*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) + (360*A + 432*I*B)*c^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 72*(3*I*A - 2*B)*c^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + 192*(3*I*A - 2*B)*c^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 72*(5*I*A - 6*B)*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + ((108*A + 72*I*B)*c^2*cos(6*f*x + 6*e) + (324*A + 216*I*B)*c^2*
cos(4*f*x + 4*e) + (324*A + 216*I*B)*c^2*cos(2*f*x + 2*e) + 36*(3*I*A - 2*B
```

```
)*c^2*sin(6*f*x + 6*e) + 108*(3*I*A - 2*B)*c^2*sin(4*f*x + 4*e) + 108*(3*I*
A - 2*B)*c^2*sin(2*f*x + 2*e) + (108*A + 72*I*B)*c^2)*arctan2(cos(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) + 1) + ((108*A + 72*I*B)*c^2*cos(6*f*x + 6*e) + (324*A +
 216*I*B)*c^2*cos(4*f*x + 4*e) + (324*A + 216*I*B)*c^2*cos(2*f*x + 2*e) + 3
6*(3*I*A - 2*B)*c^2*sin(6*f*x + 6*e) + 108*(3*I*A - 2*B)*c^2*sin(4*f*x + 4*
e) + 108*(3*I*A - 2*B)*c^2*sin(2*f*x + 2*e) + (108*A + 72*I*B)*c^2)*arctan2
(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (18*(3*I*A - 2*B)*c^2*cos(6*f*x +
6*e) + 54*(3*I*A - 2*B)*c^2*cos(4*f*x + 4*e) + 54*(3*I*A - 2*B)*c^2*cos(2*f
*x + 2*e) - (54*A + 36*I*B)*c^2*sin(6*f*x + 6*e) - (162*A + 108*I*B)*c^2*si
n(4*f*x + 4*e) - (162*A + 108*I*B)*c^2*sin(2*f*x + 2*e) + 18*(3*I*A - 2*B)*
c^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) + 1) + (18*(-3*I*A + 2*B)*c^2*cos(6*f*x + 6*e)
+ 54*(-3*I*A + 2*B)*c^2*cos(4*f*x + 4*e) + 54*(-3*I*A + 2*B)*c^2*cos(2*f*x
+ 2*e) + (54*A + 36*I*B)*c^2*sin(6*f*x + 6*e) + (162*A + 108*I*B)*c^2*sin(4
*f*x + 4*e) + (162*A + 108*I*B)*c^2*sin(2*f*x + 2*e) + 18*(-3*I*A + 2*B)*c^
2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-72*I*cos(6*f*x + 6*e)
- 216*I*cos(4*f*x + 4*e) - 216*I*cos(2*f*x + 2*e) + 72*sin(6*f*x + 6*e) + 2
16*sin(4*f*x + 4*e) + 216*sin(2*f*x + 2*e) - 72*I))
```

Fricas [B] time = 1.68716, size = 1413, normalized size = 6.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(2*((-18*I*A + 12*B)*c^2*e^(4*I*f*x + 4*I*e) + (-48*I*A + 32*B)*c^2*e^
(2*I*f*x + 2*I*e) + (-30*I*A + 36*B)*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))
*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 3*sqrt((9*A^2 + 12*I*A
*B - 4*B^2)*a*c^5/f^2)*(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I*e) + f
)*log(2*(((-12*I*A + 8*B)*c^2*e^(2*I*f*x + 2*I*e) + (-12*I*A + 8*B)*c^2)*sq
rt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x
+ I*e) + 2*sqrt((9*A^2 + 12*I*A*B - 4*B^2)*a*c^5/f^2)*(f*e^(2*I*f*x + 2*I*e
) - f))/((-3*I*A + 2*B)*c^2*e^(2*I*f*x + 2*I*e) + (-3*I*A + 2*B)*c^2)) + 3*
sqrt((9*A^2 + 12*I*A*B - 4*B^2)*a*c^5/f^2)*(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(
```

```
2*I*f*x + 2*I*e) + f)*log(2*(((-12*I*A + 8*B)*c^2*e^(2*I*f*x + 2*I*e) + (-1
2*I*A + 8*B)*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*
I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((9*A^2 + 12*I*A*B - 4*B^2)*a*c^5/f^2)*(
f*e^(2*I*f*x + 2*I*e) - f))/((-3*I*A + 2*B)*c^2*e^(2*I*f*x + 2*I*e) + (-3*I
*A + 2*B)*c^2)))/(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(fx+e)+A)\sqrt{ia\tan(fx+e)+a}(-ic\tan(fx+e)+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e
) + c)^(5/2), x)
```

3.789 $\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=164

$$-\frac{\sqrt{a}c^{3/2}(-B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}-\frac{c(-B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{B\sqrt{a+ia\tan(e+}}{}$$

```
[Out] -((Sqrt[a]*((2*I)*A - B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]]
)/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) - (((2*I)*A - B)*c*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (B*Sqrt[a + I*a*Tan[e +
f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(2*f)
```

Rubi [A] time = 0.259342, antiderivative size = 164, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 50, 63, 217, 203}

$$-\frac{\sqrt{a}c^{3/2}(-B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}-\frac{c(-B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{B\sqrt{a+ia\tan(e+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^
(3/2),x]
```

```
[Out] -((Sqrt[a]*((2*I)*A - B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]]
)/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) - (((2*I)*A - B)*c*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (B*Sqrt[a + I*a*Tan[e +
f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{\sqrt{a+iax}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}{2f} + \frac{(a(2}{}$$

$$= -\frac{(2iA-B)c\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+f}}{2f}$$

$$= -\frac{(2iA-B)c\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+f}}{2f}$$

$$= -\frac{(2iA-B)c\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+f}}{2f}$$

$$= -\frac{\sqrt{a}(2iA-B)c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f} - \frac{(2iA}{}$$

Mathematica [A] time = 5.749, size = 159, normalized size = 0.97

$$\frac{c^2e^{-ie}\left(\sin\left(\frac{e}{2}\right)-i\cos\left(\frac{e}{2}\right)\right)\sqrt{a+ia\tan(e+fx)}\left(\cos\left(\frac{e}{2}+fx\right)-i\sin\left(\frac{e}{2}+fx\right)\right)\left((4A+2iB)\tan^{-1}\left(e^{i(e+fx)}\right)+\sec(e+fx)(\right.}{2\sqrt{2}f\sqrt{\frac{c}{1+e^{2i(e+fx)}}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*(c - I*c*Tan[e +
f*x])^(3/2),x]
```

```
[Out] (c^2*((-I)*Cos[e/2] + Sin[e/2])*(Cos[e/2 + f*x] - I*Sin[e/2 + f*x])*((4*A +
 (2*I)*B)*ArcTan[E^(I*(e + f*x))] + Sec[e + f*x]*(2*A + (2*I)*B + B*Sec[e]*
Sec[e + f*x]*Sin[f*x] + B*Tan[e]))*Sqrt[a + I*a*Tan[e + f*x]])/(2*Sqrt[2]*E
^(I*e)*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f)
```

Maple [A] time = 0.202, size = 223, normalized size = 1.4

$$-\frac{c}{2f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(-iB\ln\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)}\sqrt{ac}\right)\frac{1}{\sqrt{ac}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*c*(-I*B*ln((
a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+I
*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+2*I*A*(a*c)^(1/2)*(a
*c*(1+tan(f*x+e)^2))^(1/2)-2*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-2*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1
/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 2.5161, size = 1040, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -((32*A + 16*I*B)*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
(32*A + 48*I*B)*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16
*(2*I*A - B)*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*(2
*I*A - 3*B)*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((16*A
 + 8*I*B)*c*cos(4*f*x + 4*e) + (32*A + 16*I*B)*c*cos(2*f*x + 2*e) + 8*(2*I*
A - B)*c*sin(4*f*x + 4*e) + 16*(2*I*A - B)*c*sin(2*f*x + 2*e) + (16*A + 8*I
*B)*c)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((16*A + 8*I*B)*c*cos
(4*f*x + 4*e) + (32*A + 16*I*B)*c*cos(2*f*x + 2*e) + 8*(2*I*A - B)*c*sin(4*
f*x + 4*e) + 16*(2*I*A - B)*c*sin(2*f*x + 2*e) + (16*A + 8*I*B)*c)*arctan2(
cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (4*(2*I*A - B)*c*cos(4*f*x + 4*e) +
 8*(2*I*A - B)*c*cos(2*f*x + 2*e) - (8*A + 4*I*B)*c*sin(4*f*x + 4*e) - (16*
A + 8*I*B)*c*sin(2*f*x + 2*e) + 4*(2*I*A - B)*c)*log(cos(1/2*arctan2(sin(2*
```

```
f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1
) + (4*(-2*I*A + B)*c*cos(4*f*x + 4*e) + 8*(-2*I*A + B)*c*cos(2*f*x + 2*e)
+ (8*A + 4*I*B)*c*sin(4*f*x + 4*e) + (16*A + 8*I*B)*c*sin(2*f*x + 2*e) + 4*
(-2*I*A + B)*c)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
+ sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-16*I*cos(
4*f*x + 4*e) - 32*I*cos(2*f*x + 2*e) + 16*sin(4*f*x + 4*e) + 32*sin(2*f*x +
 2*e) - 16*I))
```

Fricas [B] time = 1.6182, size = 1179, normalized size = 7.19

$$\frac{2\left((-4i\,A+2\,B)ce^{\left(2i\,fx+2i\,e\right)}+(-4i\,A+6\,B)c\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}-\sqrt{\frac{\left(4\,A^2+4i\,AB-B^2\right)ac^3}{f^2}}\left(fe^{\left(2i\,fx+2i\,e\right)}+f\right)\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/4*(2*((-4*I*A + 2*B)*c*e^(2*I*f*x + 2*I*e) + (-4*I*A + 6*B)*c)*sqrt(a/(e^
(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) -
 sqrt((4*A^2 + 4*I*A*B - B^2)*a*c^3/f^2)*(f*e^(2*I*f*x + 2*I*e) + f)*log(2*
(((-8*I*A + 4*B)*c*e^(2*I*f*x + 2*I*e) + (-8*I*A + 4*B)*c)*sqrt(a/(e^(2*I*f
*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*sqr
t((4*A^2 + 4*I*A*B - B^2)*a*c^3/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((-2*I*A
+ B)*c*e^(2*I*f*x + 2*I*e) + (-2*I*A + B)*c)) + sqrt((4*A^2 + 4*I*A*B - B^2
)*a*c^3/f^2)*(f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((-8*I*A + 4*B)*c*e^(2*I*f*
x + 2*I*e) + (-8*I*A + 4*B)*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^
(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((4*A^2 + 4*I*A*B - B^2)*a*
c^3/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((-2*I*A + B)*c*e^(2*I*f*x + 2*I*e) +
 (-2*I*A + B)*c)))/(f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\sqrt{ia\tan\left(fx+e\right)+a}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x + e
) + c)^(3/2), x)
```

3.790 $\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx}$

Optimal. Leaf size=104

$$\frac{B\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{f}-\frac{2i\sqrt{a}A\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}$$

```
[Out] ((-2*I)*Sqrt[a]*A*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt
[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (B*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c
- I*c*Tan[e + f*x]])/f
```

Rubi [A] time = 0.208421, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3588, 80, 63, 217, 203}

$$\frac{B\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{f}-\frac{2i\sqrt{a}A\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*
x]],x]
```

```
[Out] ((-2*I)*Sqrt[a]*A*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt
[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (B*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c
- I*c*Tan[e + f*x]])/f
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
```

```
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\sqrt{a+iax}\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{f} + \frac{(aAc)}{}$$

$$= \frac{B\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{f} - \frac{(2iAc)}{}$$

$$= \frac{B\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{f} - \frac{(2iAc)}{}$$

$$= -\frac{2i\sqrt{a}A\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f} + \frac{B\sqrt{a+ia\,\text{ta}}}{}$$

Mathematica [A] time = 3.3183, size = 102, normalized size = 0.98

$$\frac{\sqrt{2}e^{-i(e+fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}\sqrt{a+ia\tan(e+fx)}\left(Be^{i(e+fx)}-iA\left(1+e^{2i(e+fx)}\right)\tan^{-1}\left(e^{i(e+fx)}\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[
e + f*x]],x]
```

```
[Out] (Sqrt[2]*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*(B*E^(I*(e + f*x)) - I*A*(1 + E^
((2*I)*(e + f*x)))*ArcTan[E^(I*(e + f*x))])*Sqrt[a + I*a*Tan[e + f*x]])/(E^
(I*(e + f*x))*f)
```

Maple [A] time = 0.131, size = 121, normalized size = 1.2

$$\frac{1}{f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(A\ln\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)}\sqrt{ac}\right)\frac{1}{\sqrt{ac}}\right)ac+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e)),x)
```

```
[Out] 1/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*(A*ln((a*c*tan(
f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+B*(a*c)^(
1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 2.25387, size = 609, normalized size = 5.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e)
),x, algorithm="maxima")
```

```
[Out] -((2*A*cos(2*f*x + 2*e) + 2*I*A*sin(2*f*x + 2*e) + 2*A)*arctan2(cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e)
```

```
, cos(2*f*x + 2*e))) + 1) + (2*A*cos(2*f*x + 2*e) + 2*I*A*sin(2*f*x + 2*e)
+ 2*A)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + 4*I*B*cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (-I*A*cos(2*f*x + 2*e) + A*sin(2*f
*x + 2*e) - I*A)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - (I*A*cos(2*f*x + 2*e) - A*si
n(2*f*x + 2*e) + I*A)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - 4*B*sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/(f*(-2*I*cos(2*f*x + 2*e
) + 2*sin(2*f*x + 2*e) - 2*I))
```

Fricas [B] time = 1.48629, size = 751, normalized size = 7.22

$$\frac{4B\sqrt{\frac{a}{e^{(2ifx+2ie)}+1}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}e^{(ifx+ie)}-\sqrt{\frac{A^2ac}{f^2}}f\log\left(\frac{2\left(4\left(Ae^{(2ifx+2ie)}+A\right)\sqrt{\frac{a}{e^{(2ifx+2ie)}+1}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}e^{(ifx+ie)}+\sqrt{\frac{A^2ac}{f^2}}\left(2ife^{(2ifx+2ie)}\right.\right.}{Ae^{(2ifx+2ie)}+A}\right.}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e)
),x, algorithm="fricas")
```

```
[Out] 1/2*(4*B*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)
)*e^(I*f*x + I*e) - sqrt(A^2*a*c/f^2)*f*log(2*(4*(A*e^(2*I*f*x + 2*I*e) + A
)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*
f*x + I*e) + sqrt(A^2*a*c/f^2)*(2*I*f*e^(2*I*f*x + 2*I*e) - 2*I*f))/(A*e^(2
*I*f*x + 2*I*e) + A)) + sqrt(A^2*a*c/f^2)*f*log(2*(4*(A*e^(2*I*f*x + 2*I*e)
 + A)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e
^(I*f*x + I*e) + sqrt(A^2*a*c/f^2)*(-2*I*f*e^(2*I*f*x + 2*I*e) + 2*I*f))/(A
*e^(2*I*f*x + 2*I*e) + A)))/f
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{a\left(i\tan\left(e+fx\right)+1\right)}\sqrt{-c\left(i\tan\left(e+fx\right)-1\right)}\left(A+B\tan\left(e+fx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+
e)),x)
```

```
[Out] Integral(sqrt(a*(I*tan(e + f*x) + 1))*sqrt(-c*(I*tan(e + f*x) - 1))*(A + B*
tan(e + f*x)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\sqrt{i\,a\tan\left(fx+e\right)+a}\sqrt{-i\,c\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e)
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)*sqrt(-I*c*tan(f*x
 + e) + c), x)
```

3.791 $\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=109

$$\frac{2\sqrt{a}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{(B+iA)\sqrt{a+ia\tan(e+fx)}}{f\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] (2*Sqrt[a]*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(
f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.219721, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3588, 78, 63, 217, 203}

$$\frac{2\sqrt{a}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{(B+iA)\sqrt{a+ia\tan(e+fx)}}{f\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e +
f*x]],x]
```


```
[Out] (2*Sqrt[a]*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(
f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\sqrt{a+iax}(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{f\sqrt{c-ic\tan(e+fx)}} + \frac{(iaB)\,\text{Subst}\left(\int \frac{1}{\sqrt{a+iax}\sqrt{c-icx}}\,dx, x, \text{ta}\right.}{f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{f\sqrt{c-ic\tan(e+fx)}} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{\sqrt{2c-\frac{cx^2}{a}}}\,dx, x, \sqrt{a+ia}\right.}{f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{f\sqrt{c-ic\tan(e+fx)}} + \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1+\frac{cx^2}{a}}\,dx, x, \frac{\sqrt{a+ia\tan(e}}{\sqrt{c-ic\tan(e}}\right.}{f}$$

$$= \frac{2\sqrt{a}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f} - \frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{f\sqrt{c-ic\tan(e+fx)}}$$

Mathematica [A] time = 4.0114, size = 127, normalized size = 1.17

$$\frac{\sqrt{a+ia\tan(e+fx)}\left(\cos\left(\frac{1}{2}(e+fx)\right)-i\sin\left(\frac{1}{2}(e+fx)\right)\right)\left(\sin\left(\frac{1}{2}(e+fx)\right)-i\cos\left(\frac{1}{2}(e+fx)\right)\right)\left(A+2B\tan^{-1}\left(e^{i(e+fx)}\right)\right.}{f\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Ta
n[e + f*x]],x]
```

```
[Out] ((Cos[(e + f*x)/2] - I*Sin[(e + f*x)/2])*((-I)*Cos[(e + f*x)/2] + Sin[(e +
f*x)/2])*(A - I*B + 2*B*ArcTan[E^(I*(e + f*x))]*(I*Cos[e + f*x] + Sin[e + f
*x]))*Sqrt[a + I*a*Tan[e + f*x]])/(f*Sqrt[c - I*c*Tan[e + f*x]])
```

Maple [B] time = 0.233, size = 321, normalized size = 2.9

$$\frac{-i}{cf\left(\tan\left(fx+e\right)+i\right)^2}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(-2\,iB\ln\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\tan\left(f\right.\right.}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] -I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/c*(-2*I*B*ln((
a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f
*x+e)*a*c-B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a
*c)^(1/2))*tan(f*x+e)^2*a*c+I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*ta
n(f*x+e)+I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+B*ln((a*c*tan(f*x+e)+
(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+B*(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^
(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^2/(a*c)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.53387, size = 830, normalized size = 7.61

$$-\frac{cf\sqrt{-\frac{B^2a}{cf^2}}\log\left(\frac{4\left(2\left(Be^{(2ifx+2ie)}+B\right)\sqrt{\frac{a}{e^{(2ifx+2ie)}+1}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}e^{(ifx+ie)}+\left(cfe^{(2ifx+2ie)}-cf\right)\sqrt{-\frac{B^2a}{cf^2}}\right)}{Be^{(2ifx+2ie)}+B}\right)-cf\sqrt{-\frac{B^2a}{cf^2}}\log\left(\frac{4\left(2\left(Be^{(2ifx+2ie)}+B\right)\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] -1/2*(c*f*sqrt(-B^2*a/(c*f^2))*log(4*(2*(B*e^(2*I*f*x + 2*I*e) + B)*sqrt(a/
(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e
) + (c*f*e^(2*I*f*x + 2*I*e) - c*f)*sqrt(-B^2*a/(c*f^2)))/(B*e^(2*I*f*x + 2
```

```
*I*e) + B)) - c*f*sqrt(-B^2*a/(c*f^2))*log(4*(2*(B*e^(2*I*f*x + 2*I*e) + B)
*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f
*x + I*e) - (c*f*e^(2*I*f*x + 2*I*e) - c*f)*sqrt(-B^2*a/(c*f^2)))/(B*e^(2*I
*f*x + 2*I*e) + B)) - ((-2*I*A - 2*B)*e^(2*I*f*x + 2*I*e) - 2*I*A - 2*B)*sq
rt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x
+ I*e))/(c*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a\left(i\tan\left(e+fx\right)+1\right)}\left(A+B\tan\left(e+fx\right)\right)}{\sqrt{-c\left(i\tan\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
/2),x)
```

```
[Out] Integral(sqrt(a*(I*tan(e + f*x) + 1))*(A + B*tan(e + f*x))/sqrt(-c*(I*tan(e
 + f*x) - 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{i\,a\tan\left(fx+e\right)+a}}{\sqrt{-i\,c\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)/sqrt(-I*c*tan(f*x
 + e) + c), x)
```

3.792 $\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=102

$$-\frac{(-2B+iA)\sqrt{a+ia\tan(e+fx)}}{3cf\sqrt{c-ic\tan(e+fx)}}-\frac{(B+iA)\sqrt{a+ia\tan(e+fx)}}{3f(c-ic\tan(e+fx))^{3/2}}$$

```
[Out] -((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*f*(c - I*c*Tan[e + f*x])^(3/2))
- ((I*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*c*f*Sqrt[c - I*c*Tan[e + f*x]
])
```

Rubi [A] time = 0.218365, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$-\frac{(-2B+iA)\sqrt{a+ia\tan(e+fx)}}{3cf\sqrt{c-ic\tan(e+fx)}}-\frac{(B+iA)\sqrt{a+ia\tan(e+fx)}}{3f(c-ic\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x]
)^(3/2),x]
```

```
[Out] -((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*f*(c - I*c*Tan[e + f*x])^(3/2))
- ((I*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*c*f*Sqrt[c - I*c*Tan[e + f*x]
])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
```

```
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\sqrt{a+iax}(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{(a(A+2iB))\,\text{Subst}\left(\int \frac{1}{\sqrt{a+iax}(c-icx)^{3/2}}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{3f(c-ic\tan(e+fx))^{3/2}} - \frac{(iA-2B)\sqrt{a+ia\tan(e+fx)}}{3cf\sqrt{c-ic\tan(e+fx)}}$$

Mathematica [A] time = 5.5783, size = 101, normalized size = 0.99

$$\frac{\cos(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(2(e+fx))+i\sin(2(e+fx)))((B-2iA)\cos(e+fx)-(A+2iB}{3c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e
+ f*x])^(3/2),x]
```

```
[Out] (Cos[e + f*x]*(((-2*I)*A + B)*Cos[e + f*x] - (A + (2*I)*B)*Sin[e + f*x])*(C
os[2*(e + f*x)] + I*Sin[2*(e + f*x)])*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I
*c*Tan[e + f*x]])/(3*c^2*f)
```

Maple [A] time = 0.132, size = 100, normalized size = 1.

$$\frac{2iB\left(\tan\left(fx+e\right)\right)^2+3iA\tan\left(fx+e\right)+A\left(\tan\left(fx+e\right)\right)^2-iB-3B\tan\left(fx+e\right)-2A}{3fc^2\left(\tan\left(fx+e\right)+i\right)^3}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/3/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/c^2*(2*I*B*ta
n(f*x+e)^2+3*I*A*tan(f*x+e)+A*tan(f*x+e)^2-I*B-3*B*tan(f*x+e)-2*A)/(tan(f*x
+e)+I)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.39564, size = 244, normalized size = 2.39

$$\frac{\left((-i\,A-B)e^{\left(4i\,fx+4i\,e\right)}+(-4i\,A+2\,B)e^{\left(2i\,fx+2i\,e\right)}-3i\,A+3\,B\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}}{6\,c^2 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/6*((-I*A - B)*e^(4*I*f*x + 4*I*e) + (-4*I*A + 2*B)*e^(2*I*f*x + 2*I*e) -
3*I*A + 3*B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e)
+ 1))*e^(I*f*x + I*e)/(c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{i\,a\tan\left(fx+e\right)+a}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)/(-I*c*tan(f*x + e
) + c)^(3/2), x)
```

3.793 $\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{(-3B+2iA)\sqrt{a+ia\tan(e+fx)}}{15c^2f\sqrt{c-ic\tan(e+fx)}}-\frac{(-3B+2iA)\sqrt{a+ia\tan(e+fx)}}{15cf(c-ic\tan(e+fx))^{3/2}}-\frac{(B+iA)\sqrt{a+ia\tan(e+fx)}}{5f(c-ic\tan(e+fx))^{5/2}}$$

```
[Out] -((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(5*f*(c - I*c*Tan[e + f*x])^(5/2))
- (((2*I)*A - 3*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*c*f*(c - I*c*Tan[e + f*x
])^(3/2)) - (((2*I)*A - 3*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*c^2*f*Sqrt[c -
 I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.246502, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{(-3B+2iA)\sqrt{a+ia\tan(e+fx)}}{15c^2f\sqrt{c-ic\tan(e+fx)}}-\frac{(-3B+2iA)\sqrt{a+ia\tan(e+fx)}}{15cf(c-ic\tan(e+fx))^{3/2}}-\frac{(B+iA)\sqrt{a+ia\tan(e+fx)}}{5f(c-ic\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x]
)^(5/2),x]
```

```
[Out] -((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(5*f*(c - I*c*Tan[e + f*x])^(5/2))
- (((2*I)*A - 3*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*c*f*(c - I*c*Tan[e + f*x
])^(3/2)) - (((2*I)*A - 3*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*c^2*f*Sqrt[c -
 I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\sqrt{a+iax}(c-icx)^{7/2}}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{(a(2A+3iB))\,\text{Subst}\left(\int \frac{1}{\sqrt{a+iax}(c-icx)^{5}}\right.}{5f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{5f(c-ic\tan(e+fx))^{5/2}} - \frac{(2iA-3B)\sqrt{a+ia\tan(e+fx)}}{15cf(c-ic\tan(e+fx))^{3/2}} + \frac{(a}{}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{5f(c-ic\tan(e+fx))^{5/2}} - \frac{(2iA-3B)\sqrt{a+ia\tan(e+fx)}}{15cf(c-ic\tan(e+fx))^{3/2}} - \frac{(2}{}$$

Mathematica [A] time = 9.35934, size = 114, normalized size = 0.74

$$\frac{\cos(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(3(e+fx))+i\sin(3(e+fx)))(-3(2A+3iB)\sin(2(e+fx))+(6}{30c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e
+ f*x])^(5/2),x]
```

```
[Out] (Cos[e + f*x]*((-5*I)*A + ((-9*I)*A + 6*B)*Cos[2*(e + f*x)] - 3*(2*A + (3*I
)*B)*Sin[2*(e + f*x)])*(Cos[3*(e + f*x)] + I*Sin[3*(e + f*x)])*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(30*c^3*f)
```

Maple [A] time = 0.122, size = 125, normalized size = 0.8

$$\frac{-\frac{i}{15}\left(2\,iA\left(\tan\left(fx+e\right)\right)^{3}-12\,iB\left(\tan\left(fx+e\right)\right)^{2}-3\,B\left(\tan\left(fx+e\right)\right)^{3}-13\,iA\tan\left(fx+e\right)-8\,A\left(\tan\left(fx+e\right)\right)^{2}+3\,iB\right.}{fc^{3}\left(\tan\left(fx+e\right)+i\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/15*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/c^3*(2*I*
A*tan(f*x+e)^3-12*I*B*tan(f*x+e)^2-3*B*tan(f*x+e)^3-13*I*A*tan(f*x+e)-8*A*t
an(f*x+e)^2+3*I*B+12*B*tan(f*x+e)+7*A)/(tan(f*x+e)+I)^4
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.36633, size = 308, normalized size = 1.99

$$\frac{\left((-3i\,A-3\,B)e^{\left(6i\,fx+6i\,e\right)}+(-13i\,A-3\,B)e^{\left(4i\,fx+4i\,e\right)}+(-25i\,A+15\,B)e^{\left(2i\,fx+2i\,e\right)}-15i\,A+15\,B\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+\cdots}}}{60\,c^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/60*((-3*I*A - 3*B)*e^(6*I*f*x + 6*I*e) + (-13*I*A - 3*B)*e^(4*I*f*x + 4*I
*e) + (-25*I*A + 15*B)*e^(2*I*f*x + 2*I*e) - 15*I*A + 15*B)*sqrt(a/(e^(2*I*
f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^3*f
)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{ia\tan\left(fx+e\right)+a}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)/(-I*c*tan(f*x + e
) + c)^(5/2), x)
```

3.794 $\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{2(-4B+3iA)\sqrt{a+ia\tan(e+fx)}}{105c^3f\sqrt{c-ic\tan(e+fx)}}-\frac{2(-4B+3iA)\sqrt{a+ia\tan(e+fx)}}{105c^2f(c-ic\tan(e+fx))^{3/2}}-\frac{(-4B+3iA)\sqrt{a+ia\tan(e+fx)}}{35cf(c-ic\tan(e+fx))^{5/2}}-\frac{(B+iA)\sqrt{\ldots}}{7f(c-\ldots}$$

```
[Out] -((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(7*f*(c - I*c*Tan[e + f*x])^(7/2))
- (((3*I)*A - 4*B)*Sqrt[a + I*a*Tan[e + f*x]])/(35*c*f*(c - I*c*Tan[e + f*x
])^(5/2)) - (2*((3*I)*A - 4*B)*Sqrt[a + I*a*Tan[e + f*x]])/(105*c^2*f*(c -
I*c*Tan[e + f*x])^(3/2)) - (2*((3*I)*A - 4*B)*Sqrt[a + I*a*Tan[e + f*x]])/(
105*c^3*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.276411, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-4B+3iA)\sqrt{a+ia\tan(e+fx)}}{105c^3f\sqrt{c-ic\tan(e+fx)}}-\frac{2(-4B+3iA)\sqrt{a+ia\tan(e+fx)}}{105c^2f(c-ic\tan(e+fx))^{3/2}}-\frac{(-4B+3iA)\sqrt{a+ia\tan(e+fx)}}{35cf(c-ic\tan(e+fx))^{5/2}}-\frac{(B+iA)\sqrt{\ldots}}{7f(c-\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*x]
)^(7/2),x]
```

```
[Out] -((I*A + B)*Sqrt[a + I*a*Tan[e + f*x]])/(7*f*(c - I*c*Tan[e + f*x])^(7/2))
- (((3*I)*A - 4*B)*Sqrt[a + I*a*Tan[e + f*x]])/(35*c*f*(c - I*c*Tan[e + f*x
])^(5/2)) - (2*((3*I)*A - 4*B)*Sqrt[a + I*a*Tan[e + f*x]])/(105*c^2*f*(c -
I*c*Tan[e + f*x])^(3/2)) - (2*((3*I)*A - 4*B)*Sqrt[a + I*a*Tan[e + f*x]])/(
105*c^3*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{\sqrt{a+ia\tan(e+fx)}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{\sqrt{a+iax}(c-icx)^{9/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{(a(3A+4iB))\,\text{Subst}\left(\int \frac{1}{\sqrt{a+iax}(c-icx)^{7}}\right.}{7f}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{7f(c-ic\tan(e+fx))^{7/2}} - \frac{(3iA-4B)\sqrt{a+ia\tan(e+fx)}}{35cf(c-ic\tan(e+fx))^{5/2}} + \frac{(2}{}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{7f(c-ic\tan(e+fx))^{7/2}} - \frac{(3iA-4B)\sqrt{a+ia\tan(e+fx)}}{35cf(c-ic\tan(e+fx))^{5/2}} - \frac{2(}{1}$$

$$= -\frac{(iA+B)\sqrt{a+ia\tan(e+fx)}}{7f(c-ic\tan(e+fx))^{7/2}} - \frac{(3iA-4B)\sqrt{a+ia\tan(e+fx)}}{35cf(c-ic\tan(e+fx))^{5/2}} - \frac{2(}{1}$$

Mathematica [A] time = 12.329, size = 136, normalized size = 0.65

$$\frac{\cos(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(4(e+fx))+i\sin(4(e+fx)))(-(3A+4iB)(7\sin(e+fx)+15\sin}{420c^4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[a + I*a*Tan[e + f*x]]*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e
+ f*x])^(7/2),x]
```

```
[Out] (Cos[e + f*x]*(7*((-12*I)*A + B)*Cos[e + f*x] + 15*((-4*I)*A + 3*B)*Cos[3*(
e + f*x)] - (3*A + (4*I)*B)*(7*Sin[e + f*x] + 15*Sin[3*(e + f*x)]))*(Cos[4*
(e + f*x)] + I*Sin[4*(e + f*x)])*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Ta
n[e + f*x]])/(420*c^4*f)
```

Maple [A] time = 0.129, size = 147, normalized size = 0.7

$$\frac{8\,iB\left(\tan\left(fx+e\right)\right)^{4}+30\,iA\left(\tan\left(fx+e\right)\right)^{3}+6\,A\left(\tan\left(fx+e\right)\right)^{4}-84\,iB\left(\tan\left(fx+e\right)\right)^{2}-40\,B\left(\tan\left(fx+e\right)\right)^{3}-75\,iA}{105\,fc^4\left(\tan\left(fx+e\right)+i\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 1/105/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/c^4*(8*I*B*
tan(f*x+e)^4+30*I*A*tan(f*x+e)^3+6*A*tan(f*x+e)^4-84*I*B*tan(f*x+e)^2-40*B*
tan(f*x+e)^3-75*I*A*tan(f*x+e)-63*A*tan(f*x+e)^2+13*I*B+65*B*tan(f*x+e)+36*
A)/(tan(f*x+e)+I)^5
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.42906, size = 373, normalized size = 1.79

$$\frac{\left((-15 i A - 15 B) e^{(8 i f x + 8 i e)} + (-78 i A - 36 B) e^{(6 i f x + 6 i e)} + (-168 i A + 14 B) e^{(4 i f x + 4 i e)} + (-210 i A + 140 B) e^{(2 i f x + 2 i e)} - 1\right.}{840 c^4 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/840*((-15*I*A - 15*B)*e^(8*I*f*x + 8*I*e) + (-78*I*A - 36*B)*e^(6*I*f*x +
 6*I*e) + (-168*I*A + 14*B)*e^(4*I*f*x + 4*I*e) + (-210*I*A + 140*B)*e^(2*I
*f*x + 2*I*e) - 105*I*A + 105*B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(
e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B \tan\left(f x + e\right) + A\right) \sqrt{i a \tan\left(f x + e\right) + a}}{\left(-i c \tan\left(f x + e\right) + c\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(I*a*tan(f*x + e) + a)/(-I*c*tan(f*x + e
) + c)^(7/2), x)
```

3.795 $\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=279

$$-\frac{a^{3/2}c^{7/2}(-2B+5iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{ac^3(5A+2iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}-$$

```
[Out] -(a^(3/2)*((5*I)*A - 2*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]
])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a*(5*A + (2*I)*B)*c^3*Ta
n[e + f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) - (
((5*I)*A - 2*B)*c^2*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/
2))/(12*f) - (((5*I)*A - 2*B)*c*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e
 + f*x])^(5/2))/(20*f) + (B*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f
*x])^(7/2))/(5*f)
```

Rubi [A] time = 0.336548, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{a^{3/2}c^{7/2}(-2B+5iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{ac^3(5A+2iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(7/2),x]
```


```
[Out] -(a^(3/2)*((5*I)*A - 2*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]
])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a*(5*A + (2*I)*B)*c^3*Ta
n[e + f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) - (
((5*I)*A - 2*B)*c^2*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/
2))/(12*f) - (((5*I)*A - 2*B)*c*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e
 + f*x])^(5/2))/(20*f) + (B*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f
*x])^(7/2))/(5*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int \sqrt{a+iax}(A+Bx)(c-icx)^{5/2}\,dx,\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{7/2}}{5f}$$

$$= -\frac{(5iA-2B)c(a+ia\tan(e+fx))^{3/2}(c-ic\tan(}{20f}$$

$$= -\frac{(5iA-2B)c^2(a+ia\tan(e+fx))^{3/2}(c-ic\tan}{12f}$$

$$= \frac{a(5A+2iB)c^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{8f}$$

$$= \frac{a(5A+2iB)c^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{8f}$$

$$= \frac{a(5A+2iB)c^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{8f}$$

$$= -\frac{a^{3/2}(5iA-2B)c^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} +$$

Mathematica [A] time = 13.189, size = 257, normalized size = 0.92

$$\frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))\left(\frac{c^4(2B-5iA)e^{-2i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\tan^{-1}\left(e^{i(e+fx)}\right)}{\sqrt{\frac{c}{1+e^{2i(e+fx)}}}} - \frac{1}{240}c^3(\tan(e+fx)+i)\sec^{\frac{7}{2}}(e+fx\right.}{4f\sec^{\frac{5}{2}}(e+fx)(A\cos(e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(7/2),x]
```

```
[Out] ((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*((((-5*I)*A + 2*B)*c^4*S
qrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(E^
```

((2*I)*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) - (c^3*Sec[e + f*x]^(7/2)*(320*(A + I*B)*Cos[2*(e + f*x)] + 30*(I*A + 6*B)*Sin[2*(e + f*x)] + (5*A + (2*I)*B)*(64 + (15*I)*Sin[4*(e + f*x)]))*(I + Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/240))/(4*f*Sec[e + f*x]^(5/2)*(A*Cos[e + f*x] + B*Sin[e + f*x]))

Maple [A] time = 0.115, size = 412, normalized size = 1.5

$$-\frac{ac^3}{120 f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(60\,iB\left(\tan\left(fx+e\right)\right)^3\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+24\,B\left(\mathrm{ta}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)

[Out] -1/120/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*c^3*a*(60*I*B*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+24*B*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+80*I*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+30*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-30*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+30*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-32*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+80*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-75*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-45*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-56*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)

Maxima [B] time = 13.9878, size = 2215, normalized size = 7.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x, algorithm="maxima")

[Out] -((144000*A + 57600*I*B)*a*c^3*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (672000*A + 268800*I*B)*a*c^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (1228800*A + 491520*I*B)*a*c^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (556800*A + 960000*I*B)*a*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (144000*A + 57600*I*B)*a*c^3*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 28800*(5*I*A - 2*B)*a*c^3*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 134400*(5*I*A - 2*B)*a*c^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 245760*(5*I*A - 2*B)*a*c^3*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 19200*(29*I*A - 50*B)*a*c^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 28800*(-5*I*A + 2*B)*a*c^3*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((72000*A + 28800*I*B)*a*c^3*cos(10*f*x + 10*e) + (360000*A + 144000*I*B)*a*c^3*cos(8*f*x + 8*e) + (720000*A + 288000*I*B)*a*c^3*cos(6*f*x + 6*e) + (720000*A + 288000*I*B)*a*c^3*cos(4*f*x + 4*e) + (360000*A + 144000*I*B)*a*c^3*cos(2*f*x + 2*e) + 14400*(5*I*A - 2*B)*a*c^3*sin(10*f*x + 10*e) + 72000*(5*I*A - 2*B)*a*c^3*sin(8*f*x + 8*e) + 144000*(5*I*A - 2*B)*a*c^3*sin(6*f*x + 6*e) + 144000*(5*I*A - 2*B)*a*c^3*sin(4*f*x + 4*e) + 72000*(5*I*A - 2*B)*a*c^3*sin(2*f*x + 2*e) + (72000*A + 28800*I*B)*a*c^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((72000*A + 28800*I*B)*a*c^3*cos(10*f*x + 10*e) + (360000*A + 144000*I*B)*a*c^3*cos(8*f*x + 8*e) + (720000*A + 288000*I*B)*a*c^3*cos(6*f*x + 6*e) + (720000*A + 288000*I*B)*a*c^3*cos(4*f*x + 4*e) + (360000*A + 144000*I*B)*a*c^3*cos(2*f*x + 2*e) + 14400*(5*I*A - 2*B)*a*c^3*sin(10*f*x + 10*e) + 72000*(5*I*A - 2*B)*a*c^3*sin(8*f*x + 8*e) + 144000*(5*I*A - 2*B)*a*c^3*sin(6*f*x + 6*e) + 144000*(5*I*A - 2*B)*a*c^3*sin(4*f*x + 4*e) + 72000*(5*I*A - 2*B)*a*c^3*sin(2*f*x + 2*e) + (72000*A + 28800*I*B)*a*c^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (7200*(5*I*A - 2*B)*a*c^3*cos(10*f*x + 10*e) + 36000*(5*I*A - 2*B)*a*c^3*cos(8*f*x + 8*e) + 72000*(5*I*A - 2*B)*a*c^3*cos(6*f*x + 6*e) + 72000*(5*I*A - 2*B)*a*c^3*cos(4*f*x + 4*e) + 36000*(5*I*A - 2*B)*a*c^3*cos(2*f*x + 2*e) - (36000*A + 14400*I*B)*a*c^3*sin(10*f*x + 10*e) - (180000*A + 72000*I*B)*a*c^3*sin(8*f*x + 8*e) - (360000*A + 144000*I*B)*a*c^3*sin(6*f*x + 6*e) - (360000*A + 144000*I*B)*a*c^3*sin(4*f*x + 4*e) - (180000*A + 72000*I*B)*a*c^3*sin(2*f*x + 2*e) + 7200*(5*I*A - 2*B)*a*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (7200*(-5*I*A + 2*B)*a*c^3*cos(10*f*x + 10*e) + 36000*(-5*I*A + 2*B)*a*c^3*cos(8*f*x + 8*e) + 72000*(-5*I*A + 2*B)*a*c^3*cos(6*f*x + 6*e) + 72000*(-5*I*A + 2*B)*a*c^3*cos(4*f*x + 4*e) + 36000*(-5*I*A + 2*B)*a*c^3*cos(2*f*x + 2*e) + (36000*A + 14400*I*B)*a*c^3*sin(10*f*x + 10*e) + (180000*A + 72000*I*B)*a*c^3*sin(8*f*x + 8*e) + (360000*A + 144000*I*B)*a*c^3*sin(6*f*x + 6*e) + (360000*A + 144000*I*B)*a*c^3*sin(4*f*x + 4*e) + (180000*A + 72000*I*B)*a*c^3*sin(2*f*x + 2*e) + 7200*(-5*I*A + 2*B)*a*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-115200*I*cos(10*f*x + 10*e) - 576000*I*cos(8*f*x + 8*e) -

```
1152000*I*cos(6*f*x + 6*e) - 1152000*I*cos(4*f*x + 4*e) - 576000*I*cos(2*f*
x + 2*e) + 115200*sin(10*f*x + 10*e) + 576000*sin(8*f*x + 8*e) + 1152000*si
n(6*f*x + 6*e) + 1152000*sin(4*f*x + 4*e) + 576000*sin(2*f*x + 2*e) - 11520
0*I))
```

Fricas [B] time = 1.65431, size = 1802, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/240*(4*((-75*I*A + 30*B)*a*c^3*e^(8*I*f*x + 8*I*e) + (-350*I*A + 140*B)*a
*c^3*e^(6*I*f*x + 6*I*e) + (-640*I*A + 256*B)*a*c^3*e^(4*I*f*x + 4*I*e) + (
-290*I*A + 500*B)*a*c^3*e^(2*I*f*x + 2*I*e) + (75*I*A - 30*B)*a*c^3)*sqrt(a
/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*
e) - 15*sqrt((25*A^2 + 20*I*A*B - 4*B^2)*a^3*c^7/f^2)*(f*e^(8*I*f*x + 8*I*e
) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*
I*e) + f)*log(2*(((-20*I*A + 8*B)*a*c^3*e^(2*I*f*x + 2*I*e) + (-20*I*A + 8*
B)*a*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
))*e^(I*f*x + I*e) + 2*sqrt((25*A^2 + 20*I*A*B - 4*B^2)*a^3*c^7/f^2)*(f*e^(
2*I*f*x + 2*I*e) - f))/((-5*I*A + 2*B)*a*c^3*e^(2*I*f*x + 2*I*e) + (-5*I*A
+ 2*B)*a*c^3)) + 15*sqrt((25*A^2 + 20*I*A*B - 4*B^2)*a^3*c^7/f^2)*(f*e^(8*I
*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(
2*I*f*x + 2*I*e) + f)*log(2*(((-20*I*A + 8*B)*a*c^3*e^(2*I*f*x + 2*I*e) + (
-20*I*A + 8*B)*a*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x
+ 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((25*A^2 + 20*I*A*B - 4*B^2)*a^3*c^7
/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((-5*I*A + 2*B)*a*c^3*e^(2*I*f*x + 2*I*e
) + (-5*I*A + 2*B)*a*c^3)))/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e
) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)*(-I*c*tan(f*x +
 e) + c)^(7/2), x)
```

3.796 $\int (a + ia\tan(e + fx))^{3/2}(A + B\tan(e + fx))(c - ic\tan(e + fx))^{5/2}\,dx$

Optimal. Leaf size=226

$$-\frac{a^{3/2}c^{5/2}(-B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{ac^2(4A+iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}-\frac{c(-B$$

```
[Out] -(a^(3/2)*((4*I)*A - B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a*(4*A + I*B)*c^2*Tan[e +
f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) - (((4*I)
*A - B)*c*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(12*f)
 + (B*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(5/2))/(4*f)
```

Rubi [A] time = 0.306304, antiderivative size = 226, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{a^{3/2}c^{5/2}(-B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{ac^2(4A+iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}-\frac{c(-B$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(5/2),x]
```



```
[Out] -(a^(3/2)*((4*I)*A - B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a*(4*A + I*B)*c^2*Tan[e +
f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) - (((4*I)
*A - B)*c*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(12*f)
 + (B*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(5/2))/(4*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \sqrt{a+iax}(A+Bx)(c-icx)^{3/2}\,dx,x\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}}{4f} +$$

$$= -\frac{(4iA-B)c(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+}{12f}$$

$$= \frac{a(4A+iB)c^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c}}{8f}$$

$$= \frac{a(4A+iB)c^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c}}{8f}$$

$$= \frac{a(4A+iB)c^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c}}{8f}$$

$$= -\frac{a^{3/2}(4iA-B)c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} + \frac{a(}{}$$

Mathematica [A] time = 10.4978, size = 241, normalized size = 1.07

$$\frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))\left(\frac{c^3(B-4iA)e^{-2i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\tan^{-1}\left(e^{i(e+fx)}\right)}{\sqrt{\frac{c}{1+e^{2i(e+fx)}}}} + \frac{1}{12}c^2(1-i\tan(e+fx))\sec^{\frac{3}{2}}(e+fx)\sqrt{}\right.}{4f\sec^{\frac{5}{2}}(e+fx)(A\cos(e+fx)+B\sin(e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(5/2),x]
```

```
[Out] ((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*((((-4*I)*A + B)*c^3*Sqr
t[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(E^((
2*I)*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) + (c^2*Sec[e + f*x]^(3/2
)*(1 - I*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]]*(16*((-I)*A + B) + 3*(4*A
 - (3*I)*B + (4*A + I*B)*Cos[2*(e + f*x)])*Tan[e + f*x]))/12))/(4*f*Sec[e +
 f*x]^(5/2)*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.094, size = 350, normalized size = 1.6

$$-\frac{ac^{2}}{24 f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(6\,iB\left(\tan\left(fx+e\right)\right)^{3}\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)}\sqrt{ac}+8\,iA\left(\mathrm{ta}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/24/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*c^2*a*(6*I*
B*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+8*I*A*tan(f*x+e)^2*
(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-3*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+t
an(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+3*I*B*(a*c)^(1/2)*(a*c*(1
+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-8*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2)+8*I*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)-12*A*ln((a*c
*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-12*A
*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-8*B*(a*c)^(1/2)*(a*c*(
1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 6.46989, size = 1843, normalized size = 8.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] -((4608*A + 1152*I*B)*a*c^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + (16896*A + 4224*I*B)*a*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + (7680*A + 20352*I*B)*a*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) - (4608*A + 1152*I*B)*a*c^2*cos(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 1152*(4*I*A - B)*a*c^2*sin(7/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) + 4224*(4*I*A - B)*a*c^2*sin(5/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) + 384*(20*I*A - 53*B)*a*c^2*sin(3/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1152*(-4*I*A + B)*a*c^2*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((2304*A + 576*I*B)*a*c^2*cos(8
*f*x + 8*e) + (9216*A + 2304*I*B)*a*c^2*cos(6*f*x + 6*e) + (13824*A + 3456*
```

```
I*B)*a*c^2*cos(4*f*x + 4*e) + (9216*A + 2304*I*B)*a*c^2*cos(2*f*x + 2*e) +
576*(4*I*A - B)*a*c^2*sin(8*f*x + 8*e) + 2304*(4*I*A - B)*a*c^2*sin(6*f*x +
 6*e) + 3456*(4*I*A - B)*a*c^2*sin(4*f*x + 4*e) + 2304*(4*I*A - B)*a*c^2*si
n(2*f*x + 2*e) + (2304*A + 576*I*B)*a*c^2)*arctan2(cos(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + 1) + ((2304*A + 576*I*B)*a*c^2*cos(8*f*x + 8*e) + (9216*A + 2304*
I*B)*a*c^2*cos(6*f*x + 6*e) + (13824*A + 3456*I*B)*a*c^2*cos(4*f*x + 4*e) +
 (9216*A + 2304*I*B)*a*c^2*cos(2*f*x + 2*e) + 576*(4*I*A - B)*a*c^2*sin(8*f
*x + 8*e) + 2304*(4*I*A - B)*a*c^2*sin(6*f*x + 6*e) + 3456*(4*I*A - B)*a*c^
2*sin(4*f*x + 4*e) + 2304*(4*I*A - B)*a*c^2*sin(2*f*x + 2*e) + (2304*A + 57
6*I*B)*a*c^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))),
 -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (288*(4*I*A -
 B)*a*c^2*cos(8*f*x + 8*e) + 1152*(4*I*A - B)*a*c^2*cos(6*f*x + 6*e) + 1728
*(4*I*A - B)*a*c^2*cos(4*f*x + 4*e) + 1152*(4*I*A - B)*a*c^2*cos(2*f*x + 2*
e) - (1152*A + 288*I*B)*a*c^2*sin(8*f*x + 8*e) - (4608*A + 1152*I*B)*a*c^2*
sin(6*f*x + 6*e) - (6912*A + 1728*I*B)*a*c^2*sin(4*f*x + 4*e) - (4608*A + 1
152*I*B)*a*c^2*sin(2*f*x + 2*e) + 288*(4*I*A - B)*a*c^2)*log(cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 1) + (288*(-4*I*A + B)*a*c^2*cos(8*f*x + 8*e) + 1152*(-4*I*A + B)*a*
c^2*cos(6*f*x + 6*e) + 1728*(-4*I*A + B)*a*c^2*cos(4*f*x + 4*e) + 1152*(-4*
I*A + B)*a*c^2*cos(2*f*x + 2*e) + (1152*A + 288*I*B)*a*c^2*sin(8*f*x + 8*e)
 + (4608*A + 1152*I*B)*a*c^2*sin(6*f*x + 6*e) + (6912*A + 1728*I*B)*a*c^2*s
in(4*f*x + 4*e) + (4608*A + 1152*I*B)*a*c^2*sin(2*f*x + 2*e) + 288*(-4*I*A
+ B)*a*c^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + si
n(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-4608*I*cos(8*
f*x + 8*e) - 18432*I*cos(6*f*x + 6*e) - 27648*I*cos(4*f*x + 4*e) - 18432*I*
cos(2*f*x + 2*e) + 4608*sin(8*f*x + 8*e) + 18432*sin(6*f*x + 6*e) + 27648*s
in(4*f*x + 4*e) + 18432*sin(2*f*x + 2*e) - 4608*I))
```

Fricas [B] time = 1.69535, size = 1594, normalized size = 7.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/48*(4*((-12*I*A + 3*B)*a*c^2*e^(6*I*f*x + 6*I*e) + (-44*I*A + 11*B)*a*c^2
*e^(4*I*f*x + 4*I*e) + (-20*I*A + 53*B)*a*c^2*e^(2*I*f*x + 2*I*e) + (12*I*A
```

```
- 3*B)*a*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e
) + 1))*e^(I*f*x + I*e) - 3*sqrt((16*A^2 + 8*I*A*B - B^2)*a^3*c^5/f^2)*(f*e
^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
*log(2*(((-16*I*A + 4*B)*a*c^2*e^(2*I*f*x + 2*I*e) + (-16*I*A + 4*B)*a*c^2)
*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f
*x + I*e) + 2*sqrt((16*A^2 + 8*I*A*B - B^2)*a^3*c^5/f^2)*(f*e^(2*I*f*x + 2*
I*e) - f))/((-4*I*A + B)*a*c^2*e^(2*I*f*x + 2*I*e) + (-4*I*A + B)*a*c^2)) +
 3*sqrt((16*A^2 + 8*I*A*B - B^2)*a^3*c^5/f^2)*(f*e^(6*I*f*x + 6*I*e) + 3*f*
e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((-16*I*A + 4*B)*
a*c^2*e^(2*I*f*x + 2*I*e) + (-16*I*A + 4*B)*a*c^2)*sqrt(a/(e^(2*I*f*x + 2*I
*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((16*A^
2 + 8*I*A*B - B^2)*a^3*c^5/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((-4*I*A + B)*
a*c^2*e^(2*I*f*x + 2*I*e) + (-4*I*A + B)*a*c^2)))/(f*e^(6*I*f*x + 6*I*e) +
3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)*(-I*c*tan(f*x +
 e) + c)^(5/2), x)
```

3.797 $\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=157

$$-\frac{ia^{3/2}Ac^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}+\frac{aAc\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{B(a+ia\tan(e+fx))^{3}}{3}$$

```
[Out] ((-I)*a^(3/2)*A*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a
]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (a*A*c*Tan[e + f*x]*Sqrt[a + I*a*Tan[e
+ f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (B*(a + I*a*Tan[e + f*x])^(3/2)
*(c - I*c*Tan[e + f*x])^(3/2))/(3*f)
```

Rubi [A] time = 0.257173, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 38, 63, 217, 203}

$$-\frac{ia^{3/2}Ac^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}+\frac{aAc\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{B(a+ia\tan(e+fx))^{3}}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(3/2),x]
```


```
[Out] ((-I)*a^(3/2)*A*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a
]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (a*A*c*Tan[e + f*x]*Sqrt[a + I*a*Tan[e
+ f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (B*(a + I*a*Tan[e + f*x])^(3/2)
*(c - I*c*Tan[e + f*x])^(3/2))/(3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \sqrt{a+iax}(A+Bx)\sqrt{c-icx}\,dx,x,\mathrm{t}\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}}{3f} +$$

$$= \frac{aAc\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan}}{2f}$$

$$= \frac{aAc\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan}}{2f}$$

$$= \frac{aAc\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan}}{2f}$$

$$= -\frac{ia^{3/2}Ac^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f} + \frac{aAc\tan(}{}$$

Mathematica [A] time = 7.02637, size = 109, normalized size = 0.69

$$-\frac{iac^2(\tan(e+fx)-i)(\tan(e+fx)+i)^2\sqrt{a+ia\tan(e+fx)}\left(3A\sin(2(e+fx))-12iA\cos^3(e+fx)\tan^{-1}\left(e^{i(e+fx)}\right)+4B\right.}{12f\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(3/2),x]
```

```
[Out] ((-I/12)*a*c^2*(4*B - (12*I)*A*ArcTan[E^(I*(e + f*x))]*Cos[e + f*x]^3 + 3*A
*Sin[2*(e + f*x)])*(-I + Tan[e + f*x])*(I + Tan[e + f*x])^2*Sqrt[a + I*a*Ta
n[e + f*x]])/(f*Sqrt[c - I*c*Tan[e + f*x]])
```

Maple [A] time = 0.099, size = 186, normalized size = 1.2

$$\frac{ac}{6f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(2B\left(\tan\left(fx+e\right)\right)^2\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+3A\ln\left(\frac{ac\tan}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/6/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a*c*(2*B*tan(
f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+3*A*ln((a*c*tan(f*x+e)+(a
*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+3*A*(a*c)^(1/2)*(a
*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+2*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2)
)^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 2.46781, size = 1156, normalized size = 7.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -(12*A*a*c*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 32*I*B*a*
c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12*A*a*c*cos(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 12*I*A*a*c*sin(5/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) - 32*B*a*c*sin(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 12*I*A*a*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + (6*A*a*c*cos(6*f*x + 6*e) + 18*A*a*c*cos(4*f*x + 4*e) + 18
*A*a*c*cos(2*f*x + 2*e) + 6*I*A*a*c*sin(6*f*x + 6*e) + 18*I*A*a*c*sin(4*f*x
 + 4*e) + 18*I*A*a*c*sin(2*f*x + 2*e) + 6*A*a*c)*arctan2(cos(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + 1) + (6*A*a*c*cos(6*f*x + 6*e) + 18*A*a*c*cos(4*f*x + 4*e)
+ 18*A*a*c*cos(2*f*x + 2*e) + 6*I*A*a*c*sin(6*f*x + 6*e) + 18*I*A*a*c*sin(4
*f*x + 4*e) + 18*I*A*a*c*sin(2*f*x + 2*e) + 6*A*a*c)*arctan2(cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) + 1) - (-3*I*A*a*c*cos(6*f*x + 6*e) - 9*I*A*a*c*cos(4*f*
x + 4*e) - 9*I*A*a*c*cos(2*f*x + 2*e) + 3*A*a*c*sin(6*f*x + 6*e) + 9*A*a*c*
sin(4*f*x + 4*e) + 9*A*a*c*sin(2*f*x + 2*e) - 3*I*A*a*c)*log(cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 1) - (3*I*A*a*c*cos(6*f*x + 6*e) + 9*I*A*a*c*cos(4*f*x + 4*e) + 9*I*
A*a*c*cos(2*f*x + 2*e) - 3*A*a*c*sin(6*f*x + 6*e) - 9*A*a*c*sin(4*f*x + 4*e
) - 9*A*a*c*sin(2*f*x + 2*e) + 3*I*A*a*c)*log(cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt
```

```
(a)*sqrt(c)/(f*(-12*I*cos(6*f*x + 6*e) - 36*I*cos(4*f*x + 4*e) - 36*I*cos(2
*f*x + 2*e) + 12*sin(6*f*x + 6*e) + 36*sin(4*f*x + 4*e) + 36*sin(2*f*x + 2*
e) - 12*I))
```

Fricas [B] time = 1.50822, size = 1127, normalized size = 7.18

$$2\left(-6i\,Aace^{\left(4i\,fx+4i\,e\right)}+16\,Bace^{\left(2i\,fx+2i\,e\right)}+6i\,Aac\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}-3\sqrt{\frac{A^2a^3c^3}{f^2}}\left(fe^{\left(4i\,fx+4i\,e\right)}+2\,fe^{\left(2i\,fx\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(2*(-6*I*A*a*c*e^(4*I*f*x + 4*I*e) + 16*B*a*c*e^(2*I*f*x + 2*I*e) + 6*
I*A*a*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)
)*e^(I*f*x + I*e) - 3*sqrt(A^2*a^3*c^3/f^2)*(f*e^(4*I*f*x + 4*I*e) + 2*f*e^
(2*I*f*x + 2*I*e) + f)*log((8*(A*a*c*e^(2*I*f*x + 2*I*e) + A*a*c)*sqrt(a/(e
^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)
+ sqrt(A^2*a^3*c^3/f^2)*(4*I*f*e^(2*I*f*x + 2*I*e) - 4*I*f))/(A*a*c*e^(2*I*
f*x + 2*I*e) + A*a*c)) + 3*sqrt(A^2*a^3*c^3/f^2)*(f*e^(4*I*f*x + 4*I*e) + 2
*f*e^(2*I*f*x + 2*I*e) + f)*log((8*(A*a*c*e^(2*I*f*x + 2*I*e) + A*a*c)*sqrt
(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x +
I*e) + sqrt(A^2*a^3*c^3/f^2)*(-4*I*f*e^(2*I*f*x + 2*I*e) + 4*I*f))/(A*a*c*e
^(2*I*f*x + 2*I*e) + A*a*c)))/(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I
*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)*(-I*c*tan(f*x +
 e) + c)^(3/2), x)
```

3.798 $\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}$

Optimal. Leaf size=160

$$-\frac{a^{3/2}\sqrt{c}(B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}+\frac{a(B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{B(a+ia\tan(e+fx))}{2}$$

```
[Out] -((a^(3/2)*((2*I)*A + B)*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]]
)/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) + (a*((2*I)*A + B)*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (B*(a + I*a*Tan[e + f*x]
)^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(2*f)
```

Rubi [A] time = 0.261031, antiderivative size = 160, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 50, 63, 217, 203}

$$-\frac{a^{3/2}\sqrt{c}(B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}+\frac{a(B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{B(a+ia\tan(e+fx))}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e +
f*x]],x]
```



```
[Out] -((a^(3/2)*((2*I)*A + B)*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]]
)/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) + (a*((2*I)*A + B)*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (B*(a + I*a*Tan[e + f*x]
)^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(2*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
```

```
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}}{2f} + \frac{(a(2}{}$$

$$= \frac{a(2iA+B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}$$

$$= \frac{a(2iA+B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}$$

$$= \frac{a(2iA+B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}$$

$$= -\frac{a^{3/2}(2iA+B)\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f} + \frac{a(2i}{}$$

Mathematica [A] time = 6.4519, size = 220, normalized size = 1.38

$$\frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))\left(\frac{\cos(e)(\tan(e)+i)\sqrt{\sec(e+fx)}\sqrt{c-ic\tan(e+fx)}(2A+B\tan(e+fx)-2iB)}{2\cos(fx)+2i\sin(fx)} - \frac{ic(2A-iB)e^{-2i(e+fx)}\sqrt{\frac{e^{i(e+f}}{1+e^{2i(e}}}}{\sqrt{\frac{c}{1+e^{2i(e+f}}}}\right.}{f\sec^{\frac{5}{2}}(e+fx)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Ta
n[e + f*x]],x]
```

```
[Out] ((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x])*(((-I)*(2*A - I*B)*c*Sqr
t[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(E^((
2*I)*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) + (Cos[e]*Sqrt[Sec[e + f
*x]]*(I + Tan[e])*(2*A - (2*I)*B + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x
]])/(2*Cos[f*x] + (2*I)*Sin[f*x])))/(f*Sec[e + f*x]^(5/2)*(A*Cos[e + f*x] +
 B*Sin[e + f*x]))
```

Maple [A] time = 0.098, size = 223, normalized size = 1.4

$$\frac{a}{2f}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\left(iB\sqrt{ac}\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)}\tan\left(fx+e\right)-iB\ln\left(\left(ac\tan\left(f\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e)),x)
```

```
[Out] 1/2/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*a*(I*B*(a*c)^
(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-I*B*ln((a*c*tan(f*x+e)+(a*c*(
1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+2*I*A*(a*c)^(1/2)*(a*c
*(1+tan(f*x+e)^2))^(1/2)+2*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2
)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+2*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2
))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 2.2869, size = 1038, normalized size = 6.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e)
),x, algorithm="maxima")
```

```
[Out] ((32*A - 48*I*B)*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (
32*A - 16*I*B)*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*
(2*I*A + 3*B)*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*(
2*I*A + B)*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - ((16*A
- 8*I*B)*a*cos(4*f*x + 4*e) + (32*A - 16*I*B)*a*cos(2*f*x + 2*e) - 8*(-2*I*
A - B)*a*sin(4*f*x + 4*e) - 16*(-2*I*A - B)*a*sin(2*f*x + 2*e) + (16*A - 8*
I*B)*a)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - ((16*A - 8*I*B)*a*co
s(4*f*x + 4*e) + (32*A - 16*I*B)*a*cos(2*f*x + 2*e) - 8*(-2*I*A - B)*a*sin(
4*f*x + 4*e) - 16*(-2*I*A - B)*a*sin(2*f*x + 2*e) + (16*A - 8*I*B)*a)*arcta
n2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (4*(-2*I*A - B)*a*cos(4*f*x + 4*
e) + 8*(-2*I*A - B)*a*cos(2*f*x + 2*e) + (8*A - 4*I*B)*a*sin(4*f*x + 4*e) +
```

```
(16*A - 8*I*B)*a*sin(2*f*x + 2*e) + 4*(-2*I*A - B)*a)*log(cos(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) + (4*(2*I*A + B)*a*cos(4*f*x + 4*e) + 8*(2*I*A + B)*a*cos(2*f*x + 2
*e) - (8*A - 4*I*B)*a*sin(4*f*x + 4*e) - (16*A - 8*I*B)*a*sin(2*f*x + 2*e)
+ 4*(2*I*A + B)*a)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-16*I*c
os(4*f*x + 4*e) - 32*I*cos(2*f*x + 2*e) + 16*sin(4*f*x + 4*e) + 32*sin(2*f*
x + 2*e) - 16*I))
```

Fricas [B] time = 1.56229, size = 1165, normalized size = 7.28

$$\frac{2\left((4i\,A+6\,B)ae^{\left(2i\,fx+2i\,e\right)}+(4i\,A+2\,B)a\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\sqrt{\frac{\left(4\,A^2-4i\,AB-B^2\right)a^3c}{f^2}}\left(fe^{\left(2i\,fx+2i\,e\right)}+f\right)\log\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e)
),x, algorithm="fricas")
```

```
[Out] 1/4*(2*((4*I*A + 6*B)*a*e^(2*I*f*x + 2*I*e) + (4*I*A + 2*B)*a)*sqrt(a/(e^(2
*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + s
qrt((4*A^2 - 4*I*A*B - B^2)*a^3*c/f^2)*(f*e^(2*I*f*x + 2*I*e) + f)*log(2*((
(8*I*A + 4*B)*a*e^(2*I*f*x + 2*I*e) + (8*I*A + 4*B)*a)*sqrt(a/(e^(2*I*f*x +
 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*sqrt((4
*A^2 - 4*I*A*B - B^2)*a^3*c/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((2*I*A + B)*
a*e^(2*I*f*x + 2*I*e) + (2*I*A + B)*a)) - sqrt((4*A^2 - 4*I*A*B - B^2)*a^3*
c/f^2)*(f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((8*I*A + 4*B)*a*e^(2*I*f*x + 2*I
*e) + (8*I*A + 4*B)*a)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x
 + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((4*A^2 - 4*I*A*B - B^2)*a^3*c/f^2)
*(f*e^(2*I*f*x + 2*I*e) - f))/((2*I*A + B)*a*e^(2*I*f*x + 2*I*e) + (2*I*A +
 B)*a)))/(f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+
e)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{-ic\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e)
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)*sqrt(-I*c*tan(f
*x + e) + c), x)
```

3.799 $\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=169

$$\frac{2a^{3/2}(2B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{a(2B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{cf}-\frac{(B+iA)(a+ia\tan(e+ \ldots}{f\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] (2*a^(3/2)*(I*A + 2*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*(a + I*a*Tan[e + f*
x])^(3/2))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (a*(I*A + 2*B)*Sqrt[a + I*a*Tan
[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c*f)
```

Rubi [A] time = 0.269004, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 50, 63, 217, 203}

$$\frac{2a^{3/2}(2B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{a(2B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{cf}-\frac{(B+iA)(a+ia\tan(e+ \ldots}{f\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e
+ f*x]],x]
```


```
[Out] (2*a^(3/2)*(I*A + 2*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*(a + I*a*Tan[e + f*
x])^(3/2))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (a*(I*A + 2*B)*Sqrt[a + I*a*Tan
[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{(a(A-2iB))\,\text{Subst}\left(\int \frac{\sqrt{a+iax}}{\sqrt{c-icx}}\,dx,\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{a(iA+2B)\sqrt{a+ia\tan(e+fx)}\sqrt{c}}{cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{a(iA+2B)\sqrt{a+ia\tan(e+fx)}\sqrt{c}}{cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{a(iA+2B)\sqrt{a+ia\tan(e+fx)}\sqrt{c}}{cf}$$

$$= \frac{2a^{3/2}(iA+2B)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f} - \frac{(iA+B)(a+ia\tan(e+fx}{f\sqrt{c-ic\tan(e+fx)}}$$

Mathematica [A] time = 6.42171, size = 190, normalized size = 1.12

$$\frac{2ae^{-2i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}(\tan(e+fx)-i)\sqrt{a+ia\tan(e+fx)}\left(e^{i(e+fx)}\left(A\left(1+e^{2i(e+fx)}\right)-iB\left(2+e^{2i(e+fx)}\right)\right)-(A\right.}{cf\sec^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*
Tan[e + f*x]],x]
```

```
[Out] (2*a*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(
e + f*x)))]*(E^(I*(e + f*x))*(A*(1 + E^((2*I)*(e + f*x))) - I*B*(2 + E^((2*
I)*(e + f*x)))) - (A - (2*I)*B)*(1 + E^((2*I)*(e + f*x)))*ArcTan[E^(I*(e +
f*x))])*(-I + Tan[e + f*x])*Sqrt[a + I*a*Tan[e + f*x]])/(c*E^((2*I)*(e + f*
x))*f*Sec[e + f*x]^(3/2))
```

Maple [B] time = 0.181, size = 497, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/f*(2*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*
c)^(1/2))*tan(f*x+e)^2*a*c-2*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-A*ln((a*c*tan(f*x+e)+(a*c*(1
+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c-2*I*B*ln((
a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-4
*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-4*B*ln((a*c*tan(f*
x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-
B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+2*I*A*(a*c)^(1/2)*(
a*c*(1+tan(f*x+e)^2))^(1/2)+A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/
2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+2*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/
2)*tan(f*x+e)+3*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))*(a*(1+I*tan(f*x
+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a/c/(a*c*(1+tan(f*x+e)^2))^(1/2)/(
tan(f*x+e)+I)^2/(a*c)^(1/2)
```

Maxima [B] time = 2.13346, size = 829, normalized size = 4.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] (((2*A - 4*I*B)*a*cos(2*f*x + 2*e) - 2*(-I*A - 2*B)*a*sin(2*f*x + 2*e) + (2
*A - 4*I*B)*a)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
, sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((2*A - 4*I*B
)*a*cos(2*f*x + 2*e) - 2*(-I*A - 2*B)*a*sin(2*f*x + 2*e) + (2*A - 4*I*B)*a)
*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - ((4*A - 4*I*B)*a*cos(2*f*x
 + 2*e) + 4*(I*A + B)*a*sin(2*f*x + 2*e) + (4*A - 8*I*B)*a)*cos(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((I*A + 2*B)*a*cos(2*f*x + 2*e) - (
A - 2*I*B)*a*sin(2*f*x + 2*e) + (I*A + 2*B)*a)*log(cos(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1)
```

```
+ ((-I*A - 2*B)*a*cos(2*f*x + 2*e) + (A - 2*I*B)*a*sin(2*f*x + 2*e) + (-I*A
 - 2*B)*a)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin
(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - (4*(I*A + B)*a*cos(2*f*x + 2*e) -
(4*A - 4*I*B)*a*sin(2*f*x + 2*e) + 4*(I*A + 2*B)*a)*sin(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((-2*I*c*cos(2*f*x + 2*e) +
2*c*sin(2*f*x + 2*e) - 2*I*c)*f)
```

Fricas [B] time = 1.6406, size = 1112, normalized size = 6.58

$$-\frac{c\sqrt{\frac{\left(4\,A^2-16 i\,AB-16\,B^2\right)a^3}{cf^2}}f\log\left(\frac{2\left(\left((4i\,A+8\,B)ae^{\left(2i\,fx+2i\,e\right)}+(4i\,A+8\,B)a\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(cfe^{\left(2i\,fx+2i\,e\right)}-cf\right)\sqrt{\frac{\left(4\,A^2-16i\,AB-16\,B^2\right)a^3}{cf^2}}\right)}{(i\,A+2\,B)ae^{\left(2i\,fx+2i\,e\right)}+(i\,A+2\,B)a}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] -1/4*(c*sqrt((4*A^2 - 16*I*A*B - 16*B^2)*a^3/(c*f^2))*f*log(2*(((4*I*A + 8*
B)*a*e^(2*I*f*x + 2*I*e) + (4*I*A + 8*B)*a)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1
))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + (c*f*e^(2*I*f*x + 2*
I*e) - c*f)*sqrt((4*A^2 - 16*I*A*B - 16*B^2)*a^3/(c*f^2)))/((I*A + 2*B)*a*e
^(2*I*f*x + 2*I*e) + (I*A + 2*B)*a)) - c*sqrt((4*A^2 - 16*I*A*B - 16*B^2)*a
^3/(c*f^2))*f*log(2*(((4*I*A + 8*B)*a*e^(2*I*f*x + 2*I*e) + (4*I*A + 8*B)*a
)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*
f*x + I*e) - (c*f*e^(2*I*f*x + 2*I*e) - c*f)*sqrt((4*A^2 - 16*I*A*B - 16*B^
2)*a^3/(c*f^2)))/((I*A + 2*B)*a*e^(2*I*f*x + 2*I*e) + (I*A + 2*B)*a)) - 2*(
(-4*I*A - 4*B)*a*e^(2*I*f*x + 2*I*e) + (-4*I*A - 8*B)*a)*sqrt(a/(e^(2*I*f*x
 + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))/(c*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\sqrt{-ic\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)/sqrt(-I*c*tan(f
*x + e) + c), x)
```

3.800 $\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f}-\frac{(B+iA)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}}+\frac{2aB\sqrt{a+ia\tan(e+fx)}}{cf\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] (-2*a^(3/2)*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(c^(3/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2)
)/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*B*Sqrt[a + I*a*Tan[e + f*x]])/(
c*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.264557, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 47, 63, 217, 203}

$$-\frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f}-\frac{(B+iA)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}}+\frac{2aB\sqrt{a+ia\tan(e+fx)}}{cf\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(3/2),x]
```

```
[Out] (-2*a^(3/2)*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(c^(3/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2)
)/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*B*Sqrt[a + I*a*Tan[e + f*x]])/(
c*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{(iaB)\operatorname{Subst}\left(\int \frac{\sqrt{a+iax}}{(c-icx)^{3/2}}\,dx, x, \tan\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2aB\sqrt{a+ia\tan(e+fx)}}{cf\sqrt{c-ic\tan(e+fx)}} - \frac{(ia^2B)}{}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2aB\sqrt{a+ia\tan(e+fx)}}{cf\sqrt{c-ic\tan(e+fx)}} - \frac{(2aB)}{}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2aB\sqrt{a+ia\tan(e+fx)}}{cf\sqrt{c-ic\tan(e+fx)}} - \frac{(2aB)}{}$$

$$= -\frac{2a^{3/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f} - \frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{3f(c-ic\tan(e+fx))^{3/2}} +$$

Mathematica [A] time = 8.48806, size = 123, normalized size = 0.79

$$-\frac{ae^{-i(e+fx)}\sqrt{a+ia\tan(e+fx)}\left(iAe^{3i(e+fx)}+Be^{i(e+fx)}\left(-6+e^{2i(e+fx)}\right)+6B\tan^{-1}\left(e^{i(e+fx)}\right)\right)}{3\sqrt{2}cf\sqrt{\frac{c}{1+e^{2i(e+fx)}}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(3/2),x]
```

```
[Out] -(a*(I*A*E^((3*I)*(e + f*x)) + B*E^(I*(e + f*x))*(-6 + E^((2*I)*(e + f*x)))
 + 6*B*ArcTan[E^(I*(e + f*x))])*Sqrt[a + I*a*Tan[e + f*x]])/(3*Sqrt[2]*c*E^
(I*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f)
```

Maple [B] time = 0.116, size = 406, normalized size = 2.6

$$-\frac{a}{3\,f c^{2}\left(\tan\left(f x+e\right)+i\right)^{3}}\sqrt{a\left(1+i\tan\left(f x+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(f x+e\right)\right)}\left(3\,iB\ln\left(\left(ac\tan\left(f x+e\right)+\sqrt{ac\left(1+\left(\tan\right.\right.}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/3/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a/c^2*(3*I*B
*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*
tan(f*x+e)^3*a*c-9*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c
)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-7*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*
c)^(1/2)*tan(f*x+e)^2-9*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)
^2))^(1/2)*(a*c)^(1/2)+5*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+3*B*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*
c+12*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+A*(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^3/(
a*c)^(1/2)
```

Maxima [A] time = 2.20918, size = 232, normalized size = 1.5

$$-\frac{\left(6\,Ba\arctan\left(\cos\left(f x+e\right),\sin\left(f x+e\right)+1\right)+6\,Ba\arctan\left(\cos\left(f x+e\right),-\sin\left(f x+e\right)+1\right)-2\,(-i\,A-B)a\cos\left(3\,f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -1/6*(6*B*a*arctan2(cos(f*x + e), sin(f*x + e) + 1) + 6*B*a*arctan2(cos(f*x
 + e), -sin(f*x + e) + 1) - 2*(-I*A - B)*a*cos(3*f*x + 3*e) - 12*B*a*cos(f*
x + e) + 3*I*B*a*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1)
- 3*I*B*a*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1) - (2*A
- 2*I*B)*a*sin(3*f*x + 3*e) - 12*I*B*a*sin(f*x + e))*sqrt(a)/(c^(3/2)*f)
```

Fricas [B] time = 1.59669, size = 946, normalized size = 6.1

$$\frac{3\,c^{2}f\sqrt{-\frac{B^{2}a^{3}}{c^{3}f^{2}}}\log\left(\frac{4\left(2\left(Bae^{\left(2i\,fx+2i\,e\right)}+Ba\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(c^{2}fe^{\left(2i\,fx+2i\,e\right)}-c^{2}f\right)\sqrt{-\frac{B^{2}a^{3}}{c^{3}f^{2}}}\right)}{Bae^{\left(2i\,fx+2i\,e\right)}+Ba}\right)-3\,c^{2}f\sqrt{-\frac{B^{2}a^{3}}{c^{3}f^{2}}}\log\left(\frac{4\left(2\left(Bae\cdots\right.\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/6*(3*c^2*f*sqrt(-B^2*a^3/(c^3*f^2))*log(4*(2*(B*a*e^(2*I*f*x + 2*I*e) + B
*a)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(
I*f*x + I*e) + (c^2*f*e^(2*I*f*x + 2*I*e) - c^2*f)*sqrt(-B^2*a^3/(c^3*f^2))
)/(B*a*e^(2*I*f*x + 2*I*e) + B*a)) - 3*c^2*f*sqrt(-B^2*a^3/(c^3*f^2))*log(4
*(2*(B*a*e^(2*I*f*x + 2*I*e) + B*a)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(
c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (c^2*f*e^(2*I*f*x + 2*I*e) -
 c^2*f)*sqrt(-B^2*a^3/(c^3*f^2)))/(B*a*e^(2*I*f*x + 2*I*e) + B*a)) + ((-2*I
*A - 2*B)*a*e^(4*I*f*x + 4*I*e) + (-2*I*A + 10*B)*a*e^(2*I*f*x + 2*I*e) + 1
2*B*a)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*
e^(I*f*x + I*e))/(c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)/(-I*c*tan(f*x +
 e) + c)^(3/2), x)
```

3.801 $\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=102

$$-\frac{(-4B+iA)(a+ia\tan(e+fx))^{3/2}}{15cf(c-ic\tan(e+fx))^{3/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{3/2}}{5f(c-ic\tan(e+fx))^{5/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)
) - ((I*A - 4*B)*(a + I*a*Tan[e + f*x])^(3/2))/(15*c*f*(c - I*c*Tan[e + f*x
])^(3/2))
```

Rubi [A] time = 0.233717, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$-\frac{(-4B+iA)(a+ia\tan(e+fx))^{3/2}}{15cf(c-ic\tan(e+fx))^{3/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{3/2}}{5f(c-ic\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(5/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)
) - ((I*A - 4*B)*(a + I*a*Tan[e + f*x])^(3/2))/(15*c*f*(c - I*c*Tan[e + f*x
])^(3/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{(a(A+4iB))\operatorname{Subst}\left(\int \frac{\sqrt{a+iax}}{(c-icx)^{5/2}}\right.}{5f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{5f(c-ic\tan(e+fx))^{5/2}} - \frac{(iA-4B)(a+ia\tan(e+fx))^{3/2}}{15cf(c-ic\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 11.6563, size = 117, normalized size = 1.15

$$\frac{a\cos(e+fx)(\cos(fx)-i\sin(fx))\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(4e+5fx)+i\sin(4e+5fx))((B-4iA)\,c}{15c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(5/2),x]
```

```
[Out] (a*Cos[e + f*x]*(Cos[f*x] - I*Sin[f*x])*(((-4*I)*A + B)*Cos[e + f*x] - (A +
 (4*I)*B)*Sin[e + f*x])*(Cos[4*e + 5*f*x] + I*Sin[4*e + 5*f*x])*Sqrt[a + I*
a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(15*c^3*f)
```

Maple [A] time = 0.106, size = 90, normalized size = 0.9

$$\frac{\frac{i}{15}a\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(-4\,A+iA\tan\left(fx+e\right)-iB-4\,B\tan\left(fx+e\right)\right)}{fc^3\left(\tan\left(fx+e\right)+i\right)^4}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a/c^3*(1+t
an(f*x+e)^2)*(-4*A+I*A*tan(f*x+e)-I*B-4*B*tan(f*x+e))/(tan(f*x+e)+I)^4
```

Maxima [A] time = 2.28958, size = 209, normalized size = 2.05

$$-\frac{\left((90\,A-90i\,B)a\cos\left(7\,fx+7\,e\right)+(240\,A+60i\,B)a\cos\left(5\,fx+5\,e\right)+(150\,A+150i\,B)a\cos\left(3\,fx+3\,e\right)-90\,(-i\,A-B\right.}{\left(-900i\,c^3\cos\left(2\,fx+2\,e\right)+900\,c^3\sin\left(2\,fx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] -((90*A - 90*I*B)*a*cos(7*f*x + 7*e) + (240*A + 60*I*B)*a*cos(5*f*x + 5*e)
+ (150*A + 150*I*B)*a*cos(3*f*x + 3*e) - 90*(-I*A - B)*a*sin(7*f*x + 7*e) -
 60*(-4*I*A + B)*a*sin(5*f*x + 5*e) - 150*(-I*A + B)*a*sin(3*f*x + 3*e))*sq
rt(a)*sqrt(c)/((-900*I*c^3*cos(2*f*x + 2*e) + 900*c^3*sin(2*f*x + 2*e) - 90
0*I*c^3)*f)
```

Fricas [A] time = 1.44042, size = 290, normalized size = 2.84

$$\frac{\left((-3i\,A-3\,B)ae^{\left(6i\,fx+6i\,e\right)}+(-8i\,A+2\,B)ae^{\left(4i\,fx+4i\,e\right)}+(-5i\,A+5\,B)ae^{\left(2i\,fx+2i\,e\right)}\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}}{30\,c^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/30*((-3*I*A - 3*B)*a*e^(6*I*f*x + 6*I*e) + (-8*I*A + 2*B)*a*e^(4*I*f*x +
4*I*e) + (-5*I*A + 5*B)*a*e^(2*I*f*x + 2*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e)
+ 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^{\frac{3}{2}}}{(-ic\tan(fx+e)+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)/(-I*c*tan(f*x +
 e) + c)^(5/2), x)
```

3.802 $\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{(-5B+2iA)(a+ia\tan(e+fx))^{3/2}}{105c^2f(c-ic\tan(e+fx))^{3/2}}-\frac{(-5B+2iA)(a+ia\tan(e+fx))^{3/2}}{35cf(c-ic\tan(e+fx))^{5/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{3/2}}{7f(c-ic\tan(e+fx))^{7/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)
) - (((2*I)*A - 5*B)*(a + I*a*Tan[e + f*x])^(3/2))/(35*c*f*(c - I*c*Tan[e +
 f*x])^(5/2)) - (((2*I)*A - 5*B)*(a + I*a*Tan[e + f*x])^(3/2))/(105*c^2*f*(
c - I*c*Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.262802, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{(-5B+2iA)(a+ia\tan(e+fx))^{3/2}}{105c^2f(c-ic\tan(e+fx))^{3/2}}-\frac{(-5B+2iA)(a+ia\tan(e+fx))^{3/2}}{35cf(c-ic\tan(e+fx))^{5/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{3/2}}{7f(c-ic\tan(e+fx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(7/2),x]
```



```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)
) - (((2*I)*A - 5*B)*(a + I*a*Tan[e + f*x])^(3/2))/(35*c*f*(c - I*c*Tan[e +
 f*x])^(5/2)) - (((2*I)*A - 5*B)*(a + I*a*Tan[e + f*x])^(3/2))/(105*c^2*f*(
c - I*c*Tan[e + f*x])^(3/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{(c-icx)^{9/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{(a(2A+5iB))\,\text{Subst}\left(\int \frac{\sqrt{a+iax}}{(c-icx)^{7/2}}\right.}{7f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{7f(c-ic\tan(e+fx))^{7/2}} - \frac{(2iA-5B)(a+ia\tan(e+fx))^{3/}}{35cf(c-ic\tan(e+fx))^{5/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{7f(c-ic\tan(e+fx))^{7/2}} - \frac{(2iA-5B)(a+ia\tan(e+fx))^{3/}}{35cf(c-ic\tan(e+fx))^{5/2}}$$

Mathematica [A] time = 12.8315, size = 131, normalized size = 0.85

$$\frac{a\cos(e+fx)(\cos(fx)-i\sin(fx))\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(5e+6fx)+i\sin(5e+6fx))(-5(2A+5i}{210c^4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(7/2),x]
```

```
[Out] (a*Cos[e + f*x]*(Cos[f*x] - I*Sin[f*x])*((-21*I)*A + 5*((-5*I)*A + 2*B)*Cos
[2*(e + f*x)] - 5*(2*A + (5*I)*B)*Sin[2*(e + f*x)])*(Cos[5*e + 6*f*x] + I*S
in[5*e + 6*f*x])*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(21
0*c^4*f)
```

Maple [A] time = 0.111, size = 113, normalized size = 0.7

$$\frac{\frac{i}{105}a\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)\left(5\,B-25\,iB\tan\left(fx+e\right)-5\,B\left(\tan\left(fx+e\right)\right)^{2}-23\,iA-10\,A\tan\left(fx+e\right)+2\,iA\left(\tan\left(fx+\right.\right.\right.}{fc^{4}\left(\tan\left(fx+e\right)+i\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 1/105*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a/c^4*(1+
tan(f*x+e)^2)*(5*B-25*I*B*tan(f*x+e)-5*B*tan(f*x+e)^2-23*I*A-10*A*tan(f*x+e
)+2*I*A*tan(f*x+e)^2)/(tan(f*x+e)+I)^5
```

Maxima [A] time = 2.51571, size = 254, normalized size = 1.64

$$\left(15\left(-iA-B\right)a\cos\left(\frac{7}{2}\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)-42i\,Aa\cos\left(\frac{5}{2}\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] 1/420*(15*(-I*A - B)*a*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 - 42*I*A*a*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 35*(-I*A
 + B)*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (15*A - 15*I
*B)*a*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 42*A*a*sin(5/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (35*A + 35*I*B)*a*sin(3/2*a
```

```
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)/(c^(7/2)*f)
```

Fricas [A] time = 1.27654, size = 355, normalized size = 2.29

$$\frac{\left((-15i\,A-15\,B)ae^{(8i\,fx+8i\,e)}+(-57i\,A-15\,B)ae^{(6i\,fx+6i\,e)}+(-77i\,A+35\,B)ae^{(4i\,fx+4i\,e)}+(-35i\,A+35\,B)ae^{(2i\,fx+2i\,e)}\right)\sqrt{}}{420\,c^4 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/420*((-15*I*A - 15*B)*a*e^(8*I*f*x + 8*I*e) + (-57*I*A - 15*B)*a*e^(6*I*f
*x + 6*I*e) + (-77*I*A + 35*B)*a*e^(4*I*f*x + 4*I*e) + (-35*I*A + 35*B)*a*e
^(2*I*f*x + 2*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x +
2*I*e) + 1))*e^(I*f*x + I*e)/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)/(-I*c*tan(f*x +
 e) + c)^(7/2), x)
```

3.803 $\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{2(-2B+iA)(a+ia\tan(e+fx))^{3/2}}{315c^3f(c-ic\tan(e+fx))^{3/2}}-\frac{2(-2B+iA)(a+ia\tan(e+fx))^{3/2}}{105c^2f(c-ic\tan(e+fx))^{5/2}}-\frac{(-2B+iA)(a+ia\tan(e+fx))^{3/2}}{21cf(c-ic\tan(e+fx))^{7/2}}-\frac{(B+}{9}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(9*f*(c - I*c*Tan[e + f*x])^(9/2)
) - ((I*A - 2*B)*(a + I*a*Tan[e + f*x])^(3/2))/(21*c*f*(c - I*c*Tan[e + f*x
])^(7/2)) - (2*(I*A - 2*B)*(a + I*a*Tan[e + f*x])^(3/2))/(105*c^2*f*(c - I*
c*Tan[e + f*x])^(5/2)) - (2*(I*A - 2*B)*(a + I*a*Tan[e + f*x])^(3/2))/(315*
c^3*f*(c - I*c*Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.282241, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-2B+iA)(a+ia\tan(e+fx))^{3/2}}{315c^3f(c-ic\tan(e+fx))^{3/2}}-\frac{2(-2B+iA)(a+ia\tan(e+fx))^{3/2}}{105c^2f(c-ic\tan(e+fx))^{5/2}}-\frac{(-2B+iA)(a+ia\tan(e+fx))^{3/2}}{21cf(c-ic\tan(e+fx))^{7/2}}-\frac{(B+}{9}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(9/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(9*f*(c - I*c*Tan[e + f*x])^(9/2)
) - ((I*A - 2*B)*(a + I*a*Tan[e + f*x])^(3/2))/(21*c*f*(c - I*c*Tan[e + f*x
])^(7/2)) - (2*(I*A - 2*B)*(a + I*a*Tan[e + f*x])^(3/2))/(105*c^2*f*(c - I*
c*Tan[e + f*x])^(5/2)) - (2*(I*A - 2*B)*(a + I*a*Tan[e + f*x])^(3/2))/(315*
c^3*f*(c - I*c*Tan[e + f*x])^(3/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{9/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{(c-icx)^{11/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{9f(c-ic\tan(e+fx))^{9/2}} + \frac{(a(A+2iB))\,\text{Subst}\left(\int \frac{\sqrt{a+iax}}{(c-icx)^{9/2}}\,dx\right.}{3f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{9f(c-ic\tan(e+fx))^{9/2}} - \frac{(iA-2B)(a+ia\tan(e+fx))^{3/2}}{21cf(c-ic\tan(e+fx))^{7/2}} -$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{9f(c-ic\tan(e+fx))^{9/2}} - \frac{(iA-2B)(a+ia\tan(e+fx))^{3/2}}{21cf(c-ic\tan(e+fx))^{7/2}} -$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{9f(c-ic\tan(e+fx))^{9/2}} - \frac{(iA-2B)(a+ia\tan(e+fx))^{3/2}}{21cf(c-ic\tan(e+fx))^{7/2}} -$$

Mathematica [A] time = 8.81579, size = 148, normalized size = 0.71

$$\frac{a\cos(e+fx)(\cos(fx)-i\sin(fx))\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(6e+7fx)+i\sin(6e+7fx))(-(A+2iB)}{1260c^5f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(9/2),x]
```

```
[Out] (a*Cos[e + f*x]*(Cos[f*x] - I*Sin[f*x])*(9*((-18*I)*A + B)*Cos[e + f*x] + 3
5*((-2*I)*A + B)*Cos[3*(e + f*x)] - (A + (2*I)*B)*(27*Sin[e + f*x] + 35*Sin
[3*(e + f*x)]))*(Cos[6*e + 7*f*x] + I*Sin[6*e + 7*f*x])*Sqrt[a + I*a*Tan[e
+ f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(1260*c^5*f)
```

Maple [A] time = 0.117, size = 136, normalized size = 0.7

$$\frac{\frac{i}{315}a\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)\left(2\,iA\left(\tan\left(fx+e\right)\right)^{3}-24\,iB\left(\tan\left(fx+e\right)\right)^{2}-4\,B\left(\tan\left(fx+e\right)\right)^{3}-33\,iA\tan\left(fx+e\right)-1}{fc^{5}\left(\tan\left(fx+e\right)+i\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2),x)
```

```
[Out] 1/315*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a/c^5*(1+
tan(f*x+e)^2)*(2*I*A*tan(f*x+e)^3-24*I*B*tan(f*x+e)^2-4*B*tan(f*x+e)^3-33*I
*A*tan(f*x+e)-12*A*tan(f*x+e)^2+11*I*B+66*B*tan(f*x+e)+58*A)/(tan(f*x+e)+I)
^6
```

Maxima [A] time = 2.39516, size = 351, normalized size = 1.69

$$\frac{\left(35\,(-i\,A-B)a\cos\left(\frac{9}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)+45\,(-3i\,A-B)a\cos\left(\frac{7}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),c\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="maxima")
```

```
[Out] 1/2520*(35*(-I*A - B)*a*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) + 45*(-3*I*A - B)*a*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 63*(-3*I*A + B)*a*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
105*(-I*A + B)*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (35
*A - 35*I*B)*a*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (135*
A - 45*I*B)*a*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (189*A
 + 63*I*B)*a*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (105*A
+ 105*I*B)*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)/
(c^(9/2)*f)
```

Fricas [A] time = 1.33321, size = 423, normalized size = 2.03

$$\frac{\left((-35i\,A - 35\,B)ae^{(10i\,fx+10i\,e)} + (-170i\,A - 80\,B)ae^{(8i\,fx+8i\,e)} + (-324i\,A + 18\,B)ae^{(6i\,fx+6i\,e)} + (-294i\,A + 168\,B)ae^{(4i\,fx+4}\right.}{2520\,c^5 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="fricas")
```

```
[Out] 1/2520*((-35*I*A - 35*B)*a*e^(10*I*f*x + 10*I*e) + (-170*I*A - 80*B)*a*e^(8
*I*f*x + 8*I*e) + (-324*I*A + 18*B)*a*e^(6*I*f*x + 6*I*e) + (-294*I*A + 168
*B)*a*e^(4*I*f*x + 4*I*e) + (-105*I*A + 105*B)*a*e^(2*I*f*x + 2*I*e))*sqrt(
a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I
*e)/(c^5*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(9
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)/(-I*c*tan(f*x +
 e) + c)^(9/2), x)
```

3.804 $\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{11/2}}\,dx$

Optimal. Leaf size=261

$$-\frac{2(-7B+4iA)(a+ia\tan(e+fx))^{3/2}}{3465c^4f(c-ic\tan(e+fx))^{3/2}}-\frac{2(-7B+4iA)(a+ia\tan(e+fx))^{3/2}}{1155c^3f(c-ic\tan(e+fx))^{5/2}}-\frac{(-7B+4iA)(a+ia\tan(e+fx))^{3/2}}{231c^2f(c-ic\tan(e+fx))^{7/2}}-\frac{(-7$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(11*f*(c - I*c*Tan[e + f*x])^(11/
2)) - (((4*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(3/2))/(99*c*f*(c - I*c*Tan[e
 + f*x])^(9/2)) - (((4*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(3/2))/(231*c^2*f
*(c - I*c*Tan[e + f*x])^(7/2)) - (2*((4*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^
(3/2))/(1155*c^3*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*((4*I)*A - 7*B)*(a +
I*a*Tan[e + f*x])^(3/2))/(3465*c^4*f*(c - I*c*Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.320727, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-7B+4iA)(a+ia\tan(e+fx))^{3/2}}{3465c^4f(c-ic\tan(e+fx))^{3/2}}-\frac{2(-7B+4iA)(a+ia\tan(e+fx))^{3/2}}{1155c^3f(c-ic\tan(e+fx))^{5/2}}-\frac{(-7B+4iA)(a+ia\tan(e+fx))^{3/2}}{231c^2f(c-ic\tan(e+fx))^{7/2}}-\frac{(-7$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(11/2),x]
```


```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(3/2))/(11*f*(c - I*c*Tan[e + f*x])^(11/
2)) - (((4*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(3/2))/(99*c*f*(c - I*c*Tan[e
 + f*x])^(9/2)) - (((4*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(3/2))/(231*c^2*f
*(c - I*c*Tan[e + f*x])^(7/2)) - (2*((4*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^
(3/2))/(1155*c^3*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*((4*I)*A - 7*B)*(a +
I*a*Tan[e + f*x])^(3/2))/(3465*c^4*f*(c - I*c*Tan[e + f*x])^(3/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{3/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{11/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{\sqrt{a+iax}(A+Bx)}{(c-icx)^{13/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{11f(c-ic\tan(e+fx))^{11/2}} + \frac{(a(4A+7iB))\,\text{Subst}\left(\int \frac{\sqrt{a+iax}}{(c-icx)^{11/2}}\right.}{11f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(4iA-7B)(a+ia\tan(e+fx))^{3/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(4iA-7B)(a+ia\tan(e+fx))^{3/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(4iA-7B)(a+ia\tan(e+fx))^{3/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{3/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(4iA-7B)(a+ia\tan(e+fx))^{3/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

Mathematica [A] time = 12.7293, size = 179, normalized size = 0.69

$$-\frac{ia\cos(e+fx)(\cos(fx)-i\sin(fx))\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(7e+8fx)+i\sin(7e+8fx))(308(7A+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(3/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(11/2),x]
```

```
[Out] ((-I/27720)*a*Cos[e + f*x]*(Cos[f*x] - I*Sin[f*x])*(1485*A + 308*(7*A + I*B
)*Cos[2*(e + f*x)] + 105*(7*A + (4*I)*B)*Cos[4*(e + f*x)] - (616*I)*A*Sin[2
*(e + f*x)] + 1078*B*Sin[2*(e + f*x)] - (420*I)*A*Sin[4*(e + f*x)] + 735*B*
Sin[4*(e + f*x)])*(Cos[7*e + 8*f*x] + I*Sin[7*e + 8*f*x])*Sqrt[a + I*a*Tan[
e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c^6*f)
```

Maple [A] time = 0.114, size = 158, normalized size = 0.6

$$-\frac{a\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)\left(14\,iB\left(\tan\left(fx+e\right)\right)^{4}+56\,iA\left(\tan\left(fx+e\right)\right)^{3}+8\,A\left(\tan\left(fx+e\right)\right)^{4}-315\,iB\left(\tan\left(fx+e\right)\right)^{2}-\right.}{3465\,fc^{6}\left(\tan\left(fx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/2),x)
```

```
[Out] -1/3465/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a/c^6*(1+
tan(f*x+e)^2)*(14*I*B*tan(f*x+e)^4+56*I*A*tan(f*x+e)^3+8*A*tan(f*x+e)^4-315
*I*B*tan(f*x+e)^2-98*B*tan(f*x+e)^3-364*I*A*tan(f*x+e)-180*A*tan(f*x+e)^2+9
1*I*B+637*B*tan(f*x+e)+547*A)/(tan(f*x+e)+I)^7
```

Maxima [A] time = 2.32133, size = 421, normalized size = 1.61

$$\frac{\left(315\left(-iA-B\right)a\cos\left(\frac{11}{2}\arctan\left(\sin\left(2fx+2e\right),\cos\left(2fx+2e\right)\right)\right)+770\left(-2iA-B\right)a\cos\left(\frac{9}{2}\arctan\left(\sin\left(2fx+2e\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="maxima")
```

```
[Out] 1/55440*(315*(-I*A - B)*a*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 770*(-2*I*A - B)*a*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) - 2970*I*A*a*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 138
6*(-2*I*A + B)*a*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 115
5*(-I*A + B)*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (315*
A - 315*I*B)*a*sin(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (154
0*A - 770*I*B)*a*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 297
0*A*a*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (2772*A + 1386
*I*B)*a*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (1155*A + 11
55*I*B)*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)/(c^
(11/2)*f)
```

Fricas [A] time = 1.40657, size = 502, normalized size = 1.92

$$\frac{\left(\left(-315iA-315B\right)ae^{\left(12ifx+12ie\right)}+\left(-1855iA-1085B\right)ae^{\left(10ifx+10ie\right)}+\left(-4510iA-770B\right)ae^{\left(8ifx+8ie\right)}+\left(-5742iA+13\right.\right.}{5544}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="fricas")
```

```
[Out] 1/55440*((-315*I*A - 315*B)*a*e^(12*I*f*x + 12*I*e) + (-1855*I*A - 1085*B)*
a*e^(10*I*f*x + 10*I*e) + (-4510*I*A - 770*B)*a*e^(8*I*f*x + 8*I*e) + (-574
2*I*A + 1386*B)*a*e^(6*I*f*x + 6*I*e) + (-3927*I*A + 2541*B)*a*e^(4*I*f*x +
 4*I*e) + (-1155*I*A + 1155*B)*a*e^(2*I*f*x + 2*I*e))*sqrt(a/(e^(2*I*f*x +
2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^6*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^{\frac{3}{2}}}{(-ic\tan(fx+e)+c)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(3/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(3/2)/(-I*c*tan(f*x +
 e) + c)^(11/2), x)
```

3.805 $\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=288

$$-\frac{a^{5/2}c^{7/2}(-B+6iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f}+\frac{a^2c^3(6A+iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{16f}+\frac{ac}{}$$

```
[Out] -(a^(5/2)*((6*I)*A - B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(8*f) + (a^2*(6*A + I*B)*c^3*Tan[e
+ f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(16*f) + (a*(
6*A + I*B)*c^2*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f
*x])^(3/2))/(24*f) - (((6*I)*A - B)*c*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c
*Tan[e + f*x])^(5/2))/(30*f) + (B*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan
[e + f*x])^(7/2))/(6*f)
```

Rubi [A] time = 0.329713, antiderivative size = 288, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{a^{5/2}c^{7/2}(-B+6iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f}+\frac{a^2c^3(6A+iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{16f}+\frac{ac}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(7/2),x]
```


```
[Out] -(a^(5/2)*((6*I)*A - B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(8*f) + (a^2*(6*A + I*B)*c^3*Tan[e
+ f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(16*f) + (a*(
6*A + I*B)*c^2*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f
*x])^(3/2))/(24*f) - (((6*I)*A - B)*c*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c
*Tan[e + f*x])^(5/2))/(30*f) + (B*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan
[e + f*x])^(7/2))/(6*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{3/2}(A+Bx)(c-icx)^{5/2}\,d\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{7/2}}{6f}$$

$$= -\frac{(6iA-B)c(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e}{30f}$$

$$= \frac{a(6A+iB)c^2\tan(e+fx)(a+ia\tan(e+fx))^{3/}}{24f}$$

$$= \frac{a^2(6A+iB)c^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{16f}$$

$$= \frac{a^2(6A+iB)c^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{16f}$$

$$= \frac{a^2(6A+iB)c^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{16f}$$

$$= -\frac{a^{5/2}(6iA-B)c^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f} + $$

Mathematica [A] time = 16.7947, size = 568, normalized size = 1.97

$$\frac{\cos^3(e+fx)(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(\sec(e)\left(\frac{1}{30}c^3\cos(2e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(7/2),x]
```

```
[Out] (((-6*I)*A + B)*c^4*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e +
 f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e
+ f*x]))/(8*E^(I*(3*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e + f
```

```
*x]^(7/2)*(Cos[f*x] + I*Sin[f*x])^(5/2)*(A*Cos[e + f*x] + B*Sin[e + f*x]))
+ (Cos[e + f*x]^3*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(S
ec[e]*Sec[e + f*x]^4*((-6*I)*A*Cos[e] + 6*B*Cos[e] - (5*I)*B*Sin[e])*((c^3*
Cos[2*e])/30 - (I/30)*c^3*Sin[2*e]) - I*B*c^3*Sec[e]*Sec[e + f*x]^5*(Cos[2*
e]/6 - (I/6)*Sin[2*e])*Sin[f*x] + Sec[e]*Sec[e + f*x]^3*(Cos[2*e]/24 - (I/2
4)*Sin[2*e])*(6*A*c^3*Sin[f*x] + I*B*c^3*Sin[f*x]) + Sec[e]*Sec[e + f*x]*(C
os[2*e]/16 - (I/16)*Sin[2*e])*(6*A*c^3*Sin[f*x] + I*B*c^3*Sin[f*x]) + (6*A
+ I*B)*Sec[e + f*x]^2*((c^3*Cos[2*e])/24 - (I/24)*c^3*Sin[2*e])*Tan[e] + (6
*A + I*B)*((c^3*Cos[2*e])/16 - (I/16)*c^3*Sin[2*e])*Tan[e])*(a + I*a*Tan[e
+ f*x])^(5/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^2*(A*Cos[e +
 f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.102, size = 478, normalized size = 1.7

$$-\frac{a^2c^3}{240\,f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(40\,iB\left(\tan\left(fx+e\right)\right)^5\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+48\,iA\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] -1/240/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2*c^3*(4
0*I*B*tan(f*x+e)^5*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+48*I*A*tan(f*x+
e)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+70*I*B*(a*c*(1+tan(f*x+e)^2))
^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3-48*B*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2)+96*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^
2-60*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-15*I*B*ln((a*c
*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+15*I
*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-96*B*tan(f*x+e)^2*(a
*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+48*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*
(a*c)^(1/2)-90*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2
))/(a*c)^(1/2))*a*c-150*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+
e)-48*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1
/2)/(a*c)^(1/2)
```

Maxima [B] time = 31.2979, size = 2722, normalized size = 9.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] -((1382400*A + 230400*I*B)*a^2*c^3*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + (7833600*A + 1305600*I*B)*a^2*c^3*cos(9/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) + (18247680*A + 3041280*I*B)*a^2*c^3*cos(7/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (5345280*A + 20551680*I*B)*a^2
*c^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (7833600*A + 13
05600*I*B)*a^2*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (
1382400*A + 230400*I*B)*a^2*c^3*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + 230400*(6*I*A - B)*a^2*c^3*sin(11/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 1305600*(6*I*A - B)*a^2*c^3*sin(9/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 3041280*(6*I*A - B)*a^2*c^3*sin(7/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 92160*(58*I*A - 223*B)*a^2*c^3*sin(5/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1305600*(-6*I*A + B)*a^2*c^3
*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 230400*(-6*I*A + B)
*a^2*c^3*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((691200*A
+ 115200*I*B)*a^2*c^3*cos(12*f*x + 12*e) + (4147200*A + 691200*I*B)*a^2*c^3
*cos(10*f*x + 10*e) + (10368000*A + 1728000*I*B)*a^2*c^3*cos(8*f*x + 8*e) +
 (13824000*A + 2304000*I*B)*a^2*c^3*cos(6*f*x + 6*e) + (10368000*A + 172800
0*I*B)*a^2*c^3*cos(4*f*x + 4*e) + (4147200*A + 691200*I*B)*a^2*c^3*cos(2*f*
x + 2*e) + 115200*(6*I*A - B)*a^2*c^3*sin(12*f*x + 12*e) + 691200*(6*I*A -
B)*a^2*c^3*sin(10*f*x + 10*e) + 1728000*(6*I*A - B)*a^2*c^3*sin(8*f*x + 8*e
) + 2304000*(6*I*A - B)*a^2*c^3*sin(6*f*x + 6*e) + 1728000*(6*I*A - B)*a^2*
c^3*sin(4*f*x + 4*e) + 691200*(6*I*A - B)*a^2*c^3*sin(2*f*x + 2*e) + (69120
0*A + 115200*I*B)*a^2*c^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (
(691200*A + 115200*I*B)*a^2*c^3*cos(12*f*x + 12*e) + (4147200*A + 691200*I*
B)*a^2*c^3*cos(10*f*x + 10*e) + (10368000*A + 1728000*I*B)*a^2*c^3*cos(8*f*
x + 8*e) + (13824000*A + 2304000*I*B)*a^2*c^3*cos(6*f*x + 6*e) + (10368000*
A + 1728000*I*B)*a^2*c^3*cos(4*f*x + 4*e) + (4147200*A + 691200*I*B)*a^2*c^
3*cos(2*f*x + 2*e) + 115200*(6*I*A - B)*a^2*c^3*sin(12*f*x + 12*e) + 691200
*(6*I*A - B)*a^2*c^3*sin(10*f*x + 10*e) + 1728000*(6*I*A - B)*a^2*c^3*sin(8
*f*x + 8*e) + 2304000*(6*I*A - B)*a^2*c^3*sin(6*f*x + 6*e) + 1728000*(6*I*A
 - B)*a^2*c^3*sin(4*f*x + 4*e) + 691200*(6*I*A - B)*a^2*c^3*sin(2*f*x + 2*e
) + (691200*A + 115200*I*B)*a^2*c^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) + (57600*(6*I*A - B)*a^2*c^3*cos(12*f*x + 12*e) + 345600*(6*I*A - B
)*a^2*c^3*cos(10*f*x + 10*e) + 864000*(6*I*A - B)*a^2*c^3*cos(8*f*x + 8*e)
+ 1152000*(6*I*A - B)*a^2*c^3*cos(6*f*x + 6*e) + 864000*(6*I*A - B)*a^2*c^3
*cos(4*f*x + 4*e) + 345600*(6*I*A - B)*a^2*c^3*cos(2*f*x + 2*e) - (345600*A
 + 57600*I*B)*a^2*c^3*sin(12*f*x + 12*e) - (2073600*A + 345600*I*B)*a^2*c^3
```

```
*sin(10*f*x + 10*e) - (5184000*A + 864000*I*B)*a^2*c^3*sin(8*f*x + 8*e) - (
6912000*A + 1152000*I*B)*a^2*c^3*sin(6*f*x + 6*e) - (5184000*A + 864000*I*B
)*a^2*c^3*sin(4*f*x + 4*e) - (2073600*A + 345600*I*B)*a^2*c^3*sin(2*f*x + 2
*e) + 57600*(6*I*A - B)*a^2*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (57600*(-6*I
*A + B)*a^2*c^3*cos(12*f*x + 12*e) + 345600*(-6*I*A + B)*a^2*c^3*cos(10*f*x
 + 10*e) + 864000*(-6*I*A + B)*a^2*c^3*cos(8*f*x + 8*e) + 1152000*(-6*I*A +
 B)*a^2*c^3*cos(6*f*x + 6*e) + 864000*(-6*I*A + B)*a^2*c^3*cos(4*f*x + 4*e)
 + 345600*(-6*I*A + B)*a^2*c^3*cos(2*f*x + 2*e) + (345600*A + 57600*I*B)*a^
2*c^3*sin(12*f*x + 12*e) + (2073600*A + 345600*I*B)*a^2*c^3*sin(10*f*x + 10
*e) + (5184000*A + 864000*I*B)*a^2*c^3*sin(8*f*x + 8*e) + (6912000*A + 1152
000*I*B)*a^2*c^3*sin(6*f*x + 6*e) + (5184000*A + 864000*I*B)*a^2*c^3*sin(4*
f*x + 4*e) + (2073600*A + 345600*I*B)*a^2*c^3*sin(2*f*x + 2*e) + 57600*(-6*
I*A + B)*a^2*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^
2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-1843200
*I*cos(12*f*x + 12*e) - 11059200*I*cos(10*f*x + 10*e) - 27648000*I*cos(8*f*
x + 8*e) - 36864000*I*cos(6*f*x + 6*e) - 27648000*I*cos(4*f*x + 4*e) - 1105
9200*I*cos(2*f*x + 2*e) + 1843200*sin(12*f*x + 12*e) + 11059200*sin(10*f*x
+ 10*e) + 27648000*sin(8*f*x + 8*e) + 36864000*sin(6*f*x + 6*e) + 27648000*
sin(4*f*x + 4*e) + 11059200*sin(2*f*x + 2*e) - 1843200*I))
```

Fricas [B] time = 1.62099, size = 2005, normalized size = 6.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/480*(4*((-90*I*A + 15*B)*a^2*c^3*e^(10*I*f*x + 10*I*e) + (-510*I*A + 85*B
)*a^2*c^3*e^(8*I*f*x + 8*I*e) + (-1188*I*A + 198*B)*a^2*c^3*e^(6*I*f*x + 6*
I*e) + (-348*I*A + 1338*B)*a^2*c^3*e^(4*I*f*x + 4*I*e) + (510*I*A - 85*B)*a
^2*c^3*e^(2*I*f*x + 2*I*e) + (90*I*A - 15*B)*a^2*c^3)*sqrt(a/(e^(2*I*f*x +
2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 15*sqrt((3
6*A^2 + 12*I*A*B - B^2)*a^5*c^7/f^2)*(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*
f*x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^
(2*I*f*x + 2*I*e) + f)*log(2*(((-24*I*A + 4*B)*a^2*c^3*e^(2*I*f*x + 2*I*e)
+ (-24*I*A + 4*B)*a^2*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I
*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*sqrt((36*A^2 + 12*I*A*B - B^2)*a^5*
```

```
c^7/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((-6*I*A + B)*a^2*c^3*e^(2*I*f*x + 2*
I*e) + (-6*I*A + B)*a^2*c^3)) + 15*sqrt((36*A^2 + 12*I*A*B - B^2)*a^5*c^7/f
^2)*(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x +
6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((-
24*I*A + 4*B)*a^2*c^3*e^(2*I*f*x + 2*I*e) + (-24*I*A + 4*B)*a^2*c^3)*sqrt(a
/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*
e) - 2*sqrt((36*A^2 + 12*I*A*B - B^2)*a^5*c^7/f^2)*(f*e^(2*I*f*x + 2*I*e) -
 f))/((-6*I*A + B)*a^2*c^3*e^(2*I*f*x + 2*I*e) + (-6*I*A + B)*a^2*c^3)))/(f
*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e)
 + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)*(-I*c*tan(f*x +
 e) + c)^(7/2), x)
```

3.806 $\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=213

$$-\frac{3ia^{5/2}Ac^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{3a^2Ac^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{aAc\tan(e+fx)(a$$

```
[Out] (((-3*I)/4)*a^(5/2)*A*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(
Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (3*a^2*A*c^2*Tan[e + f*x]*Sqrt[a
+ I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (a*A*c*Tan[e + f*x]
*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(4*f) + (B*(a +
 I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f)
```

Rubi [A] time = 0.274512, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 38, 63, 217, 203}

$$-\frac{3ia^{5/2}Ac^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{3a^2Ac^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{aAc\tan(e+fx)(a$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(5/2),x]
```

```
[Out] (((-3*I)/4)*a^(5/2)*A*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(
Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (3*a^2*A*c^2*Tan[e + f*x]*Sqrt[a
+ I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (a*A*c*Tan[e + f*x]
*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(4*f) + (B*(a +
 I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5/2))/(5*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{3/2}(A+Bx)(c-icx)^{3/2}\,dx,\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}}{5f} +$$

$$= \frac{aAc\tan(e+fx)(a+ia\tan(e+fx))^{3/2}(c-ic\tan}{4f}$$

$$= \frac{3a^2Ac^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\,t}}{8f}$$

$$= \frac{3a^2Ac^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\,t}}{8f}$$

$$= \frac{3a^2Ac^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\,t}}{8f}$$

$$= -\frac{3ia^{5/2}Ac^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} + \frac{3a^2Ac^2}{}$$

Mathematica [B] time = 13.9205, size = 459, normalized size = 2.15

$$\frac{\cos^3(e+fx)(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(Ac^2\sec(e)\left(\frac{1}{4}\cos(2e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(5/2),x]
```

```
[Out] (((-3*I)/4)*A*c^3*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f
*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e +
f*x]))/(E^(I*(3*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e + f*x]^
(7/2)*(Cos[f*x] + I*Sin[f*x])^(5/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])) + (C
os[e + f*x]^3*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(Sec[e
 + f*x]^4*((B*c^2*Cos[2*e])/5 - (I/5)*B*c^2*Sin[2*e]) + A*c^2*Sec[e]*Sec[e
+ f*x]^3*(Cos[2*e]/4 - (I/4)*Sin[2*e])*Sin[f*x] + A*c^2*Sec[e]*Sec[e + f*x]
```

```
*((3*Cos[2*e])/8 - ((3*I)/8)*Sin[2*e])*Sin[f*x] + Sec[e + f*x]^2*((A*c^2*Co
s[2*e])/4 - (I/4)*A*c^2*Sin[2*e])*Tan[e] + ((3*A*c^2*Cos[2*e])/8 - ((3*I)/8
)*A*c^2*Sin[2*e])*Tan[e])*(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])
)/(f*(Cos[f*x] + I*Sin[f*x])^2*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.095, size = 252, normalized size = 1.2

$$\frac{a^2c^2}{40\,f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(8\,B\left(\tan\left(fx+e\right)\right)^4\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+10\,A\left(\tan\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/40/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2*c^2*(8*B
*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+10*A*tan(f*x+e)^3*(a
*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+16*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)
^2))^(1/2)*(a*c)^(1/2)+15*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)
*(a*c)^(1/2))/(a*c)^(1/2))*a*c+25*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2
)*tan(f*x+e)+8*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+
e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 5.69319, size = 1955, normalized size = 9.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] -(60*A*a^2*c^2*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 280*A
*a^2*c^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 512*I*B*a^2
*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 280*A*a^2*c^2*c
os(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 60*A*a^2*c^2*cos(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 60*I*A*a^2*c^2*sin(9/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 280*I*A*a^2*c^2*sin(7/2*arctan2(s
```

```
in(2*f*x + 2*e), cos(2*f*x + 2*e))) - 512*B*a^2*c^2*sin(5/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) - 280*I*A*a^2*c^2*sin(3/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) - 60*I*A*a^2*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + (30*A*a^2*c^2*cos(10*f*x + 10*e) + 150*A*a^2*c^2*cos
(8*f*x + 8*e) + 300*A*a^2*c^2*cos(6*f*x + 6*e) + 300*A*a^2*c^2*cos(4*f*x +
4*e) + 150*A*a^2*c^2*cos(2*f*x + 2*e) + 30*I*A*a^2*c^2*sin(10*f*x + 10*e) +
 150*I*A*a^2*c^2*sin(8*f*x + 8*e) + 300*I*A*a^2*c^2*sin(6*f*x + 6*e) + 300*
I*A*a^2*c^2*sin(4*f*x + 4*e) + 150*I*A*a^2*c^2*sin(2*f*x + 2*e) + 30*A*a^2*
c^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (30*A*a^2*c^2*cos(10*f*
x + 10*e) + 150*A*a^2*c^2*cos(8*f*x + 8*e) + 300*A*a^2*c^2*cos(6*f*x + 6*e)
 + 300*A*a^2*c^2*cos(4*f*x + 4*e) + 150*A*a^2*c^2*cos(2*f*x + 2*e) + 30*I*A
*a^2*c^2*sin(10*f*x + 10*e) + 150*I*A*a^2*c^2*sin(8*f*x + 8*e) + 300*I*A*a^
2*c^2*sin(6*f*x + 6*e) + 300*I*A*a^2*c^2*sin(4*f*x + 4*e) + 150*I*A*a^2*c^2
*sin(2*f*x + 2*e) + 30*A*a^2*c^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 1) - (-15*I*A*a^2*c^2*cos(10*f*x + 10*e) - 75*I*A*a^2*c^2*cos(8*f*x + 8*e
) - 150*I*A*a^2*c^2*cos(6*f*x + 6*e) - 150*I*A*a^2*c^2*cos(4*f*x + 4*e) - 7
5*I*A*a^2*c^2*cos(2*f*x + 2*e) + 15*A*a^2*c^2*sin(10*f*x + 10*e) + 75*A*a^2
*c^2*sin(8*f*x + 8*e) + 150*A*a^2*c^2*sin(6*f*x + 6*e) + 150*A*a^2*c^2*sin(
4*f*x + 4*e) + 75*A*a^2*c^2*sin(2*f*x + 2*e) - 15*I*A*a^2*c^2)*log(cos(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 1) - (15*I*A*a^2*c^2*cos(10*f*x + 10*e) + 75*I*A*a^2*c^2*cos(8
*f*x + 8*e) + 150*I*A*a^2*c^2*cos(6*f*x + 6*e) + 150*I*A*a^2*c^2*cos(4*f*x
+ 4*e) + 75*I*A*a^2*c^2*cos(2*f*x + 2*e) - 15*A*a^2*c^2*sin(10*f*x + 10*e)
- 75*A*a^2*c^2*sin(8*f*x + 8*e) - 150*A*a^2*c^2*sin(6*f*x + 6*e) - 150*A*a^
2*c^2*sin(4*f*x + 4*e) - 75*A*a^2*c^2*sin(2*f*x + 2*e) + 15*I*A*a^2*c^2)*lo
g(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-80*I*cos(10*f*x + 10*e) - 4
00*I*cos(8*f*x + 8*e) - 800*I*cos(6*f*x + 6*e) - 800*I*cos(4*f*x + 4*e) - 4
00*I*cos(2*f*x + 2*e) + 80*sin(10*f*x + 10*e) + 400*sin(8*f*x + 8*e) + 800*
sin(6*f*x + 6*e) + 800*sin(4*f*x + 4*e) + 400*sin(2*f*x + 2*e) - 80*I))
```

Fricas [B] time = 1.60908, size = 1523, normalized size = 7.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/80*(4*(-15*I*A*a^2*c^2*e^(8*I*f*x + 8*I*e) - 70*I*A*a^2*c^2*e^(6*I*f*x +
6*I*e) + 128*B*a^2*c^2*e^(4*I*f*x + 4*I*e) + 70*I*A*a^2*c^2*e^(2*I*f*x + 2*
I*e) + 15*I*A*a^2*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x
 + 2*I*e) + 1))*e^(I*f*x + I*e) - 15*sqrt(A^2*a^5*c^5/f^2)*(f*e^(8*I*f*x +
8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x
 + 2*I*e) + f)*log(1/4*(32*(A*a^2*c^2*e^(2*I*f*x + 2*I*e) + A*a^2*c^2)*sqrt
(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x +
I*e) + sqrt(A^2*a^5*c^5/f^2)*(16*I*f*e^(2*I*f*x + 2*I*e) - 16*I*f))/(A*a^2*
c^2*e^(2*I*f*x + 2*I*e) + A*a^2*c^2)) + 15*sqrt(A^2*a^5*c^5/f^2)*(f*e^(8*I*
f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2
*I*f*x + 2*I*e) + f)*log(1/4*(32*(A*a^2*c^2*e^(2*I*f*x + 2*I*e) + A*a^2*c^2
)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*
f*x + I*e) + sqrt(A^2*a^5*c^5/f^2)*(-16*I*f*e^(2*I*f*x + 2*I*e) + 16*I*f))/
(A*a^2*c^2*e^(2*I*f*x + 2*I*e) + A*a^2*c^2)))/(f*e^(8*I*f*x + 8*I*e) + 4*f*
e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)*(-I*c*tan(f*x +
 e) + c)^(5/2), x)
```

3.807 $\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=222

$$-\frac{a^{5/2}c^{3/2}(B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{a^2c(4A-iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{a(B$$

```
[Out] -(a^(5/2)*((4*I)*A + B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a^2*(4*A - I*B)*c*Tan[e +
f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (a*((4*
I)*A + B)*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(12*f)
 + (B*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(3/2))/(4*f)
```

Rubi [A] time = 0.304214, antiderivative size = 222, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{a^{5/2}c^{3/2}(B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{a^2c(4A-iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{a(B$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(3/2),x]
```


```
[Out] -(a^(5/2)*((4*I)*A + B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a^2*(4*A - I*B)*c*Tan[e +
f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (a*((4*
I)*A + B)*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(12*f)
 + (B*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(3/2))/(4*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (a+iax)^{3/2}(A+Bx)\sqrt{c-icx}\,dx,\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}}{4f}$$

$$= \frac{a(4iA+B)(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e}{12f}$$

$$= \frac{a^2(4A-iB)c\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{8f}$$

$$= \frac{a^2(4A-iB)c\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{8f}$$

$$= \frac{a^2(4A-iB)c\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{8f}$$

$$= -\frac{a^{5/2}(4iA+B)c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} +$$

Mathematica [B] time = 11.9281, size = 460, normalized size = 2.07

$$\frac{\cos^3(e+fx)(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(\sec(e)\left(\frac{1}{12}c\cos(2e)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(3/2),x]
```

```
[Out] ((-I/4)*(4*A - I*B)*c^2*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*
(e + f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Ta
n[e + f*x]))/(E^(I*(3*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e +
 f*x]^(7/2)*(Cos[f*x] + I*Sin[f*x])^(5/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])
) + (Cos[e + f*x]^3*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*
(Sec[e]*Sec[e + f*x]^2*((4*I)*A*Cos[e] + 4*B*Cos[e] + (3*I)*B*Sin[e])*((c*C
os[2*e])/12 - (I/12)*c*Sin[2*e]) + I*B*c*Sec[e]*Sec[e + f*x]^3*(Cos[2*e]/4
```

```
- (I/4)*Sin[2*e])*Sin[f*x] + Sec[e]*Sec[e + f*x]*(Cos[2*e]/8 - (I/8)*Sin[2*
e])*(4*A*c*Sin[f*x] - I*B*c*Sin[f*x]) + (4*A - I*B)*((c*Cos[2*e])/8 - (I/8)
*c*Sin[2*e])*Tan[e])*(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(f*
(Cos[f*x] + I*Sin[f*x])^2*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.098, size = 350, normalized size = 1.6

$$\frac{a^2c}{24f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(6\,iB\left(\tan\left(fx+e\right)\right)^3\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+8\,iA\left(\tan\left(\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/24/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2*c*(6*I*B
*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+8*I*A*tan(f*x+e)^2*(
a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-3*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+ta
n(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+3*I*B*(a*c)^(1/2)*(a*c*(1+
tan(f*x+e)^2))^(1/2)*tan(f*x+e)+8*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/
2)*(a*c)^(1/2)+8*I*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)+12*A*ln((a*c*
tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+12*A*
(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+8*B*(a*c)^(1/2)*(a*c*(1
+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 6.78353, size = 1845, normalized size = 8.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -((4608*A - 1152*I*B)*a^2*c*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) - (7680*A - 20352*I*B)*a^2*c*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) - (16896*A - 4224*I*B)*a^2*c*cos(3/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) - (4608*A - 1152*I*B)*a^2*c*cos(1/2*arctan2(sin(2*f*x +
```

```
 2*e), cos(2*f*x + 2*e))) - 1152*(-4*I*A - B)*a^2*c*sin(7/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) - 384*(20*I*A + 53*B)*a^2*c*sin(5/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4224*(4*I*A + B)*a^2*c*sin(3/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1152*(4*I*A + B)*a^2*c*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((2304*A - 576*I*B)*a^2*c*cos(8
*f*x + 8*e) + (9216*A - 2304*I*B)*a^2*c*cos(6*f*x + 6*e) + (13824*A - 3456*
I*B)*a^2*c*cos(4*f*x + 4*e) + (9216*A - 2304*I*B)*a^2*c*cos(2*f*x + 2*e) -
576*(-4*I*A - B)*a^2*c*sin(8*f*x + 8*e) - 2304*(-4*I*A - B)*a^2*c*sin(6*f*x
 + 6*e) - 3456*(-4*I*A - B)*a^2*c*sin(4*f*x + 4*e) - 2304*(-4*I*A - B)*a^2*
c*sin(2*f*x + 2*e) + (2304*A - 576*I*B)*a^2*c)*arctan2(cos(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 1) + ((2304*A - 576*I*B)*a^2*c*cos(8*f*x + 8*e) + (9216*A - 2
304*I*B)*a^2*c*cos(6*f*x + 6*e) + (13824*A - 3456*I*B)*a^2*c*cos(4*f*x + 4*
e) + (9216*A - 2304*I*B)*a^2*c*cos(2*f*x + 2*e) - 576*(-4*I*A - B)*a^2*c*si
n(8*f*x + 8*e) - 2304*(-4*I*A - B)*a^2*c*sin(6*f*x + 6*e) - 3456*(-4*I*A -
B)*a^2*c*sin(4*f*x + 4*e) - 2304*(-4*I*A - B)*a^2*c*sin(2*f*x + 2*e) + (230
4*A - 576*I*B)*a^2*c)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - (288*
(-4*I*A - B)*a^2*c*cos(8*f*x + 8*e) + 1152*(-4*I*A - B)*a^2*c*cos(6*f*x + 6
*e) + 1728*(-4*I*A - B)*a^2*c*cos(4*f*x + 4*e) + 1152*(-4*I*A - B)*a^2*c*co
s(2*f*x + 2*e) + (1152*A - 288*I*B)*a^2*c*sin(8*f*x + 8*e) + (4608*A - 1152
*I*B)*a^2*c*sin(6*f*x + 6*e) + (6912*A - 1728*I*B)*a^2*c*sin(4*f*x + 4*e) +
 (4608*A - 1152*I*B)*a^2*c*sin(2*f*x + 2*e) + 288*(-4*I*A - B)*a^2*c)*log(c
os(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 1) - (288*(4*I*A + B)*a^2*c*cos(8*f*x + 8*e) + 1152*(4*
I*A + B)*a^2*c*cos(6*f*x + 6*e) + 1728*(4*I*A + B)*a^2*c*cos(4*f*x + 4*e) +
 1152*(4*I*A + B)*a^2*c*cos(2*f*x + 2*e) - (1152*A - 288*I*B)*a^2*c*sin(8*f
*x + 8*e) - (4608*A - 1152*I*B)*a^2*c*sin(6*f*x + 6*e) - (6912*A - 1728*I*B
)*a^2*c*sin(4*f*x + 4*e) - (4608*A - 1152*I*B)*a^2*c*sin(2*f*x + 2*e) + 288
*(4*I*A + B)*a^2*c)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-4608*
I*cos(8*f*x + 8*e) - 18432*I*cos(6*f*x + 6*e) - 27648*I*cos(4*f*x + 4*e) -
18432*I*cos(2*f*x + 2*e) + 4608*sin(8*f*x + 8*e) + 18432*sin(6*f*x + 6*e) +
 27648*sin(4*f*x + 4*e) + 18432*sin(2*f*x + 2*e) - 4608*I))
```

Fricas [B] time = 1.64753, size = 1581, normalized size = 7.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/48*(4*((-12*I*A - 3*B)*a^2*c*e^(6*I*f*x + 6*I*e) + (20*I*A + 53*B)*a^2*c*
e^(4*I*f*x + 4*I*e) + (44*I*A + 11*B)*a^2*c*e^(2*I*f*x + 2*I*e) + (12*I*A +
 3*B)*a^2*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e)
+ 1))*e^(I*f*x + I*e) + 3*sqrt((16*A^2 - 8*I*A*B - B^2)*a^5*c^3/f^2)*(f*e^(
6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)*l
og(2*(((16*I*A + 4*B)*a^2*c*e^(2*I*f*x + 2*I*e) + (16*I*A + 4*B)*a^2*c)*sqr
t(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x +
 I*e) + 2*sqrt((16*A^2 - 8*I*A*B - B^2)*a^5*c^3/f^2)*(f*e^(2*I*f*x + 2*I*e)
 - f))/((4*I*A + B)*a^2*c*e^(2*I*f*x + 2*I*e) + (4*I*A + B)*a^2*c)) - 3*sqr
t((16*A^2 - 8*I*A*B - B^2)*a^5*c^3/f^2)*(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I
*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((16*I*A + 4*B)*a^2*c*e
^(2*I*f*x + 2*I*e) + (16*I*A + 4*B)*a^2*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1)
)*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((16*A^2 - 8*I*
A*B - B^2)*a^5*c^3/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((4*I*A + B)*a^2*c*e^(
2*I*f*x + 2*I*e) + (4*I*A + B)*a^2*c)))/(f*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I
*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)*(-I*c*tan(f*x +
 e) + c)^(3/2), x)
```

3.808 $\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}$

Optimal. Leaf size=217

$$-\frac{a^{5/2}\sqrt{c}(2B+3iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}+\frac{a^2(2B+3iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{a(2B+3iA)(a+i$$

```
[Out] -((a^(5/2)*((3*I)*A + 2*B)*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x
]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) + (a^2*((3*I)*A + 2*B)*Sqrt[a
 + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (a*((3*I)*A + 2*B)
*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(6*f) + (B*(a + I
*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]])/(3*f)
```

Rubi [A] time = 0.290031, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 50, 63, 217, 203}

$$-\frac{a^{5/2}\sqrt{c}(2B+3iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f}+\frac{a^2(2B+3iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2f}+\frac{a(2B+3iA)(a+i$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e +
f*x]],x]
```


```
[Out] -((a^(5/2)*((3*I)*A + 2*B)*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x
]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f) + (a^2*((3*I)*A + 2*B)*Sqrt[a
 + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*f) + (a*((3*I)*A + 2*B)
*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(6*f) + (B*(a + I
*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]])/(3*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}}{3f} + \frac{(a(3}{}$$

$$= \frac{a(3iA+2B)(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+}}{6f}$$

$$= \frac{a^2(3iA+2B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+f}}{2f}$$

$$= \frac{a^2(3iA+2B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+f}}{2f}$$

$$= \frac{a^2(3iA+2B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+f}}{2f}$$

$$= -\frac{a^{5/2}(3iA+2B)\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{f} + \frac{a^2(}{}$$

Mathematica [A] time = 8.35172, size = 253, normalized size = 1.17

$$\frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\left(\frac{(\sin(2e)+i\cos(2e))\sec^{\frac{5}{2}}(e+fx)\sqrt{c-ic\tan(e+fx)}((6B+3iA)\sin(2(e+fx))+12(A-iB)\cos(2(e+fx))+12A}{12(\cos(fx)+i\sin(fx))^2}\right.}{f\sec^{\frac{7}{2}}(e+fx)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Ta
n[e + f*x]],x]
```

```
[Out] ((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(((-I)*(3*A - (2*I)*B)*c
*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(
E^((3*I)*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) + (Sec[e + f*x]^(5/2
)*(I*Cos[2*e] + Sin[2*e])*(12*A - (8*I)*B + 12*(A - I*B)*Cos[2*(e + f*x)] +
 ((3*I)*A + 6*B)*Sin[2*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(12*(Cos[f*x
```

```
] + I*Sin[f*x])^2)))/(f*Sec[e + f*x]^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x]
))
```

Maple [A] time = 0.102, size = 285, normalized size = 1.3

$$\frac{a^2}{6f}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\left(-6\,iB\ln\left(\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}\right)\frac{1}{\sqrt{ac}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e)),x)
```

```
[Out] 1/6/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*a^2*(-6*I*B*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*
c+6*I*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-2*B*tan(f*x+e)^
2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+12*I*A*(a*c)^(1/2)*(a*c*(1+tan(f
*x+e)^2))^(1/2)+9*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(
1/2))/(a*c)^(1/2))*a*c-3*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x
+e)+10*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(
1/2)/(a*c)^(1/2)
```

Maxima [B] time = 3.48748, size = 1457, normalized size = 6.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e)
),x, algorithm="maxima")
```

```
[Out] ((360*A - 432*I*B)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + (576*A - 384*I*B)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + (216*A - 144*I*B)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 72*(5*I*A + 6*B)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 192*(3*I*A + 2*B)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + 72*(3*I*A + 2*B)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) - ((108*A - 72*I*B)*a^2*cos(6*f*x + 6*e) + (324*A - 216*I*B)*a^2*c
```

```
os(4*f*x + 4*e) + (324*A - 216*I*B)*a^2*cos(2*f*x + 2*e) - 36*(-3*I*A - 2*B
)*a^2*sin(6*f*x + 6*e) - 108*(-3*I*A - 2*B)*a^2*sin(4*f*x + 4*e) - 108*(-3*
I*A - 2*B)*a^2*sin(2*f*x + 2*e) + (108*A - 72*I*B)*a^2)*arctan2(cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + 1) - ((108*A - 72*I*B)*a^2*cos(6*f*x + 6*e) + (324*A
 - 216*I*B)*a^2*cos(4*f*x + 4*e) + (324*A - 216*I*B)*a^2*cos(2*f*x + 2*e) -
 36*(-3*I*A - 2*B)*a^2*sin(6*f*x + 6*e) - 108*(-3*I*A - 2*B)*a^2*sin(4*f*x
+ 4*e) - 108*(-3*I*A - 2*B)*a^2*sin(2*f*x + 2*e) + (108*A - 72*I*B)*a^2)*ar
ctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (18*(-3*I*A - 2*B)*a^2*cos(6*
f*x + 6*e) + 54*(-3*I*A - 2*B)*a^2*cos(4*f*x + 4*e) + 54*(-3*I*A - 2*B)*a^2
*cos(2*f*x + 2*e) + (54*A - 36*I*B)*a^2*sin(6*f*x + 6*e) + (162*A - 108*I*B
)*a^2*sin(4*f*x + 4*e) + (162*A - 108*I*B)*a^2*sin(2*f*x + 2*e) + 18*(-3*I*
A - 2*B)*a^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (18*(3*I*A + 2*B)*a^2*cos(6*f*x
 + 6*e) + 54*(3*I*A + 2*B)*a^2*cos(4*f*x + 4*e) + 54*(3*I*A + 2*B)*a^2*cos(
2*f*x + 2*e) - (54*A - 36*I*B)*a^2*sin(6*f*x + 6*e) - (162*A - 108*I*B)*a^2
*sin(4*f*x + 4*e) - (162*A - 108*I*B)*a^2*sin(2*f*x + 2*e) + 18*(3*I*A + 2*
B)*a^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-72*I*cos(6*f*x +
6*e) - 216*I*cos(4*f*x + 4*e) - 216*I*cos(2*f*x + 2*e) + 72*sin(6*f*x + 6*e
) + 216*sin(4*f*x + 4*e) + 216*sin(2*f*x + 2*e) - 72*I))
```

Fricas [B] time = 1.59996, size = 1399, normalized size = 6.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e)
),x, algorithm="fricas")
```

```
[Out] 1/12*(2*((30*I*A + 36*B)*a^2*e^(4*I*f*x + 4*I*e) + (48*I*A + 32*B)*a^2*e^(2
*I*f*x + 2*I*e) + (18*I*A + 12*B)*a^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sq
rt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 3*sqrt((9*A^2 - 12*I*A*B
- 4*B^2)*a^5*c/f^2)*(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I*e) + f)*l
og(2*(((12*I*A + 8*B)*a^2*e^(2*I*f*x + 2*I*e) + (12*I*A + 8*B)*a^2)*sqrt(a/
(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e
) + 2*sqrt((9*A^2 - 12*I*A*B - 4*B^2)*a^5*c/f^2)*(f*e^(2*I*f*x + 2*I*e) - f
))/((3*I*A + 2*B)*a^2*e^(2*I*f*x + 2*I*e) + (3*I*A + 2*B)*a^2)) - 3*sqrt((9
```

```
*A^2 - 12*I*A*B - 4*B^2)*a^5*c/f^2)*(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x
 + 2*I*e) + f)*log(2*(((12*I*A + 8*B)*a^2*e^(2*I*f*x + 2*I*e) + (12*I*A + 8
*B)*a^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1)
)*e^(I*f*x + I*e) - 2*sqrt((9*A^2 - 12*I*A*B - 4*B^2)*a^5*c/f^2)*(f*e^(2*I*
f*x + 2*I*e) - f))/((3*I*A + 2*B)*a^2*e^(2*I*f*x + 2*I*e) + (3*I*A + 2*B)*a
^2)))/(f*e^(4*I*f*x + 4*I*e) + 2*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+
e)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\sqrt{-ic\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e)
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)*sqrt(-I*c*tan(f
*x + e) + c), x)
```

3.809 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=227

$$\frac{3a^{5/2}(3B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{3a^2(3B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2cf}-\frac{a(3B+2iA)(a+ia\tan$$

```
[Out] (3*a^(5/2)*((2*I)*A + 3*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*(a + I*a*Tan[e
+ f*x])^(5/2))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (3*a^2*((2*I)*A + 3*B)*Sqrt
[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*c*f) - (a*((2*I)*A +
3*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(2*c*f)
```

Rubi [A] time = 0.304716, antiderivative size = 227, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 50, 63, 217, 203}

$$\frac{3a^{5/2}(3B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{3a^2(3B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2cf}-\frac{a(3B+2iA)(a+ia\tan$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e
+ f*x]],x]
```

```
[Out] (3*a^(5/2)*((2*I)*A + 3*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*(a + I*a*Tan[e
+ f*x])^(5/2))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (3*a^2*((2*I)*A + 3*B)*Sqrt
[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*c*f) - (a*((2*I)*A +
3*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(2*c*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{(a(2A-3iB))\,\mathrm{Subst}\left(\int \frac{(a+iax)^{3/2}}{\sqrt{c-icx}}\,d\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{a(2iA+3B)(a+ia\tan(e+fx))^{3/}}{2cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{3a^2(2iA+3B)\sqrt{a+ia\tan(e+fx}}{2cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{3a^2(2iA+3B)\sqrt{a+ia\tan(e+fx}}{2cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{3a^2(2iA+3B)\sqrt{a+ia\tan(e+fx}}{2cf}$$

$$= \frac{3a^{5/2}(2iA+3B)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f} - \frac{(iA+B)(a+ia\tan(e+f}{f\sqrt{c-ic\tan(e+fx}}$$

Mathematica [A] time = 10.1899, size = 239, normalized size = 1.05

$$\frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\left(\frac{3(3B+2iA)e^{-3i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\tan^{-1}\left(e^{i(e+fx)}\right)}{\sqrt{\frac{c}{1+e^{2i(e+fx)}}}} - \frac{(\tan(e+fx)+i)\sqrt{\sec(e+fx)}\sqrt{c-ic\tan(e+fx)}((-5l}{}\right.}{f\sec^{\frac{7}{2}}(e+fx)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*
Tan[e + f*x]],x]
```

```
[Out] ((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*((3*((2*I)*A + 3*B)*Sqrt
[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(E^((3
*I)*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) - (Sqrt[Sec[e + f*x]]*(5*
(2*A - (3*I)*B) + (10*A - (13*I)*B)*Cos[2*(e + f*x)] + ((-2*I)*A - 5*B)*Sin
```

```
[2*(e + f*x)])*(I + Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(4*c)))/(f*Se
c[e + f*x]^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.183, size = 565, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/2*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c*(6*I*
A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))
*tan(f*x+e)^2*a*c+18*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a
*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c+4*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2)*tan(f*x+e)^2+9*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)
*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c-B*(a*c*(1+tan(f*x+e)^2))^(1/2)*
(a*c)^(1/2)*tan(f*x+e)^3-6*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-12*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)
^(1/2)*tan(f*x+e)-12*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c
)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-2*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2)
)^(1/2)*(a*c)^(1/2)-14*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-9*B*ln(
(a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-
19*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+10*A*(a*c*(1+tan(f
*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^2/
(a*c)^(1/2)
```

Maxima [B] time = 2.81444, size = 1342, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] -((32*A - 112*I*B)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + 16*(2*I*A + 7*B)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) - ((48*A - 72*I*B)*a^2*cos(4*f*x + 4*e) + (96*A - 144*I*B)*a^2*cos(2*f*x
```

```
+ 2*e) - 24*(-2*I*A - 3*B)*a^2*sin(4*f*x + 4*e) - 48*(-2*I*A - 3*B)*a^2*sin
(2*f*x + 2*e) + (48*A - 72*I*B)*a^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) + 1) - ((48*A - 72*I*B)*a^2*cos(4*f*x + 4*e) + (96*A - 144*I*B)*a^2*cos(2
*f*x + 2*e) - 24*(-2*I*A - 3*B)*a^2*sin(4*f*x + 4*e) - 48*(-2*I*A - 3*B)*a^
2*sin(2*f*x + 2*e) + (48*A - 72*I*B)*a^2)*arctan2(cos(1/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + 1) + ((64*A - 64*I*B)*a^2*cos(4*f*x + 4*e) + (128*A - 128*I*B)*a^
2*cos(2*f*x + 2*e) + 64*(I*A + B)*a^2*sin(4*f*x + 4*e) + 128*(I*A + B)*a^2*
sin(2*f*x + 2*e) + (96*A - 144*I*B)*a^2)*cos(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) + (12*(-2*I*A - 3*B)*a^2*cos(4*f*x + 4*e) + 24*(-2*I*A -
 3*B)*a^2*cos(2*f*x + 2*e) + (24*A - 36*I*B)*a^2*sin(4*f*x + 4*e) + (48*A -
 72*I*B)*a^2*sin(2*f*x + 2*e) + 12*(-2*I*A - 3*B)*a^2)*log(cos(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) + (12*(2*I*A + 3*B)*a^2*cos(4*f*x + 4*e) + 24*(2*I*A + 3*B)*a^2*cos
(2*f*x + 2*e) - (24*A - 36*I*B)*a^2*sin(4*f*x + 4*e) - (48*A - 72*I*B)*a^2*
sin(2*f*x + 2*e) + 12*(2*I*A + 3*B)*a^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (64*
(I*A + B)*a^2*cos(4*f*x + 4*e) + 128*(I*A + B)*a^2*cos(2*f*x + 2*e) - (64*A
 - 64*I*B)*a^2*sin(4*f*x + 4*e) - (128*A - 128*I*B)*a^2*sin(2*f*x + 2*e) +
48*(2*I*A + 3*B)*a^2)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))
*sqrt(a)*sqrt(c)/((-16*I*c*cos(4*f*x + 4*e) - 32*I*c*cos(2*f*x + 2*e) + 16*
c*sin(4*f*x + 4*e) + 32*c*sin(2*f*x + 2*e) - 16*I*c)*f)
```

Fricas [B] time = 1.61783, size = 1347, normalized size = 5.93

$$2\left((-8iA-8B)a^2e^{(4ifx+4ie)}+(-20iA-30B)a^2e^{(2ifx+2ie)}+(-12iA-18B)a^2\right)\sqrt{\frac{a}{e^{(2ifx+2ie)}+1}}\sqrt{\frac{c}{e^{(2ifx+2ie)}+1}}e^{(ifx+ie)}-\sqrt{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] 1/4*(2*((-8*I*A - 8*B)*a^2*e^(4*I*f*x + 4*I*e) + (-20*I*A - 30*B)*a^2*e^(2*
I*f*x + 2*I*e) + (-12*I*A - 18*B)*a^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sq
rt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - sqrt((36*A^2 - 108*I*A*B
```

```
- 81*B^2)*a^5/(c*f^2))*(c*f*e^(2*I*f*x + 2*I*e) + c*f)*log(2*(((24*I*A + 36
*B)*a^2*e^(2*I*f*x + 2*I*e) + (24*I*A + 36*B)*a^2)*sqrt(a/(e^(2*I*f*x + 2*I
*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*sqrt((36*A^
2 - 108*I*A*B - 81*B^2)*a^5/(c*f^2))*(c*f*e^(2*I*f*x + 2*I*e) - c*f))/((6*I
*A + 9*B)*a^2*e^(2*I*f*x + 2*I*e) + (6*I*A + 9*B)*a^2)) + sqrt((36*A^2 - 10
8*I*A*B - 81*B^2)*a^5/(c*f^2))*(c*f*e^(2*I*f*x + 2*I*e) + c*f)*log(2*(((24*
I*A + 36*B)*a^2*e^(2*I*f*x + 2*I*e) + (24*I*A + 36*B)*a^2)*sqrt(a/(e^(2*I*f
*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqr
t((36*A^2 - 108*I*A*B - 81*B^2)*a^5/(c*f^2))*(c*f*e^(2*I*f*x + 2*I*e) - c*f
))/((6*I*A + 9*B)*a^2*e^(2*I*f*x + 2*I*e) + (6*I*A + 9*B)*a^2)))/(c*f*e^(2*
I*f*x + 2*I*e) + c*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^{\frac{5}{2}}}{\sqrt{-ic\tan(fx+e)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/sqrt(-I*c*tan(f
*x + e) + c), x)
```

3.810 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=226

$$-\frac{2a^{5/2}(4B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f}+\frac{a^2(4B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{c^2f}+\frac{2a(4B+iA)(a+ia\tan(\ldots}{3cf\sqrt{c-ic\tan(\ldots}}$$

```
[Out] (-2*a^(5/2)*(I*A + 4*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a
]*Sqrt[c - I*c*Tan[e + f*x]])])/(c^(3/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f
*x])^(5/2))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*(I*A + 4*B)*(a + I*a*
Tan[e + f*x])^(3/2))/(3*c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (a^2*(I*A + 4*B)*
Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c^2*f)
```

Rubi [A] time = 0.31489, antiderivative size = 226, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$-\frac{2a^{5/2}(4B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f}+\frac{a^2(4B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{c^2f}+\frac{2a(4B+iA)(a+ia\tan(\ldots}{3cf\sqrt{c-ic\tan(\ldots}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(3/2),x]
```

```
[Out] (-2*a^(5/2)*(I*A + 4*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a
]*Sqrt[c - I*c*Tan[e + f*x]])])/(c^(3/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f
*x])^(5/2))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*(I*A + 4*B)*(a + I*a*
Tan[e + f*x])^(3/2))/(3*c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (a^2*(I*A + 4*B)*
Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c^2*f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
```

```
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{3f(c-ic\tan(e+fx))^{3/2}} - \frac{(a(A-4iB))\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}}{(c-icx)^{3/2}}\,dx\right.}{3f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(iA+4B)(a+ia\tan(e+fx))^{3/}}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(iA+4B)(a+ia\tan(e+fx))^{3/}}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(iA+4B)(a+ia\tan(e+fx))^{3/}}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(iA+4B)(a+ia\tan(e+fx))^{3/}}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{2a^{5/2}(iA+4B)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f} - \frac{(iA+B)(a+ia\tan(e+f}{3f(c-ic\tan(e+fx))}$$

Mathematica [A] time = 13.928, size = 227, normalized size = 1.

$$\frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\left(\sqrt{\sec(e+fx)}\sqrt{c-ic\tan(e+fx)}((4A-13iB)\sin(2(e+fx))+(11B+2iA)\,\text{c}\right.}{3c^2f\sec^{\frac{7}{2}}(e+fx)(A\cos(e+fx)+B\sin(e+fx))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(3/2),x]
```

```
[Out] ((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x])*(((-6*I)*(A - (4*I)*B)*c
*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))])/(
E^((3*I)*(e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]) + Sqrt[Sec[e + f*x]]
*((2*I)*A + 8*B + ((2*I)*A + 11*B)*Cos[2*(e + f*x)] + (4*A - (13*I)*B)*Sin[
2*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]]))/(3*c^2*f*Sec[e + f*x]^(7/2)*(A*C
os[e + f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.178, size = 667, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/3/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c^2*(-12*
I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2
))*tan(f*x+e)^3*a*c+9*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+3*A*ln((a*c*tan(f*x+e)+(a*c*(1+ta
n(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+36*I*B*ln((a*
c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x
+e)*a*c+29*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2+36*B*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)^2*a*c+3*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3-3*
I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2
))*a*c-12*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-9*A*ln((a
*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*
x+e)*a*c-8*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-19*I*B*(
a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-12*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-45*B*(a*c*(1+tan(f*x+e)^2))
^(1/2)*(a*c)^(1/2)*tan(f*x+e)+4*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))
/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^3/(a*c)^(1/2)
```

Maxima [B] time = 2.15514, size = 1114, normalized size = 4.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -((((18*A - 72*I*B)*a^2*cos(2*f*x + 2*e) - 18*(-I*A - 4*B)*a^2*sin(2*f*x + 2
*e) + (18*A - 72*I*B)*a^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (
(18*A - 72*I*B)*a^2*cos(2*f*x + 2*e) - 18*(-I*A - 4*B)*a^2*sin(2*f*x + 2*e)
 + (18*A - 72*I*B)*a^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((1
2*A - 12*I*B)*a^2*cos(2*f*x + 2*e) - 12*(-I*A - B)*a^2*sin(2*f*x + 2*e) + (
12*A - 12*I*B)*a^2)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) -
((36*A - 108*I*B)*a^2*cos(2*f*x + 2*e) + 36*(I*A + 3*B)*a^2*sin(2*f*x + 2*e
) + (36*A - 144*I*B)*a^2)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) - (9*(-I*A - 4*B)*a^2*cos(2*f*x + 2*e) + (9*A - 36*I*B)*a^2*sin(2*f*x +
 2*e) + 9*(-I*A - 4*B)*a^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*si
n(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - (9*(I*A + 4*B)*a^
2*cos(2*f*x + 2*e) - (9*A - 36*I*B)*a^2*sin(2*f*x + 2*e) + 9*(I*A + 4*B)*a^
2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 1) - (12*(-I*A - B)*a^2*cos(2*f*x + 2*e) + (12*
A - 12*I*B)*a^2*sin(2*f*x + 2*e) + 12*(-I*A - B)*a^2)*sin(3/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) - (36*(I*A + 3*B)*a^2*cos(2*f*x + 2*e) - (3
6*A - 108*I*B)*a^2*sin(2*f*x + 2*e) + 36*(I*A + 4*B)*a^2)*sin(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((-18*I*c^2*cos(2*f*x
+ 2*e) + 18*c^2*sin(2*f*x + 2*e) - 18*I*c^2)*f)
```

Fricas [B] time = 1.59042, size = 1237, normalized size = 5.47

$$\frac{3\,c^2\sqrt{\frac{\left(4\,A^2-32i\,AB-64\,B^2\right)a^5}{c^3f^2}}f\log\left(\frac{2\left(\left((4i\,A+16\,B)a^2e^{\left(2i\,fx+2i\,e\right)}+(4i\,A+16\,B)a^2\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(c^2fe^{\left(2i\,fx+2i\,e\right)}-c^2f\right)\sqrt{\frac{\left(4\,A^2-32 \cdots}{\cdots}}\right.}{(i\,A+4\,B)a^2e^{\left(2i\,fx+2i\,e\right)}+(i\,A+4\,B)a^2}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(3*c^2*sqrt((4*A^2 - 32*I*A*B - 64*B^2)*a^5/(c^3*f^2))*f*log(2*(((4*I*
A + 16*B)*a^2*e^(2*I*f*x + 2*I*e) + (4*I*A + 16*B)*a^2)*sqrt(a/(e^(2*I*f*x
```

```
+ 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + (c^2*f*e
^(2*I*f*x + 2*I*e) - c^2*f)*sqrt((4*A^2 - 32*I*A*B - 64*B^2)*a^5/(c^3*f^2))
)/((I*A + 4*B)*a^2*e^(2*I*f*x + 2*I*e) + (I*A + 4*B)*a^2)) - 3*c^2*sqrt((4*
A^2 - 32*I*A*B - 64*B^2)*a^5/(c^3*f^2))*f*log(2*(((4*I*A + 16*B)*a^2*e^(2*I
*f*x + 2*I*e) + (4*I*A + 16*B)*a^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(
c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (c^2*f*e^(2*I*f*x + 2*I*e) -
 c^2*f)*sqrt((4*A^2 - 32*I*A*B - 64*B^2)*a^5/(c^3*f^2)))/((I*A + 4*B)*a^2*e
^(2*I*f*x + 2*I*e) + (I*A + 4*B)*a^2)) + 2*((-4*I*A - 4*B)*a^2*e^(4*I*f*x +
 4*I*e) + (8*I*A + 32*B)*a^2*e^(2*I*f*x + 2*I*e) + (12*I*A + 48*B)*a^2)*sqr
t(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x +
 I*e))/(c^2*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/(-I*c*tan(f*x +
 e) + c)^(3/2), x)
```

3.811 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=203

$$\frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{5/2}f}-\frac{2a^2B\sqrt{a+ia\tan(e+fx)}}{c^2f\sqrt{c-ic\tan(e+fx)}}-\frac{(B+iA)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}}+\frac{2aB(a+ia\tan(e+fx))^{3/2}}{3cf(c-ic\tan(e+fx))^{3/2}}$$

```
[Out] (2*a^(5/2)*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
I*c*Tan[e + f*x]])])/(c^(5/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))
/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a*B*(a + I*a*Tan[e + f*x])^(3/2))/
(3*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^2*B*Sqrt[a + I*a*Tan[e + f*x]])
/(c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.289427, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 47, 63, 217, 203}

$$\frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{5/2}f}-\frac{2a^2B\sqrt{a+ia\tan(e+fx)}}{c^2f\sqrt{c-ic\tan(e+fx)}}-\frac{(B+iA)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}}+\frac{2aB(a+ia\tan(e+fx))^{3/2}}{3cf(c-ic\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (2*a^(5/2)*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
I*c*Tan[e + f*x]])])/(c^(5/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))
/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a*B*(a + I*a*Tan[e + f*x])^(3/2))/
(3*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^2*B*Sqrt[a + I*a*Tan[e + f*x]])
/(c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{(iaB)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}}{(c-icx)^{5/2}}\,dx, x, \tan\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2aB(a+ia\tan(e+fx))^{3/2}}{3cf(c-ic\tan(e+fx))^{3/2}} - \frac{(ia^2}{}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2aB(a+ia\tan(e+fx))^{3/2}}{3cf(c-ic\tan(e+fx))^{3/2}} - \frac{2a^2}{c^2 f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2aB(a+ia\tan(e+fx))^{3/2}}{3cf(c-ic\tan(e+fx))^{3/2}} - \frac{2a^2}{c^2 f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2aB(a+ia\tan(e+fx))^{3/2}}{3cf(c-ic\tan(e+fx))^{3/2}} - \frac{2a^2}{c^2 f}$$

$$= \frac{2a^{5/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{5/2}f} - \frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{5f(c-ic\tan(e+fx))^{5/2}} +$$

Mathematica [A] time = 15.5644, size = 203, normalized size = 1.

$$\frac{a^2\cos^2(e+fx)(\tan(e+fx)-i)^2\sqrt{a+ia\tan(e+fx)}\left(\cos\left(\frac{1}{2}(e-2fx)\right)-i\sin\left(\frac{1}{2}(e-2fx)\right)\right)\left(\cos\left(\frac{1}{2}(e-2fx)\right)+i\sin\left(\frac{1}{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(5/2),x]
```

```
[Out] (a^2*Cos[e + f*x]^2*(Cos[(e - 2*f*x)/2] - I*Sin[(e - 2*f*x)/2])*(Cos[(e - 2
*f*x)/2] + I*Sin[(e - 2*f*x)/2])*(-10*B + ((3*I)*A + 33*B)*Cos[2*(e + f*x)]
 - 3*A*Sin[2*(e + f*x)] - (27*I)*B*Sin[2*(e + f*x)] - 30*B*ArcTan[E^(I*(e +
 f*x))]*(Cos[3*(e + f*x)] - I*Sin[3*(e + f*x)]))*(-I + Tan[e + f*x])^2*Sqrt
[a + I*a*Tan[e + f*x]])/(15*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Maple [B] time = 0.131, size = 555, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/15/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c^3*(-1
5*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1
/2))*tan(f*x+e)^4*a*c+90*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2
)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+43*I*B*(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+60*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2
))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+3*I*A*tan(f*x+e)^2*(a*c
*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-3*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2)
)^(1/2)*(a*c)^(1/2)-15*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*
(a*c)^(1/2))/(a*c)^(1/2))*a*c-77*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/
2)*tan(f*x+e)-60*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1
/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-97*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(
1/2)*(a*c)^(1/2)+3*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-3*A*(a*c)^(
1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+23*B*(a*c)^(1/2)*(a*c*(1+tan(f
*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^4/(a*c)^(1/2)
```

Maxima [A] time = 2.35966, size = 290, normalized size = 1.43

$$\frac{\left(30\,Ba^2\arctan\left(\cos\left(fx+e\right),\sin\left(fx+e\right)+1\right)+30\,Ba^2\arctan\left(\cos\left(fx+e\right),-\sin\left(fx+e\right)+1\right)-6\,(i\,A+B)a^2\cos\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] 1/30*(30*B*a^2*arctan2(cos(f*x + e), sin(f*x + e) + 1) + 30*B*a^2*arctan2(c
os(f*x + e), -sin(f*x + e) + 1) - 6*(I*A + B)*a^2*cos(5*f*x + 5*e) + 20*B*a
^2*cos(3*f*x + 3*e) - 60*B*a^2*cos(f*x + e) + 15*I*B*a^2*log(cos(f*x + e)^2
 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) - 15*I*B*a^2*log(cos(f*x + e)^2 + s
in(f*x + e)^2 - 2*sin(f*x + e) + 1) + (6*A - 6*I*B)*a^2*sin(5*f*x + 5*e) +
```

```
20*I*B*a^2*sin(3*f*x + 3*e) - 60*I*B*a^2*sin(f*x + e))*sqrt(a)/(c^(5/2)*f)
```

Fricas [B] time = 1.68933, size = 1023, normalized size = 5.04

$$-\frac{15\,c^3 f\sqrt{-\frac{B^2a^5}{c^5f^2}}\log\left(\frac{4\left(2\left(Ba^2e^{\left(2i\,fx+2i\,e\right)}+Ba^2\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(c^3fe^{\left(2i\,fx+2i\,e\right)}-c^3f\right)\sqrt{-\frac{B^2a^5}{c^5f^2}}\right)}{Ba^2e^{\left(2i\,fx+2i\,e\right)}+Ba^2}\right)-15\,c^3f\sqrt{-\frac{B^2a^5}{c^5f^2}}\log\left(4\ldots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] -1/30*(15*c^3*f*sqrt(-B^2*a^5/(c^5*f^2))*log(4*(2*(B*a^2*e^(2*I*f*x + 2*I*e
) + B*a^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) +
1))*e^(I*f*x + I*e) + (c^3*f*e^(2*I*f*x + 2*I*e) - c^3*f)*sqrt(-B^2*a^5/(c^
5*f^2)))/(B*a^2*e^(2*I*f*x + 2*I*e) + B*a^2)) - 15*c^3*f*sqrt(-B^2*a^5/(c^5
*f^2))*log(4*(2*(B*a^2*e^(2*I*f*x + 2*I*e) + B*a^2)*sqrt(a/(e^(2*I*f*x + 2*
I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (c^3*f*e^(2*
I*f*x + 2*I*e) - c^3*f)*sqrt(-B^2*a^5/(c^5*f^2)))/(B*a^2*e^(2*I*f*x + 2*I*e
) + B*a^2)) - ((-6*I*A - 6*B)*a^2*e^(6*I*f*x + 6*I*e) + (-6*I*A + 14*B)*a^2
*e^(4*I*f*x + 4*I*e) - 40*B*a^2*e^(2*I*f*x + 2*I*e) - 60*B*a^2)*sqrt(a/(e^(
2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))/(
c^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/(-I*c*tan(f*x +
 e) + c)^(5/2), x)
```

3.812 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=102

$$-\frac{(-6B+iA)(a+ia\tan(e+fx))^{5/2}}{35cf(c-ic\tan(e+fx))^{5/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{5/2}}{7f(c-ic\tan(e+fx))^{7/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)
) - ((I*A - 6*B)*(a + I*a*Tan[e + f*x])^(5/2))/(35*c*f*(c - I*c*Tan[e + f*x
])^(5/2))
```

Rubi [A] time = 0.230742, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$-\frac{(-6B+iA)(a+ia\tan(e+fx))^{5/2}}{35cf(c-ic\tan(e+fx))^{5/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{5/2}}{7f(c-ic\tan(e+fx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(7/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(7*f*(c - I*c*Tan[e + f*x])^(7/2)
) - ((I*A - 6*B)*(a + I*a*Tan[e + f*x])^(5/2))/(35*c*f*(c - I*c*Tan[e + f*x
])^(5/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{9/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{(a(A+6iB))\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}}{(c-icx)^{7/2}}\right.}{7f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{7f(c-ic\tan(e+fx))^{7/2}} - \frac{(iA-6B)(a+ia\tan(e+fx))^{5/2}}{35cf(c-ic\tan(e+fx))^{5/2}}$$

Mathematica [A] time = 12.1307, size = 121, normalized size = 1.19

$$\frac{a^2\cos(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(6e+8fx)+i\sin(6e+8fx))((B-6iA)\cos(e+fx)-(A+6}{35c^4f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(7/2),x]
```

```
[Out] (a^2*Cos[e + f*x]*(((-6*I)*A + B)*Cos[e + f*x] - (A + (6*I)*B)*Sin[e + f*x]
)*(Cos[6*e + 8*f*x] + I*Sin[6*e + 8*f*x])*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c
 - I*c*Tan[e + f*x]])/(35*c^4*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.108, size = 115, normalized size = 1.1

$$\frac{-\frac{i}{35}a^2\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(iA\left(\tan\left(fx+e\right)\right)^2+5\,iB\tan\left(fx+e\right)-6\,B\left(\tan\left(fx+e\right)\right)^2+6\,iA-5\,A\tan\left(fx+e\right)-I\right.}{fc^4\left(\tan\left(fx+e\right)+i\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] -1/35*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c^4*(
1+tan(f*x+e)^2)*(I*A*tan(f*x+e)^2+5*I*B*tan(f*x+e)-6*B*tan(f*x+e)^2+6*I*A-5
*A*tan(f*x+e)-B)/(tan(f*x+e)+I)^5
```

Maxima [B] time = 2.45494, size = 225, normalized size = 2.21

$$-\frac{\left((350\,A-350i\,B)a^2\cos\left(9\,fx+9\,e\right)+(840\,A+140i\,B)a^2\cos\left(7\,fx+7\,e\right)+(490\,A+490i\,B)a^2\cos\left(5\,fx+5\,e\right)-350\,(\ldots}{\left(-4900i\,c^4\cos\left(2\,fx+2\,e\right)+4900\,c^4\sin\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] -((350*A - 350*I*B)*a^2*cos(9*f*x + 9*e) + (840*A + 140*I*B)*a^2*cos(7*f*x
 + 7*e) + (490*A + 490*I*B)*a^2*cos(5*f*x + 5*e) - 350*(-I*A - B)*a^2*sin(9*
f*x + 9*e) - 140*(-6*I*A + B)*a^2*sin(7*f*x + 7*e) - 490*(-I*A + B)*a^2*sin
(5*f*x + 5*e))*sqrt(a)*sqrt(c)/((-4900*I*c^4*cos(2*f*x + 2*e) + 4900*c^4*si
n(2*f*x + 2*e) - 4900*I*c^4)*f)
```

Fricas [A] time = 1.39234, size = 300, normalized size = 2.94

$$\frac{\left((-5i\,A-5\,B)a^2e^{\left(8i\,fx+8i\,e\right)}+(-12i\,A+2\,B)a^2e^{\left(6i\,fx+6i\,e\right)}+(-7i\,A+7\,B)a^2e^{\left(4i\,fx+4i\,e\right)}\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}}{70\,c^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/70*((-5*I*A - 5*B)*a^2*e^(8*I*f*x + 8*I*e) + (-12*I*A + 2*B)*a^2*e^(6*I*f
*x + 6*I*e) + (-7*I*A + 7*B)*a^2*e^(4*I*f*x + 4*I*e))*sqrt(a/(e^(2*I*f*x +
2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/(-I*c*tan(f*x +
 e) + c)^(7/2), x)
```

3.813 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{(-7B+2iA)(a+ia\tan(e+fx))^{5/2}}{315c^2f(c-ic\tan(e+fx))^{5/2}}-\frac{(-7B+2iA)(a+ia\tan(e+fx))^{5/2}}{63cf(c-ic\tan(e+fx))^{7/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{5/2}}{9f(c-ic\tan(e+fx))^{9/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(9*f*(c - I*c*Tan[e + f*x])^(9/2)
) - (((2*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(5/2))/(63*c*f*(c - I*c*Tan[e +
 f*x])^(7/2)) - (((2*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(5/2))/(315*c^2*f*(
c - I*c*Tan[e + f*x])^(5/2))
```

Rubi [A] time = 0.259379, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{(-7B+2iA)(a+ia\tan(e+fx))^{5/2}}{315c^2f(c-ic\tan(e+fx))^{5/2}}-\frac{(-7B+2iA)(a+ia\tan(e+fx))^{5/2}}{63cf(c-ic\tan(e+fx))^{7/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{5/2}}{9f(c-ic\tan(e+fx))^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(9/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(9*f*(c - I*c*Tan[e + f*x])^(9/2)
) - (((2*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(5/2))/(63*c*f*(c - I*c*Tan[e +
 f*x])^(7/2)) - (((2*I)*A - 7*B)*(a + I*a*Tan[e + f*x])^(5/2))/(315*c^2*f*(
c - I*c*Tan[e + f*x])^(5/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{9/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{11/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{9f(c-ic\tan(e+fx))^{9/2}} + \frac{(a(2A+7iB))\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}}{(c-icx)^{9/2}}\right.}{9f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{9f(c-ic\tan(e+fx))^{9/2}} - \frac{(2iA-7B)(a+ia\tan(e+fx))^{5/}}{63cf(c-ic\tan(e+fx))^{7/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{9f(c-ic\tan(e+fx))^{9/2}} - \frac{(2iA-7B)(a+ia\tan(e+fx))^{5/}}{63cf(c-ic\tan(e+fx))^{7/2}}$$

Mathematica [A] time = 10.0313, size = 135, normalized size = 0.87

$$\frac{a^2\cos(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(7e+9fx)+i\sin(7e+9fx))(-7(2A+7iB)\sin(2(e+fx))+}{630c^5f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(9/2),x]
```

```
[Out] (a^2*Cos[e + f*x]*((-45*I)*A + 7*((-7*I)*A + 2*B)*Cos[2*(e + f*x)] - 7*(2*A
 + (7*I)*B)*Sin[2*(e + f*x)])*(Cos[7*e + 9*f*x] + I*Sin[7*e + 9*f*x])*Sqrt[
a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(630*c^5*f*(Cos[f*x] + I*
Sin[f*x])^2)
```

Maple [A] time = 0.119, size = 138, normalized size = 0.9

$$\frac{-\frac{i}{315}a^2\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(-47\,A-33\,iA\tan\left(fx+e\right)-12\,A\left(\tan\left(fx+e\right)\right)^2+2\,iA\left(\tan\left(fx+e\right)\right)^3-7\,iB-42\,B\,\mathrm{ta}\right.}{fc^5\left(\tan\left(fx+e\right)+i\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2),x)
```

```
[Out] -1/315*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c^5*
(1+tan(f*x+e)^2)*(-47*A-33*I*A*tan(f*x+e)-12*A*tan(f*x+e)^2+2*I*A*tan(f*x+e
)^3-7*I*B-42*B*tan(f*x+e)-42*I*B*tan(f*x+e)^2-7*B*tan(f*x+e)^3)/(tan(f*x+e)
+I)^6
```

Maxima [A] time = 2.16504, size = 270, normalized size = 1.74

$$\frac{\left(35\,(-i\,A-B)a^2\cos\left(\frac{9}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)-90i\,Aa^2\cos\left(\frac{7}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="maxima")
```

```
[Out] 1/1260*(35*(-I*A - B)*a^2*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) - 90*I*A*a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 63*
(-I*A + B)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (35*A
 - 35*I*B)*a^2*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 90*A*
a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (63*A + 63*I*B)*
```

```
a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)/(c^(9/2)*
f)
```

Fricas [A] time = 1.41018, size = 373, normalized size = 2.41

$$\frac{\left((-35 i A-35 B) a^{2} e^{(10 i f x+10 i e)}+(-125 i A-35 B) a^{2} e^{(8 i f x+8 i e)}+(-153 i A+63 B) a^{2} e^{(6 i f x+6 i e)}+(-63 i A+63 B) a^{2} e^{(4 i f}\right.}{1260 c^{5} f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="fricas")
```

```
[Out] 1/1260*((-35*I*A - 35*B)*a^2*e^(10*I*f*x + 10*I*e) + (-125*I*A - 35*B)*a^2*
e^(8*I*f*x + 8*I*e) + (-153*I*A + 63*B)*a^2*e^(6*I*f*x + 6*I*e) + (-63*I*A
+ 63*B)*a^2*e^(4*I*f*x + 4*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(
e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^5*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(9
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B \tan\left(f x+e\right)+A\right)\left(i a \tan\left(f x+e\right)+a\right)^{\frac{5}{2}}}{\left(-i c \tan\left(f x+e\right)+c\right)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/(-I*c*tan(f*x +
 e) + c)^(9/2), x)
```

3.814 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{11/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{2(-8B+3iA)(a+ia\tan(e+fx))^{5/2}}{3465c^3f(c-ic\tan(e+fx))^{5/2}}-\frac{2(-8B+3iA)(a+ia\tan(e+fx))^{5/2}}{693c^2f(c-ic\tan(e+fx))^{7/2}}-\frac{(-8B+3iA)(a+ia\tan(e+fx))^{5/2}}{99cf(c-ic\tan(e+fx))^{9/2}}-\frac{(}{}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(11*f*(c - I*c*Tan[e + f*x])^(11/
2)) - (((3*I)*A - 8*B)*(a + I*a*Tan[e + f*x])^(5/2))/(99*c*f*(c - I*c*Tan[e
 + f*x])^(9/2)) - (2*((3*I)*A - 8*B)*(a + I*a*Tan[e + f*x])^(5/2))/(693*c^2
*f*(c - I*c*Tan[e + f*x])^(7/2)) - (2*((3*I)*A - 8*B)*(a + I*a*Tan[e + f*x]
)^(5/2))/(3465*c^3*f*(c - I*c*Tan[e + f*x])^(5/2))
```

Rubi [A] time = 0.291019, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-8B+3iA)(a+ia\tan(e+fx))^{5/2}}{3465c^3f(c-ic\tan(e+fx))^{5/2}}-\frac{2(-8B+3iA)(a+ia\tan(e+fx))^{5/2}}{693c^2f(c-ic\tan(e+fx))^{7/2}}-\frac{(-8B+3iA)(a+ia\tan(e+fx))^{5/2}}{99cf(c-ic\tan(e+fx))^{9/2}}-\frac{(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(11/2),x]
```


```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(11*f*(c - I*c*Tan[e + f*x])^(11/
2)) - (((3*I)*A - 8*B)*(a + I*a*Tan[e + f*x])^(5/2))/(99*c*f*(c - I*c*Tan[e
 + f*x])^(9/2)) - (2*((3*I)*A - 8*B)*(a + I*a*Tan[e + f*x])^(5/2))/(693*c^2
*f*(c - I*c*Tan[e + f*x])^(7/2)) - (2*((3*I)*A - 8*B)*(a + I*a*Tan[e + f*x]
)^(5/2))/(3465*c^3*f*(c - I*c*Tan[e + f*x])^(5/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{11/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{13/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{11f(c-ic\tan(e+fx))^{11/2}} + \frac{(a(3A+8iB))\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}}{(c-icx)^{11/2}}\right.}{11f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(3iA-8B)(a+ia\tan(e+fx))^{5/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(3iA-8B)(a+ia\tan(e+fx))^{5/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(3iA-8B)(a+ia\tan(e+fx))^{5/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

Mathematica [A] time = 13.4844, size = 156, normalized size = 0.75

$$\frac{a^2\cos(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(\cos(8e+10fx)+i\sin(8e+10fx))(-(3A+8iB)(55\sin(e+fx)-}{13860c^6f(\cos(fx)+i\sin(fx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(11/2),x]
```

```
[Out] (a^2*Cos[e + f*x]*(55*((-24*I)*A + B)*Cos[e + f*x] + 63*((-8*I)*A + 3*B)*Co
s[3*(e + f*x)] - (3*A + (8*I)*B)*(55*Sin[e + f*x] + 63*Sin[3*(e + f*x)]))*(
Cos[8*e + 10*f*x] + I*Sin[8*e + 10*f*x])*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c
- I*c*Tan[e + f*x]])/(13860*c^6*f*(Cos[f*x] + I*Sin[f*x])^2)
```

Maple [A] time = 0.158, size = 161, normalized size = 0.8

$$\frac{-\frac{i}{3465}a^2\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(6\,iA\left(\tan\left(fx+e\right)\right)^4-112\,iB\left(\tan\left(fx+e\right)\right)^3-16\,B\left(\tan\left(fx+e\right)\right)^4-135\,iA\left(\tan\left(fx\right.\right.\right.}{fc^6\left(\tan\left(fx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/2),x)
```

```
[Out] -1/3465*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c^6
*(1+tan(f*x+e)^2)*(6*I*A*tan(f*x+e)^4-112*I*B*tan(f*x+e)^3-16*B*tan(f*x+e)^
4-135*I*A*tan(f*x+e)^2-42*A*tan(f*x+e)^3-427*I*B*tan(f*x+e)+360*B*tan(f*x+e
)^2-456*I*A+273*A*tan(f*x+e)+61*B)/(tan(f*x+e)+I)^7
```

Maxima [A] time = 2.46048, size = 373, normalized size = 1.79

$$\frac{\left(315\,(-i\,A-B)a^2\cos\left(\frac{11}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)+385\,(-3i\,A-B)a^2\cos\left(\frac{9}{2}\,\arctan\left(\sin\left(2\,fx+2\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="maxima")
```

```
[Out] 1/27720*(315*(-I*A - B)*a^2*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + 385*(-3*I*A - B)*a^2*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + 495*(-3*I*A + B)*a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 693*(-I*A + B)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + (315*A - 315*I*B)*a^2*sin(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + (1155*A - 385*I*B)*a^2*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + (1485*A + 495*I*B)*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e))) + (693*A + 693*I*B)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))))*sqrt(a)/(c^(11/2)*f)
```

Fricas [A] time = 1.41673, size = 451, normalized size = 2.17

$$\frac{\left((-315i\,A - 315\,B)a^2e^{(12i\,fx+12i\,e)} + (-1470i\,A - 700\,B)a^2e^{(10i\,fx+10i\,e)} + (-2640i\,A + 110\,B)a^2e^{(8i\,fx+8i\,e)} + (-2178i\,A + 11\right.}{27720\,c^6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="fricas")
```

```
[Out] 1/27720*((-315*I*A - 315*B)*a^2*e^(12*I*f*x + 12*I*e) + (-1470*I*A - 700*B)
*a^2*e^(10*I*f*x + 10*I*e) + (-2640*I*A + 110*B)*a^2*e^(8*I*f*x + 8*I*e) +
(-2178*I*A + 1188*B)*a^2*e^(6*I*f*x + 6*I*e) + (-693*I*A + 693*B)*a^2*e^(4*
I*f*x + 4*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*
e) + 1))*e^(I*f*x + I*e)/(c^6*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/(-I*c*tan(f*x +
 e) + c)^(11/2), x)
```

3.815 $\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{13/2}}\,dx$

Optimal. Leaf size=261

$$-\frac{2(-9B+4iA)(a+ia\tan(e+fx))^{5/2}}{15015c^4f(c-ic\tan(e+fx))^{5/2}}-\frac{2(-9B+4iA)(a+ia\tan(e+fx))^{5/2}}{3003c^3f(c-ic\tan(e+fx))^{7/2}}-\frac{(-9B+4iA)(a+ia\tan(e+fx))^{5/2}}{429c^2f(c-ic\tan(e+fx))^{9/2}}-\frac{(-9$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(13*f*(c - I*c*Tan[e + f*x])^(13/
2)) - (((4*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(5/2))/(143*c*f*(c - I*c*Tan[
e + f*x])^(11/2)) - (((4*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(5/2))/(429*c^2
*f*(c - I*c*Tan[e + f*x])^(9/2)) - (2*((4*I)*A - 9*B)*(a + I*a*Tan[e + f*x]
)^(5/2))/(3003*c^3*f*(c - I*c*Tan[e + f*x])^(7/2)) - (2*((4*I)*A - 9*B)*(a
+ I*a*Tan[e + f*x])^(5/2))/(15015*c^4*f*(c - I*c*Tan[e + f*x])^(5/2))
```

Rubi [A] time = 0.321313, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-9B+4iA)(a+ia\tan(e+fx))^{5/2}}{15015c^4f(c-ic\tan(e+fx))^{5/2}}-\frac{2(-9B+4iA)(a+ia\tan(e+fx))^{5/2}}{3003c^3f(c-ic\tan(e+fx))^{7/2}}-\frac{(-9B+4iA)(a+ia\tan(e+fx))^{5/2}}{429c^2f(c-ic\tan(e+fx))^{9/2}}-\frac{(-9$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(13/2),x]
```


```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(5/2))/(13*f*(c - I*c*Tan[e + f*x])^(13/
2)) - (((4*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(5/2))/(143*c*f*(c - I*c*Tan[
e + f*x])^(11/2)) - (((4*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(5/2))/(429*c^2
*f*(c - I*c*Tan[e + f*x])^(9/2)) - (2*((4*I)*A - 9*B)*(a + I*a*Tan[e + f*x]
)^(5/2))/(3003*c^3*f*(c - I*c*Tan[e + f*x])^(7/2)) - (2*((4*I)*A - 9*B)*(a
+ I*a*Tan[e + f*x])^(5/2))/(15015*c^4*f*(c - I*c*Tan[e + f*x])^(5/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{13/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}(A+Bx)}{(c-icx)^{15/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{13f(c-ic\tan(e+fx))^{13/2}} + \frac{(a(4A+9iB))\,\text{Subst}\left(\int \frac{(a+iax)^{3/2}}{(c-icx)^{13/2}}\right.}{13f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(4iA-9B)(a+ia\tan(e+fx))^{5/2}}{143cf(c-ic\tan(e+fx))^{11/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(4iA-9B)(a+ia\tan(e+fx))^{5/2}}{143cf(c-ic\tan(e+fx))^{11/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(4iA-9B)(a+ia\tan(e+fx))^{5/2}}{143cf(c-ic\tan(e+fx))^{11/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{5/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(4iA-9B)(a+ia\tan(e+fx))^{5/2}}{143cf(c-ic\tan(e+fx))^{11/2}}$$

Mathematica [B] time = 17.0542, size = 577, normalized size = 2.21

$$\frac{\cos^3(e+fx)(a+ia\tan(e+fx))^{5/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((B-iA)\cos(4fx)\right(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(13/2),x]
```

```
[Out] (Cos[e + f*x]^3*(((-I)*A + B)*Cos[4*f*x]*(Cos[2*e]/(160*c^7) + ((I/160)*Sin
[2*e])/c^7) + ((-27*I)*A + 17*B)*Cos[6*f*x]*(Cos[4*e]/(1120*c^7) + ((I/1120
)*Sin[4*e])/c^7) + ((-13*I)*A + 3*B)*Cos[8*f*x]*(Cos[6*e]/(336*c^7) + ((I/3
36)*Sin[6*e])/c^7) + (17*A - (3*I)*B)*Cos[10*f*x]*(((-I/528)*Cos[8*e])/c^7
+ Sin[8*e]/(528*c^7)) + (63*A - (37*I)*B)*Cos[12*f*x]*(((-I/4576)*Cos[10*e]
)/c^7 + Sin[10*e]/(4576*c^7)) + (A - I*B)*Cos[14*f*x]*(((-I/416)*Cos[12*e])
/c^7 + Sin[12*e]/(416*c^7)) + (A + I*B)*(Cos[2*e]/(160*c^7) + ((I/160)*Sin[
2*e])/c^7)*Sin[4*f*x] + (27*A + (17*I)*B)*(Cos[4*e]/(1120*c^7) + ((I/1120)*
Sin[4*e])/c^7)*Sin[6*f*x] + (13*A + (3*I)*B)*(Cos[6*e]/(336*c^7) + ((I/336)
*Sin[6*e])/c^7)*Sin[8*f*x] + (17*A - (3*I)*B)*(Cos[8*e]/(528*c^7) + ((I/528
)*Sin[8*e])/c^7)*Sin[10*f*x] + (63*A - (37*I)*B)*(Cos[10*e]/(4576*c^7) + ((
I/4576)*Sin[10*e])/c^7)*Sin[12*f*x] + (A - I*B)*(Cos[12*e]/(416*c^7) + ((I/
416)*Sin[12*e])/c^7)*Sin[14*f*x])*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*S
```

```
in[e + f*x])]*(a + I*a*Tan[e + f*x])^(5/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*
x] + I*Sin[f*x])^2*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.11, size = 183, normalized size = 0.7

$$\frac{a^2\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(18\,iB\left(\tan\left(fx+e\right)\right)^5+64\,iA\left(\tan\left(fx+e\right)\right)^4+8\,A\left(\tan\left(fx+e\right)\right)^5-531\,iB\left(\tan\left(fx+e\right)\right)^3\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/2),x)
```

```
[Out] 1/15015/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^2/c^7*(
1+tan(f*x+e)^2)*(18*I*B*tan(f*x+e)^5+64*I*A*tan(f*x+e)^4+8*A*tan(f*x+e)^5-5
31*I*B*tan(f*x+e)^3-144*B*tan(f*x+e)^4-544*I*A*tan(f*x+e)^2-236*A*tan(f*x+e
)^3-1704*I*B*tan(f*x+e)+1224*B*tan(f*x+e)^2-1763*I*A+911*A*tan(f*x+e)+213*B
)/(tan(f*x+e)+I)^8
```

Maxima [A] time = 2.53554, size = 448, normalized size = 1.72

$$\frac{\left(1155\,(-i\,A-B)a^2\cos\left(\frac{13}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)+2730\,(-2i\,A-B)a^2\cos\left(\frac{11}{2}\,\arctan\left(\sin\left(2\,fx\cdots\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/
2),x, algorithm="maxima")
```

```
[Out] 1/240240*(1155*(-I*A - B)*a^2*cos(13/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 2730*(-2*I*A - B)*a^2*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) - 10010*I*A*a^2*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 4290*(-2*I*A + B)*a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + 3003*(-I*A + B)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + (1155*A - 1155*I*B)*a^2*sin(13/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + (5460*A - 2730*I*B)*a^2*sin(11/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 10010*A*a^2*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + (8580*A + 4290*I*B)*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2
```

```
*f*x + 2*e))) + (3003*A + 3003*I*B)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))))*sqrt(a)/(c^(13/2)*f)
```

Fricas [A] time = 1.41336, size = 531, normalized size = 2.03

$$\frac{\left((-1155i\,A - 1155\,B)a^2e^{\left(14i\,fx+14i\,e\right)} + (-6615i\,A - 3885\,B)a^2e^{\left(12i\,fx+12i\,e\right)} + (-15470i\,A - 2730\,B)a^2e^{\left(10i\,fx+10i\,e\right)} + (-1859}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/
2),x, algorithm="fricas")
```

```
[Out] 1/240240*((-1155*I*A - 1155*B)*a^2*e^(14*I*f*x + 14*I*e) + (-6615*I*A - 388
5*B)*a^2*e^(12*I*f*x + 12*I*e) + (-15470*I*A - 2730*B)*a^2*e^(10*I*f*x + 10
*I*e) + (-18590*I*A + 4290*B)*a^2*e^(8*I*f*x + 8*I*e) + (-11583*I*A + 7293*
B)*a^2*e^(6*I*f*x + 6*I*e) + (-3003*I*A + 3003*B)*a^2*e^(4*I*f*x + 4*I*e))*
sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*
x + I*e)/(c^7*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(5/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(5/2)/(-I*c*tan(f*x +
 e) + c)^(13/2), x)
```

3.816 $\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}\,dx$

Optimal. Leaf size=350

$$-\frac{5a^{7/2}c^{9/2}(-B+8iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{64f}+\frac{5a^3c^4(8A+iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{128f}+\frac{5}{}$$

```
[Out] (-5*a^(7/2)*((8*I)*A - B)*c^(9/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]
])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(64*f) + (5*a^3*(8*A + I*B)*c^4*T
an[e + f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(128*f)
+ (5*a^2*(8*A + I*B)*c^3*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c
*Tan[e + f*x])^(3/2))/(192*f) + (a*(8*A + I*B)*c^2*Tan[e + f*x]*(a + I*a*Ta
n[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5/2))/(48*f) - (((8*I)*A - B)*c*(
a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f*x])^(7/2))/(56*f) + (B*(a +
I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f*x])^(9/2))/(8*f)
```

Rubi [A] time = 0.369121, antiderivative size = 350, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{5a^{7/2}c^{9/2}(-B+8iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{64f}+\frac{5a^3c^4(8A+iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{128f}+\frac{5}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(9/2),x]
```


```
[Out] (-5*a^(7/2)*((8*I)*A - B)*c^(9/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]
])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(64*f) + (5*a^3*(8*A + I*B)*c^4*T
an[e + f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(128*f)
+ (5*a^2*(8*A + I*B)*c^3*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c
*Tan[e + f*x])^(3/2))/(192*f) + (a*(8*A + I*B)*c^2*Tan[e + f*x]*(a + I*a*Ta
n[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5/2))/(48*f) - (((8*I)*A - B)*c*(
a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f*x])^(7/2))/(56*f) + (B*(a +
I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f*x])^(9/2))/(8*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
```

```
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{5/2}(A+Bx)(c-icx)^{7/2}\,dx,\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{7/2}(c-ic\tan(e+fx))^{9/2}}{8f} +$$

$$= -\frac{(8iA-B)c(a+ia\tan(e+fx))^{7/2}(c-ic\tan(e+}{56f}$$

$$= \frac{a(8A+iB)c^2\tan(e+fx)(a+ia\tan(e+fx))^{5/2}(}{48f}$$

$$= \frac{5a^2(8A+iB)c^3\tan(e+fx)(a+ia\tan(e+fx))^3}{192f}$$

$$= \frac{5a^3(8A+iB)c^4\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{128f}$$

$$= \frac{5a^3(8A+iB)c^4\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{128f}$$

$$= \frac{5a^3(8A+iB)c^4\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{128f}$$

$$= -\frac{5a^{7/2}(8iA-B)c^{9/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{64f} + \frac{5}{}$$

Mathematica [A] time = 17.5257, size = 666, normalized size = 1.9

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(\sec(e)\left(\frac{1}{56}c^4\cos(3e)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(9/2),x]
```

```
[Out] (5*((-8*I)*A + B)*c^5*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e
 + f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[
e + f*x]))/(64*E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e
+ f*x]^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x]
)) + (Cos[e + f*x]^4*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]
*(Sec[e]*Sec[e + f*x]^6*((-8*I)*A*Cos[e] + 8*B*Cos[e] - (7*I)*B*Sin[e])*((c
^4*Cos[3*e])/56 - (I/56)*c^4*Sin[3*e]) - I*B*c^4*Sec[e]*Sec[e + f*x]^7*(Cos
[3*e]/8 - (I/8)*Sin[3*e])*Sin[f*x] + Sec[e]*Sec[e + f*x]^5*(Cos[3*e]/48 - (
I/48)*Sin[3*e])*(8*A*c^4*Sin[f*x] + I*B*c^4*Sin[f*x]) + Sec[e]*Sec[e + f*x]
^3*((5*Cos[3*e])/192 - ((5*I)/192)*Sin[3*e])*(8*A*c^4*Sin[f*x] + I*B*c^4*Si
n[f*x]) + Sec[e]*Sec[e + f*x]*((5*Cos[3*e])/128 - ((5*I)/128)*Sin[3*e])*(8*
A*c^4*Sin[f*x] + I*B*c^4*Sin[f*x]) + (8*A + I*B)*Sec[e + f*x]^4*((c^4*Cos[3
*e])/48 - (I/48)*c^4*Sin[3*e])*Tan[e] + (8*A + I*B)*Sec[e + f*x]^2*((5*c^4*
Cos[3*e])/192 - ((5*I)/192)*c^4*Sin[3*e])*Tan[e] + (8*A + I*B)*((5*c^4*Cos[
3*e])/128 - ((5*I)/128)*c^4*Sin[3*e])*Tan[e])*(a + I*a*Tan[e + f*x])^(7/2)*
(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[
e + f*x]))
```

Maple [B] time = 0.111, size = 604, normalized size = 1.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2),x)
```

```
[Out] -1/2688/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3*c^4*(
105*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+826*I*B*(a*c*(1
+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+384*I*A*tan(f*x+e)^6*(a*c*(1
+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-384*B*tan(f*x+e)^6*(a*c*(1+tan(f*x+e)^2))
^(1/2)*(a*c)^(1/2)-105*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*
(a*c)^(1/2))/(a*c)^(1/2))*a*c-448*A*tan(f*x+e)^5*(a*c*(1+tan(f*x+e)^2))^(1/
2)*(a*c)^(1/2)+336*I*B*tan(f*x+e)^7*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2
)-1152*B*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+384*I*A*(a*c
*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-1456*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)
^2))^(1/2)*(a*c)^(1/2)+1152*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*ta
n(f*x+e)^4+1152*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2-1
152*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+952*I*B*(a*c*(1
+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^5-840*A*ln((a*c*tan(f*x+e)+(a*
c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-1848*A*(a*c)^(1/2)*
(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-384*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e
)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 124.471, size = 3482, normalized size = 9.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="maxima")
```

```
[Out] -((289013760*A + 36126720*I*B)*a^3*c^4*cos(15/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + (2215772160*A + 276971520*I*B)*a^3*c^4*cos(13/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (7379484672*A + 922435584*I*B)*a^3*
c^4*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (13908443136*A
+ 1738555392*I*B)*a^3*c^4*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) + (3002990592*A + 15172878336*I*B)*a^3*c^4*cos(7/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - (7379484672*A + 922435584*I*B)*a^3*c^4*cos(5/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (2215772160*A + 276971520*I*B
)*a^3*c^4*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (289013760
*A + 36126720*I*B)*a^3*c^4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 36126720*(8*I*A - B)*a^3*c^4*sin(15/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + 276971520*(8*I*A - B)*a^3*c^4*sin(13/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 922435584*(8*I*A - B)*a^3*c^4*sin(11/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1738555392*(8*I*A - B)*a^3*c^4*sin(9
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 344064*(8728*I*A - 44099*
B)*a^3*c^4*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 922435584
*(-8*I*A + B)*a^3*c^4*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 276971520*(-8*I*A + B)*a^3*c^4*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 36126720*(-8*I*A + B)*a^3*c^4*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + ((144506880*A + 18063360*I*B)*a^3*c^4*cos(16*f*x + 1
6*e) + (1156055040*A + 144506880*I*B)*a^3*c^4*cos(14*f*x + 14*e) + (4046192
640*A + 505774080*I*B)*a^3*c^4*cos(12*f*x + 12*e) + (8092385280*A + 1011548
160*I*B)*a^3*c^4*cos(10*f*x + 10*e) + (10115481600*A + 1264435200*I*B)*a^3*
c^4*cos(8*f*x + 8*e) + (8092385280*A + 1011548160*I*B)*a^3*c^4*cos(6*f*x +
6*e) + (4046192640*A + 505774080*I*B)*a^3*c^4*cos(4*f*x + 4*e) + (115605504
0*A + 144506880*I*B)*a^3*c^4*cos(2*f*x + 2*e) + 18063360*(8*I*A - B)*a^3*c^
4*sin(16*f*x + 16*e) + 144506880*(8*I*A - B)*a^3*c^4*sin(14*f*x + 14*e) + 5
05774080*(8*I*A - B)*a^3*c^4*sin(12*f*x + 12*e) + 1011548160*(8*I*A - B)*a^
3*c^4*sin(10*f*x + 10*e) + 1264435200*(8*I*A - B)*a^3*c^4*sin(8*f*x + 8*e)
+ 1011548160*(8*I*A - B)*a^3*c^4*sin(6*f*x + 6*e) + 505774080*(8*I*A - B)*a
^3*c^4*sin(4*f*x + 4*e) + 144506880*(8*I*A - B)*a^3*c^4*sin(2*f*x + 2*e) +
(144506880*A + 18063360*I*B)*a^3*c^4)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) + ((144506880*A + 18063360*I*B)*a^3*c^4*cos(16*f*x + 16*e) + (11560
```

55040*A + 144506880*I*B)*a^3*c^4*cos(14*f*x + 14*e) + (4046192640*A + 50577
4080*I*B)*a^3*c^4*cos(12*f*x + 12*e) + (8092385280*A + 1011548160*I*B)*a^3*
c^4*cos(10*f*x + 10*e) + (10115481600*A + 1264435200*I*B)*a^3*c^4*cos(8*f*x
 + 8*e) + (8092385280*A + 1011548160*I*B)*a^3*c^4*cos(6*f*x + 6*e) + (40461
92640*A + 505774080*I*B)*a^3*c^4*cos(4*f*x + 4*e) + (1156055040*A + 1445068
80*I*B)*a^3*c^4*cos(2*f*x + 2*e) + 18063360*(8*I*A - B)*a^3*c^4*sin(16*f*x
+ 16*e) + 144506880*(8*I*A - B)*a^3*c^4*sin(14*f*x + 14*e) + 505774080*(8*I
*A - B)*a^3*c^4*sin(12*f*x + 12*e) + 1011548160*(8*I*A - B)*a^3*c^4*sin(10*
f*x + 10*e) + 1264435200*(8*I*A - B)*a^3*c^4*sin(8*f*x + 8*e) + 1011548160*
(8*I*A - B)*a^3*c^4*sin(6*f*x + 6*e) + 505774080*(8*I*A - B)*a^3*c^4*sin(4*
f*x + 4*e) + 144506880*(8*I*A - B)*a^3*c^4*sin(2*f*x + 2*e) + (144506880*A
+ 18063360*I*B)*a^3*c^4)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (9
031680*(8*I*A - B)*a^3*c^4*cos(16*f*x + 16*e) + 72253440*(8*I*A - B)*a^3*c^
4*cos(14*f*x + 14*e) + 252887040*(8*I*A - B)*a^3*c^4*cos(12*f*x + 12*e) + 5
05774080*(8*I*A - B)*a^3*c^4*cos(10*f*x + 10*e) + 632217600*(8*I*A - B)*a^3
*c^4*cos(8*f*x + 8*e) + 505774080*(8*I*A - B)*a^3*c^4*cos(6*f*x + 6*e) + 25
2887040*(8*I*A - B)*a^3*c^4*cos(4*f*x + 4*e) + 72253440*(8*I*A - B)*a^3*c^4
*cos(2*f*x + 2*e) - (72253440*A + 9031680*I*B)*a^3*c^4*sin(16*f*x + 16*e) -
 (578027520*A + 72253440*I*B)*a^3*c^4*sin(14*f*x + 14*e) - (2023096320*A +
252887040*I*B)*a^3*c^4*sin(12*f*x + 12*e) - (4046192640*A + 505774080*I*B)*
a^3*c^4*sin(10*f*x + 10*e) - (5057740800*A + 632217600*I*B)*a^3*c^4*sin(8*f
*x + 8*e) - (4046192640*A + 505774080*I*B)*a^3*c^4*sin(6*f*x + 6*e) - (2023
096320*A + 252887040*I*B)*a^3*c^4*sin(4*f*x + 4*e) - (578027520*A + 7225344
0*I*B)*a^3*c^4*sin(2*f*x + 2*e) + 9031680*(8*I*A - B)*a^3*c^4)*log(cos(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 1) + (9031680*(-8*I*A + B)*a^3*c^4*cos(16*f*x + 16*e) + 722534
40*(-8*I*A + B)*a^3*c^4*cos(14*f*x + 14*e) + 252887040*(-8*I*A + B)*a^3*c^4
*cos(12*f*x + 12*e) + 505774080*(-8*I*A + B)*a^3*c^4*cos(10*f*x + 10*e) + 6
32217600*(-8*I*A + B)*a^3*c^4*cos(8*f*x + 8*e) + 505774080*(-8*I*A + B)*a^3
*c^4*cos(6*f*x + 6*e) + 252887040*(-8*I*A + B)*a^3*c^4*cos(4*f*x + 4*e) + 7
2253440*(-8*I*A + B)*a^3*c^4*cos(2*f*x + 2*e) + (72253440*A + 9031680*I*B)*
a^3*c^4*sin(16*f*x + 16*e) + (578027520*A + 72253440*I*B)*a^3*c^4*sin(14*f*
x + 14*e) + (2023096320*A + 252887040*I*B)*a^3*c^4*sin(12*f*x + 12*e) + (40
46192640*A + 505774080*I*B)*a^3*c^4*sin(10*f*x + 10*e) + (5057740800*A + 63
2217600*I*B)*a^3*c^4*sin(8*f*x + 8*e) + (4046192640*A + 505774080*I*B)*a^3*
c^4*sin(6*f*x + 6*e) + (2023096320*A + 252887040*I*B)*a^3*c^4*sin(4*f*x + 4
*e) + (578027520*A + 72253440*I*B)*a^3*c^4*sin(2*f*x + 2*e) + 9031680*(-8*I
*A + B)*a^3*c^4)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(-46242201
6*I*cos(16*f*x + 16*e) - 3699376128*I*cos(14*f*x + 14*e) - 12947816448*I*co
s(12*f*x + 12*e) - 25895632896*I*cos(10*f*x + 10*e) - 32369541120*I*cos(8*f
*x + 8*e) - 25895632896*I*cos(6*f*x + 6*e) - 12947816448*I*cos(4*f*x + 4*e)

```
 - 3699376128*I*cos(2*f*x + 2*e) + 462422016*sin(16*f*x + 16*e) + 369937612
8*sin(14*f*x + 14*e) + 12947816448*sin(12*f*x + 12*e) + 25895632896*sin(10*
f*x + 10*e) + 32369541120*sin(8*f*x + 8*e) + 25895632896*sin(6*f*x + 6*e) +
 12947816448*sin(4*f*x + 4*e) + 3699376128*sin(2*f*x + 2*e) - 462422016*I))
```

Fricas [B] time = 1.8015, size = 2461, normalized size = 7.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="fricas")
```

```
[Out] 1/5376*(4*((-840*I*A + 105*B)*a^3*c^4*e^(14*I*f*x + 14*I*e) + (-6440*I*A +
805*B)*a^3*c^4*e^(12*I*f*x + 12*I*e) + (-21448*I*A + 2681*B)*a^3*c^4*e^(10*
I*f*x + 10*I*e) + (-40424*I*A + 5053*B)*a^3*c^4*e^(8*I*f*x + 8*I*e) + (-872
8*I*A + 44099*B)*a^3*c^4*e^(6*I*f*x + 6*I*e) + (21448*I*A - 2681*B)*a^3*c^4
*e^(4*I*f*x + 4*I*e) + (6440*I*A - 805*B)*a^3*c^4*e^(2*I*f*x + 2*I*e) + (84
0*I*A - 105*B)*a^3*c^4)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*
x + 2*I*e) + 1))*e^(I*f*x + I*e) - 21*sqrt((1600*A^2 + 400*I*A*B - 25*B^2)*
a^7*c^9/f^2)*(f*e^(14*I*f*x + 14*I*e) + 7*f*e^(12*I*f*x + 12*I*e) + 21*f*e^
(10*I*f*x + 10*I*e) + 35*f*e^(8*I*f*x + 8*I*e) + 35*f*e^(6*I*f*x + 6*I*e) +
 21*f*e^(4*I*f*x + 4*I*e) + 7*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((-160*I*A
+ 20*B)*a^3*c^4*e^(2*I*f*x + 2*I*e) + (-160*I*A + 20*B)*a^3*c^4)*sqrt(a/(e^
(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) +
 2*sqrt((1600*A^2 + 400*I*A*B - 25*B^2)*a^7*c^9/f^2)*(f*e^(2*I*f*x + 2*I*e)
 - f))/((-40*I*A + 5*B)*a^3*c^4*e^(2*I*f*x + 2*I*e) + (-40*I*A + 5*B)*a^3*c
^4)) + 21*sqrt((1600*A^2 + 400*I*A*B - 25*B^2)*a^7*c^9/f^2)*(f*e^(14*I*f*x
+ 14*I*e) + 7*f*e^(12*I*f*x + 12*I*e) + 21*f*e^(10*I*f*x + 10*I*e) + 35*f*e
^(8*I*f*x + 8*I*e) + 35*f*e^(6*I*f*x + 6*I*e) + 21*f*e^(4*I*f*x + 4*I*e) +
7*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((-160*I*A + 20*B)*a^3*c^4*e^(2*I*f*x +
 2*I*e) + (-160*I*A + 20*B)*a^3*c^4)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt
(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((1600*A^2 + 400*I*A*
B - 25*B^2)*a^7*c^9/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((-40*I*A + 5*B)*a^3*
c^4*e^(2*I*f*x + 2*I*e) + (-40*I*A + 5*B)*a^3*c^4)))/(f*e^(14*I*f*x + 14*I*
e) + 7*f*e^(12*I*f*x + 12*I*e) + 21*f*e^(10*I*f*x + 10*I*e) + 35*f*e^(8*I*f
*x + 8*I*e) + 35*f*e^(6*I*f*x + 6*I*e) + 21*f*e^(4*I*f*x + 4*I*e) + 7*f*e^(
2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(9
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)*(-I*c*tan(f*x +
 e) + c)^(9/2), x)
```

3.817 $\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx$

Optimal. Leaf size=267

$$-\frac{5ia^{7/2}Ac^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f}+\frac{5a^3Ac^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{16f}+\frac{5a^2Ac^2\tan(e+f}{}$$

```
[Out] (((-5*I)/8)*a^(7/2)*A*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(
Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (5*a^3*A*c^3*Tan[e + f*x]*Sqrt[a
+ I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(16*f) + (5*a^2*A*c^2*Tan[e
 + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(24*f) +
 (a*A*c*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5
/2))/(6*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f*x])^(7/2))/
(7*f)
```

Rubi [A] time = 0.297291, antiderivative size = 267, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 38, 63, 217, 203}

$$-\frac{5ia^{7/2}Ac^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f}+\frac{5a^3Ac^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{16f}+\frac{5a^2Ac^2\tan(e+f}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(7/2),x]
```


```
[Out] (((-5*I)/8)*a^(7/2)*A*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(
Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/f + (5*a^3*A*c^3*Tan[e + f*x]*Sqrt[a
+ I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(16*f) + (5*a^2*A*c^2*Tan[e
 + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))/(24*f) +
 (a*A*c*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5
/2))/(6*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f*x])^(7/2))/
(7*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{5/2}(A+Bx)(c-icx)^{5/2}\,dx,\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{7/2}(c-ic\tan(e+fx))^{7/2}}{7f} +$$

$$= \frac{aAc\tan(e+fx)(a+ia\tan(e+fx))^{5/2}(c-ic\tan}{6f}$$

$$= \frac{5a^2Ac^2\tan(e+fx)(a+ia\tan(e+fx))^{3/2}(c-ic}{24f}$$

$$= \frac{5a^3Ac^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\,t}}{16f}$$

$$= \frac{5a^3Ac^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\,t}}{16f}$$

$$= \frac{5a^3Ac^3\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\,t}}{16f}$$

$$= -\frac{5ia^{7/2}Ac^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f} + \frac{5a^3Ac^3}{}$$

Mathematica [B] time = 17.073, size = 535, normalized size = 2.

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(Ac^3\sec(e)\left(\frac{1}{6}\cos(3e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(7/2),x]
```

```
[Out] (((-5*I)/8)*A*c^4*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f
*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e +
f*x]))/(E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e + f*x]^
(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])) + (C
```

```
os[e + f*x]^4*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(Sec[e
 + f*x]^6*((B*c^3*Cos[3*e])/7 - (I/7)*B*c^3*Sin[3*e]) + A*c^3*Sec[e]*Sec[e
+ f*x]^5*(Cos[3*e]/6 - (I/6)*Sin[3*e])*Sin[f*x] + A*c^3*Sec[e]*Sec[e + f*x]
^3*((5*Cos[3*e])/24 - ((5*I)/24)*Sin[3*e])*Sin[f*x] + A*c^3*Sec[e]*Sec[e +
f*x]*((5*Cos[3*e])/16 - ((5*I)/16)*Sin[3*e])*Sin[f*x] + Sec[e + f*x]^4*((A*
c^3*Cos[3*e])/6 - (I/6)*A*c^3*Sin[3*e])*Tan[e] + Sec[e + f*x]^2*((5*A*c^3*C
os[3*e])/24 - ((5*I)/24)*A*c^3*Sin[3*e])*Tan[e] + ((5*A*c^3*Cos[3*e])/16 -
((5*I)/16)*A*c^3*Sin[3*e])*Tan[e])*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[
e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.105, size = 314, normalized size = 1.2

$$\frac{a^3c^3}{336\,f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(48\,B\left(\tan\left(fx+e\right)\right)^{6}\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^{2}\right)}\sqrt{ac}+56\,A\left(\mathrm{ta}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 1/336/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3*c^3*(48
*B*tan(f*x+e)^6*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+56*A*tan(f*x+e)^5*
(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+144*B*tan(f*x+e)^4*(a*c*(1+tan(f*x
+e)^2))^(1/2)*(a*c)^(1/2)+182*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2)+144*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+105*
A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))
*a*c+231*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+48*B*(a*c)^(
1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 19.374, size = 2570, normalized size = 9.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] -(420*A*a^3*c^3*cos(13/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 280
0*A*a^3*c^3*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 7924*A*
a^3*c^3*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 12288*I*B*a^
3*c^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 7924*A*a^3*c^3
*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2800*A*a^3*c^3*cos(
3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 420*A*a^3*c^3*cos(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 420*I*A*a^3*c^3*sin(13/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2800*I*A*a^3*c^3*sin(11/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 7924*I*A*a^3*c^3*sin(9/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12288*B*a^3*c^3*sin(7/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) - 7924*I*A*a^3*c^3*sin(5/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - 2800*I*A*a^3*c^3*sin(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - 420*I*A*a^3*c^3*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + (210*A*a^3*c^3*cos(14*f*x + 14*e) + 1470*A*a^3*c^3*c
os(12*f*x + 12*e) + 4410*A*a^3*c^3*cos(10*f*x + 10*e) + 7350*A*a^3*c^3*cos(
8*f*x + 8*e) + 7350*A*a^3*c^3*cos(6*f*x + 6*e) + 4410*A*a^3*c^3*cos(4*f*x +
 4*e) + 1470*A*a^3*c^3*cos(2*f*x + 2*e) + 210*I*A*a^3*c^3*sin(14*f*x + 14*e
) + 1470*I*A*a^3*c^3*sin(12*f*x + 12*e) + 4410*I*A*a^3*c^3*sin(10*f*x + 10*
e) + 7350*I*A*a^3*c^3*sin(8*f*x + 8*e) + 7350*I*A*a^3*c^3*sin(6*f*x + 6*e)
+ 4410*I*A*a^3*c^3*sin(4*f*x + 4*e) + 1470*I*A*a^3*c^3*sin(2*f*x + 2*e) + 2
10*A*a^3*c^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))),
 sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (210*A*a^3*c^3
*cos(14*f*x + 14*e) + 1470*A*a^3*c^3*cos(12*f*x + 12*e) + 4410*A*a^3*c^3*co
s(10*f*x + 10*e) + 7350*A*a^3*c^3*cos(8*f*x + 8*e) + 7350*A*a^3*c^3*cos(6*f
*x + 6*e) + 4410*A*a^3*c^3*cos(4*f*x + 4*e) + 1470*A*a^3*c^3*cos(2*f*x + 2*
e) + 210*I*A*a^3*c^3*sin(14*f*x + 14*e) + 1470*I*A*a^3*c^3*sin(12*f*x + 12*
e) + 4410*I*A*a^3*c^3*sin(10*f*x + 10*e) + 7350*I*A*a^3*c^3*sin(8*f*x + 8*e
) + 7350*I*A*a^3*c^3*sin(6*f*x + 6*e) + 4410*I*A*a^3*c^3*sin(4*f*x + 4*e) +
 1470*I*A*a^3*c^3*sin(2*f*x + 2*e) + 210*A*a^3*c^3)*arctan2(cos(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 1) - (-105*I*A*a^3*c^3*cos(14*f*x + 14*e) - 735*I*A*a^3
*c^3*cos(12*f*x + 12*e) - 2205*I*A*a^3*c^3*cos(10*f*x + 10*e) - 3675*I*A*a^
3*c^3*cos(8*f*x + 8*e) - 3675*I*A*a^3*c^3*cos(6*f*x + 6*e) - 2205*I*A*a^3*c
^3*cos(4*f*x + 4*e) - 735*I*A*a^3*c^3*cos(2*f*x + 2*e) + 105*A*a^3*c^3*sin(
14*f*x + 14*e) + 735*A*a^3*c^3*sin(12*f*x + 12*e) + 2205*A*a^3*c^3*sin(10*f
*x + 10*e) + 3675*A*a^3*c^3*sin(8*f*x + 8*e) + 3675*A*a^3*c^3*sin(6*f*x + 6
*e) + 2205*A*a^3*c^3*sin(4*f*x + 4*e) + 735*A*a^3*c^3*sin(2*f*x + 2*e) - 10
5*I*A*a^3*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
 sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - (105*I*A*a^3*c^3*cos(14*f*x +
14*e) + 735*I*A*a^3*c^3*cos(12*f*x + 12*e) + 2205*I*A*a^3*c^3*cos(10*f*x +
10*e) + 3675*I*A*a^3*c^3*cos(8*f*x + 8*e) + 3675*I*A*a^3*c^3*cos(6*f*x + 6*
e) + 2205*I*A*a^3*c^3*cos(4*f*x + 4*e) + 735*I*A*a^3*c^3*cos(2*f*x + 2*e) -
 105*A*a^3*c^3*sin(14*f*x + 14*e) - 735*A*a^3*c^3*sin(12*f*x + 12*e) - 2205
*A*a^3*c^3*sin(10*f*x + 10*e) - 3675*A*a^3*c^3*sin(8*f*x + 8*e) - 3675*A*a^
```

```
3*c^3*sin(6*f*x + 6*e) - 2205*A*a^3*c^3*sin(4*f*x + 4*e) - 735*A*a^3*c^3*si
n(2*f*x + 2*e) + 105*I*A*a^3*c^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
- 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt
(c)/(f*(-672*I*cos(14*f*x + 14*e) - 4704*I*cos(12*f*x + 12*e) - 14112*I*cos
(10*f*x + 10*e) - 23520*I*cos(8*f*x + 8*e) - 23520*I*cos(6*f*x + 6*e) - 141
12*I*cos(4*f*x + 4*e) - 4704*I*cos(2*f*x + 2*e) + 672*sin(14*f*x + 14*e) +
4704*sin(12*f*x + 12*e) + 14112*sin(10*f*x + 10*e) + 23520*sin(8*f*x + 8*e)
 + 23520*sin(6*f*x + 6*e) + 14112*sin(4*f*x + 4*e) + 4704*sin(2*f*x + 2*e)
- 672*I))
```

Fricas [B] time = 1.56795, size = 1883, normalized size = 7.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/672*(4*(-105*I*A*a^3*c^3*e^(12*I*f*x + 12*I*e) - 700*I*A*a^3*c^3*e^(10*I*
f*x + 10*I*e) - 1981*I*A*a^3*c^3*e^(8*I*f*x + 8*I*e) + 3072*B*a^3*c^3*e^(6*
I*f*x + 6*I*e) + 1981*I*A*a^3*c^3*e^(4*I*f*x + 4*I*e) + 700*I*A*a^3*c^3*e^(
2*I*f*x + 2*I*e) + 105*I*A*a^3*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(
c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 105*sqrt(A^2*a^7*c^7/f^2)*(f
*e^(12*I*f*x + 12*I*e) + 6*f*e^(10*I*f*x + 10*I*e) + 15*f*e^(8*I*f*x + 8*I*
e) + 20*f*e^(6*I*f*x + 6*I*e) + 15*f*e^(4*I*f*x + 4*I*e) + 6*f*e^(2*I*f*x +
 2*I*e) + f)*log(1/8*(64*(A*a^3*c^3*e^(2*I*f*x + 2*I*e) + A*a^3*c^3)*sqrt(a
/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*
e) + sqrt(A^2*a^7*c^7/f^2)*(32*I*f*e^(2*I*f*x + 2*I*e) - 32*I*f))/(A*a^3*c^
3*e^(2*I*f*x + 2*I*e) + A*a^3*c^3)) + 105*sqrt(A^2*a^7*c^7/f^2)*(f*e^(12*I*
f*x + 12*I*e) + 6*f*e^(10*I*f*x + 10*I*e) + 15*f*e^(8*I*f*x + 8*I*e) + 20*f
*e^(6*I*f*x + 6*I*e) + 15*f*e^(4*I*f*x + 4*I*e) + 6*f*e^(2*I*f*x + 2*I*e) +
 f)*log(1/8*(64*(A*a^3*c^3*e^(2*I*f*x + 2*I*e) + A*a^3*c^3)*sqrt(a/(e^(2*I*
f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + sqrt
(A^2*a^7*c^7/f^2)*(-32*I*f*e^(2*I*f*x + 2*I*e) + 32*I*f))/(A*a^3*c^3*e^(2*I
*f*x + 2*I*e) + A*a^3*c^3)))/(f*e^(12*I*f*x + 12*I*e) + 6*f*e^(10*I*f*x + 1
0*I*e) + 15*f*e^(8*I*f*x + 8*I*e) + 20*f*e^(6*I*f*x + 6*I*e) + 15*f*e^(4*I*
f*x + 4*I*e) + 6*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan (fx+e)+A)(i\,a\tan (fx+e)+a)^{\frac{7}{2}}(-i\,c\tan (fx+e)+c)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)*(-I*c*tan(f*x +
 e) + c)^(7/2), x)
```

3.818 $\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=284

$$-\frac{a^{7/2}c^{5/2}(B+6iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f}+\frac{a^3c^2(6A-iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{16f}+\frac{a^2c(}{}$$

```
[Out] -(a^(7/2)*((6*I)*A + B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(8*f) + (a^3*(6*A - I*B)*c^2*Tan[e
+ f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(16*f) + (a^2
*(6*A - I*B)*c*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f
*x])^(3/2))/(24*f) + (a*((6*I)*A + B)*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c
*Tan[e + f*x])^(5/2))/(30*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan
[e + f*x])^(5/2))/(6*f)
```

Rubi [A] time = 0.326534, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{a^{7/2}c^{5/2}(B+6iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f}+\frac{a^3c^2(6A-iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{16f}+\frac{a^2c(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(5/2),x]
```


```
[Out] -(a^(7/2)*((6*I)*A + B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])
/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(8*f) + (a^3*(6*A - I*B)*c^2*Tan[e
+ f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(16*f) + (a^2
*(6*A - I*B)*c*Tan[e + f*x]*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f
*x])^(3/2))/(24*f) + (a*((6*I)*A + B)*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c
*Tan[e + f*x])^(5/2))/(30*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan
[e + f*x])^(5/2))/(6*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{5/2}(A+Bx)(c-icx)^{3/2}\,d\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{7/2}(c-ic\tan(e+fx))^{5/2}}{6f}$$

$$= \frac{a(6iA+B)(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e}{30f}$$

$$= \frac{a^2(6A-iB)c\tan(e+fx)(a+ia\tan(e+fx))^{3/}}{24f}$$

$$= \frac{a^3(6A-iB)c^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{16f}$$

$$= \frac{a^3(6A-iB)c^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{16f}$$

$$= \frac{a^3(6A-iB)c^2\tan(e+fx)\sqrt{a+ia\tan(e+fx)}}{16f}$$

$$= -\frac{a^{7/2}(6iA+B)c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{8f} +$$

Mathematica [B] time = 15.958, size = 572, normalized size = 2.01

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(\sec(e)\left(\frac{1}{30}c^2\cos(3e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(5/2),x]
```

```
[Out] ((-I/8)*(6*A - I*B)*c^3*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*
(e + f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Ta
n[e + f*x]))/(E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e +
```

```
 f*x]^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])
) + (Cos[e + f*x]^4*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*
(Sec[e]*Sec[e + f*x]^4*((6*I)*A*Cos[e] + 6*B*Cos[e] + (5*I)*B*Sin[e])*((c^2
*Cos[3*e])/30 - (I/30)*c^2*Sin[3*e]) + I*B*c^2*Sec[e]*Sec[e + f*x]^5*(Cos[3
*e]/6 - (I/6)*Sin[3*e])*Sin[f*x] + Sec[e]*Sec[e + f*x]^3*(Cos[3*e]/24 - (I/
24)*Sin[3*e])*(6*A*c^2*Sin[f*x] - I*B*c^2*Sin[f*x]) + Sec[e]*Sec[e + f*x]*(
Cos[3*e]/16 - (I/16)*Sin[3*e])*(6*A*c^2*Sin[f*x] - I*B*c^2*Sin[f*x]) + (6*A
 - I*B)*Sec[e + f*x]^2*((c^2*Cos[3*e])/24 - (I/24)*c^2*Sin[3*e])*Tan[e] + (
6*A - I*B)*((c^2*Cos[3*e])/16 - (I/16)*c^2*Sin[3*e])*Tan[e])*(a + I*a*Tan[e
 + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e
+ f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.1, size = 478, normalized size = 1.7

$$\frac{a^3c^2}{240\,f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(40\,iB\left(\tan\left(fx+e\right)\right)^5\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+48\,iA\,(\mathrm{ta}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/240/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3*c^2*(40
*I*B*tan(f*x+e)^5*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+48*I*A*tan(f*x+e
)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+70*I*B*(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+48*B*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1/
2)*(a*c)^(1/2)+96*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2
+60*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-15*I*B*ln((a*c*
tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+15*I*
B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+96*B*tan(f*x+e)^2*(a*
c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+48*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2)+90*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)
)/(a*c)^(1/2))*a*c+150*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e
)+48*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/
2)/(a*c)^(1/2)
```

Maxima [B] time = 33.223, size = 2724, normalized size = 9.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] -((1382400*A - 230400*I*B)*a^3*c^2*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + (7833600*A - 1305600*I*B)*a^3*c^2*cos(9/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - (5345280*A - 20551680*I*B)*a^3*c^2*cos(7/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (18247680*A - 3041280*I*B)*a^3
*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (7833600*A - 13
05600*I*B)*a^3*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (
1382400*A - 230400*I*B)*a^3*c^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) - 230400*(-6*I*A - B)*a^3*c^2*sin(11/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) - 1305600*(-6*I*A - B)*a^3*c^2*sin(9/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - 92160*(58*I*A + 223*B)*a^3*c^2*sin(7/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 3041280*(6*I*A + B)*a^3*c^2*sin(5/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1305600*(6*I*A + B)*a^3*c^
2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 230400*(6*I*A + B)
*a^3*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((691200*A
- 115200*I*B)*a^3*c^2*cos(12*f*x + 12*e) + (4147200*A - 691200*I*B)*a^3*c^2
*cos(10*f*x + 10*e) + (10368000*A - 1728000*I*B)*a^3*c^2*cos(8*f*x + 8*e) +
 (13824000*A - 2304000*I*B)*a^3*c^2*cos(6*f*x + 6*e) + (10368000*A - 172800
0*I*B)*a^3*c^2*cos(4*f*x + 4*e) + (4147200*A - 691200*I*B)*a^3*c^2*cos(2*f*
x + 2*e) - 115200*(-6*I*A - B)*a^3*c^2*sin(12*f*x + 12*e) - 691200*(-6*I*A
- B)*a^3*c^2*sin(10*f*x + 10*e) - 1728000*(-6*I*A - B)*a^3*c^2*sin(8*f*x +
8*e) - 2304000*(-6*I*A - B)*a^3*c^2*sin(6*f*x + 6*e) - 1728000*(-6*I*A - B)
*a^3*c^2*sin(4*f*x + 4*e) - 691200*(-6*I*A - B)*a^3*c^2*sin(2*f*x + 2*e) +
(691200*A - 115200*I*B)*a^3*c^2)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
1) + ((691200*A - 115200*I*B)*a^3*c^2*cos(12*f*x + 12*e) + (4147200*A - 691
200*I*B)*a^3*c^2*cos(10*f*x + 10*e) + (10368000*A - 1728000*I*B)*a^3*c^2*co
s(8*f*x + 8*e) + (13824000*A - 2304000*I*B)*a^3*c^2*cos(6*f*x + 6*e) + (103
68000*A - 1728000*I*B)*a^3*c^2*cos(4*f*x + 4*e) + (4147200*A - 691200*I*B)*
a^3*c^2*cos(2*f*x + 2*e) - 115200*(-6*I*A - B)*a^3*c^2*sin(12*f*x + 12*e) -
 691200*(-6*I*A - B)*a^3*c^2*sin(10*f*x + 10*e) - 1728000*(-6*I*A - B)*a^3*
c^2*sin(8*f*x + 8*e) - 2304000*(-6*I*A - B)*a^3*c^2*sin(6*f*x + 6*e) - 1728
000*(-6*I*A - B)*a^3*c^2*sin(4*f*x + 4*e) - 691200*(-6*I*A - B)*a^3*c^2*sin
(2*f*x + 2*e) + (691200*A - 115200*I*B)*a^3*c^2)*arctan2(cos(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + 1) - (57600*(-6*I*A - B)*a^3*c^2*cos(12*f*x + 12*e) + 3456
00*(-6*I*A - B)*a^3*c^2*cos(10*f*x + 10*e) + 864000*(-6*I*A - B)*a^3*c^2*co
s(8*f*x + 8*e) + 1152000*(-6*I*A - B)*a^3*c^2*cos(6*f*x + 6*e) + 864000*(-6
*I*A - B)*a^3*c^2*cos(4*f*x + 4*e) + 345600*(-6*I*A - B)*a^3*c^2*cos(2*f*x
+ 2*e) + (345600*A - 57600*I*B)*a^3*c^2*sin(12*f*x + 12*e) + (2073600*A - 3
```

```
45600*I*B)*a^3*c^2*sin(10*f*x + 10*e) + (5184000*A - 864000*I*B)*a^3*c^2*si
n(8*f*x + 8*e) + (6912000*A - 1152000*I*B)*a^3*c^2*sin(6*f*x + 6*e) + (5184
000*A - 864000*I*B)*a^3*c^2*sin(4*f*x + 4*e) + (2073600*A - 345600*I*B)*a^3
*c^2*sin(2*f*x + 2*e) + 57600*(-6*I*A - B)*a^3*c^2)*log(cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 1) - (57600*(6*I*A + B)*a^3*c^2*cos(12*f*x + 12*e) + 345600*(6*I*A + B)*a
^3*c^2*cos(10*f*x + 10*e) + 864000*(6*I*A + B)*a^3*c^2*cos(8*f*x + 8*e) + 1
152000*(6*I*A + B)*a^3*c^2*cos(6*f*x + 6*e) + 864000*(6*I*A + B)*a^3*c^2*co
s(4*f*x + 4*e) + 345600*(6*I*A + B)*a^3*c^2*cos(2*f*x + 2*e) - (345600*A -
57600*I*B)*a^3*c^2*sin(12*f*x + 12*e) - (2073600*A - 345600*I*B)*a^3*c^2*si
n(10*f*x + 10*e) - (5184000*A - 864000*I*B)*a^3*c^2*sin(8*f*x + 8*e) - (691
2000*A - 1152000*I*B)*a^3*c^2*sin(6*f*x + 6*e) - (5184000*A - 864000*I*B)*a
^3*c^2*sin(4*f*x + 4*e) - (2073600*A - 345600*I*B)*a^3*c^2*sin(2*f*x + 2*e)
 + 57600*(6*I*A + B)*a^3*c^2)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*
sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/
(f*(-1843200*I*cos(12*f*x + 12*e) - 11059200*I*cos(10*f*x + 10*e) - 2764800
0*I*cos(8*f*x + 8*e) - 36864000*I*cos(6*f*x + 6*e) - 27648000*I*cos(4*f*x +
 4*e) - 11059200*I*cos(2*f*x + 2*e) + 1843200*sin(12*f*x + 12*e) + 11059200
*sin(10*f*x + 10*e) + 27648000*sin(8*f*x + 8*e) + 36864000*sin(6*f*x + 6*e)
 + 27648000*sin(4*f*x + 4*e) + 11059200*sin(2*f*x + 2*e) - 1843200*I))
```

Fricas [B] time = 1.81744, size = 1991, normalized size = 7.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/480*(4*((-90*I*A - 15*B)*a^3*c^2*e^(10*I*f*x + 10*I*e) + (-510*I*A - 85*B
)*a^3*c^2*e^(8*I*f*x + 8*I*e) + (348*I*A + 1338*B)*a^3*c^2*e^(6*I*f*x + 6*I
*e) + (1188*I*A + 198*B)*a^3*c^2*e^(4*I*f*x + 4*I*e) + (510*I*A + 85*B)*a^3
*c^2*e^(2*I*f*x + 2*I*e) + (90*I*A + 15*B)*a^3*c^2)*sqrt(a/(e^(2*I*f*x + 2*
I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 15*sqrt((36*
A^2 - 12*I*A*B - B^2)*a^7*c^5/f^2)*(f*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*
x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2
*I*f*x + 2*I*e) + f)*log(2*(((24*I*A + 4*B)*a^3*c^2*e^(2*I*f*x + 2*I*e) + (
24*I*A + 4*B)*a^3*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x
 + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*sqrt((36*A^2 - 12*I*A*B - B^2)*a^7*c^5/
```

```
f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((6*I*A + B)*a^3*c^2*e^(2*I*f*x + 2*I*e)
+ (6*I*A + B)*a^3*c^2)) - 15*sqrt((36*A^2 - 12*I*A*B - B^2)*a^7*c^5/f^2)*(f
*e^(10*I*f*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e)
 + 10*f*e^(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((24*I*A
+ 4*B)*a^3*c^2*e^(2*I*f*x + 2*I*e) + (24*I*A + 4*B)*a^3*c^2)*sqrt(a/(e^(2*I
*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*s
qrt((36*A^2 - 12*I*A*B - B^2)*a^7*c^5/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((6
*I*A + B)*a^3*c^2*e^(2*I*f*x + 2*I*e) + (6*I*A + B)*a^3*c^2)))/(f*e^(10*I*f
*x + 10*I*e) + 5*f*e^(8*I*f*x + 8*I*e) + 10*f*e^(6*I*f*x + 6*I*e) + 10*f*e^
(4*I*f*x + 4*I*e) + 5*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int (B\tan(fx+e)+A)(ia\tan(fx+e)+a)^{\frac{7}{2}}(-ic\tan(fx+e)+c)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)*(-I*c*tan(f*x +
 e) + c)^(5/2), x)
```

3.819 $\int (a + ia\tan(e + fx))^{7/2}(A + B\tan(e + fx))(c - ic\tan(e + fx))^{3/2}\,dx$

Optimal. Leaf size=279

$$-\frac{a^{7/2}c^{3/2}(2B+5iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{a^3c(5A-2iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{a^2(2}{}$$

```
[Out] -(a^(7/2)*((5*I)*A + 2*B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]
])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a^3*(5*A - (2*I)*B)*c*Ta
n[e + f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (
a^2*((5*I)*A + 2*B)*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/
2))/(12*f) + (a*((5*I)*A + 2*B)*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e
 + f*x])^(3/2))/(20*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f
*x])^(3/2))/(5*f)
```

Rubi [A] time = 0.328647, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 80, 49, 38, 63, 217, 203}

$$-\frac{a^{7/2}c^{3/2}(2B+5iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{a^3c(5A-2iB)\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{a^2(2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x]
)^(3/2),x]
```


```
[Out] -(a^(7/2)*((5*I)*A + 2*B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]
])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (a^3*(5*A - (2*I)*B)*c*Ta
n[e + f*x]*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (
a^2*((5*I)*A + 2*B)*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/
2))/(12*f) + (a*((5*I)*A + 2*B)*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e
 + f*x])^(3/2))/(20*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*(c - I*c*Tan[e + f
*x])^(3/2))/(5*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 49

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(2*c*n)/(m + n + 1
), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] && E
qQ[b*c + a*d, 0] && IGtQ[m + 1/2, 0] && IGtQ[n + 1/2, 0] && LtQ[m, n]
```

Rule 38

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> Simp[(x
*(a + b*x)^m*(c + d*x)^m)/(2*m + 1), x] + Dist[(2*a*c*m)/(2*m + 1), Int[(a
+ b*x)^(m - 1)*(c + d*x)^(m - 1), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[b
*c + a*d, 0] && IGtQ[m + 1/2, 0]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{5/2}(A+Bx)\sqrt{c-icx}\,dx,x\right.}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{7/2}(c-ic\tan(e+fx))^{3/2}}{5f} +$$

$$= \frac{a(5iA+2B)(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+}{20f}$$

$$= \frac{a^2(5iA+2B)(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e}{12f}$$

$$= \frac{a^3(5A-2iB)c\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{}}{8f}$$

$$= \frac{a^3(5A-2iB)c\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{}}{8f}$$

$$= \frac{a^3(5A-2iB)c\tan(e+fx)\sqrt{a+ia\tan(e+fx)}\sqrt{}}{8f}$$

$$= -\frac{a^{7/2}(5iA+2B)c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} +$$

Mathematica [A] time = 13.1913, size = 507, normalized size = 1.82

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(\sec(e)\left(\frac{1}{4}\cos(3e)-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e
+ f*x])^(3/2),x]
```

```
[Out] ((-I/4)*(5*A - (2*I)*B)*c^2*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2
*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A +
B*Tan[e + f*x]))/(E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec
```

```
[e + f*x]^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f
*x])) + (Cos[e + f*x]^4*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x
])]*(Sec[e]*Sec[e + f*x]^2*((8*I)*A*Cos[e] + 8*B*Cos[e] - 3*A*Sin[e] + (6*I
)*B*Sin[e])*((c*Cos[3*e])/12 - (I/12)*c*Sin[3*e]) + Sec[e + f*x]^4*(-(B*c*C
os[3*e])/5 + (I/5)*B*c*Sin[3*e]) + Sec[e]*Sec[e + f*x]*(Cos[3*e]/8 - (I/8)*
Sin[3*e])*(5*A*c*Sin[f*x] - (2*I)*B*c*Sin[f*x]) + Sec[e]*Sec[e + f*x]^3*(Co
s[3*e]/4 - (I/4)*Sin[3*e])*(-(A*c*Sin[f*x]) + (2*I)*B*c*Sin[f*x]) + (5*A -
(2*I)*B)*((c*Cos[3*e])/8 - (I/8)*c*Sin[3*e])*Tan[e])*(a + I*a*Tan[e + f*x])
^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] +
 B*Sin[e + f*x]))
```

Maple [A] time = 0.099, size = 412, normalized size = 1.5

$$\frac{a^3 c}{120\, f}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\left(60\, iB\left(\tan\left(fx+e\right)\right)^3\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}-24\,B\left(\mathrm{ta}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/120/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3*c*(60*I
*B*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-24*B*tan(f*x+e)^4*
(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+80*I*A*tan(f*x+e)^2*(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2)-30*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2)-30*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/
2))/(a*c)^(1/2))*a*c+30*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*
x+e)+32*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+80*I*A*(a*c
*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+75*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+45*A*(a*c)^(1/2)*(a*c*(1+tan(f
*x+e)^2))^(1/2)*tan(f*x+e)+56*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(
a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)
```

Maxima [B] time = 14.7518, size = 2222, normalized size = 7.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -((144000*A - 57600*I*B)*a^3*c*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) - (556800*A - 960000*I*B)*a^3*c*cos(7/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) - (1228800*A - 491520*I*B)*a^3*c*cos(5/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) - (672000*A - 268800*I*B)*a^3*c*cos(3/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (144000*A - 57600*I*B)*a^3*c*cos(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 28800*(-5*I*A - 2*B)*a^3
*c*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 19200*(29*I*A + 5
0*B)*a^3*c*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 245760*(5
*I*A + 2*B)*a^3*c*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 13
4400*(5*I*A + 2*B)*a^3*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) - 28800*(5*I*A + 2*B)*a^3*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + ((72000*A - 28800*I*B)*a^3*c*cos(10*f*x + 10*e) + (360000*A - 14
4000*I*B)*a^3*c*cos(8*f*x + 8*e) + (720000*A - 288000*I*B)*a^3*c*cos(6*f*x
+ 6*e) + (720000*A - 288000*I*B)*a^3*c*cos(4*f*x + 4*e) + (360000*A - 14400
0*I*B)*a^3*c*cos(2*f*x + 2*e) - 14400*(-5*I*A - 2*B)*a^3*c*sin(10*f*x + 10*
e) - 72000*(-5*I*A - 2*B)*a^3*c*sin(8*f*x + 8*e) - 144000*(-5*I*A - 2*B)*a^
3*c*sin(6*f*x + 6*e) - 144000*(-5*I*A - 2*B)*a^3*c*sin(4*f*x + 4*e) - 72000
*(-5*I*A - 2*B)*a^3*c*sin(2*f*x + 2*e) + (72000*A - 28800*I*B)*a^3*c)*arcta
n2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((72000*A - 28800*I*B)*a^3*c*cos(
10*f*x + 10*e) + (360000*A - 144000*I*B)*a^3*c*cos(8*f*x + 8*e) + (720000*A
 - 288000*I*B)*a^3*c*cos(6*f*x + 6*e) + (720000*A - 288000*I*B)*a^3*c*cos(4
*f*x + 4*e) + (360000*A - 144000*I*B)*a^3*c*cos(2*f*x + 2*e) - 14400*(-5*I*
A - 2*B)*a^3*c*sin(10*f*x + 10*e) - 72000*(-5*I*A - 2*B)*a^3*c*sin(8*f*x +
8*e) - 144000*(-5*I*A - 2*B)*a^3*c*sin(6*f*x + 6*e) - 144000*(-5*I*A - 2*B)
*a^3*c*sin(4*f*x + 4*e) - 72000*(-5*I*A - 2*B)*a^3*c*sin(2*f*x + 2*e) + (72
000*A - 28800*I*B)*a^3*c)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) - (
7200*(-5*I*A - 2*B)*a^3*c*cos(10*f*x + 10*e) + 36000*(-5*I*A - 2*B)*a^3*c*c
os(8*f*x + 8*e) + 72000*(-5*I*A - 2*B)*a^3*c*cos(6*f*x + 6*e) + 72000*(-5*I
*A - 2*B)*a^3*c*cos(4*f*x + 4*e) + 36000*(-5*I*A - 2*B)*a^3*c*cos(2*f*x + 2
*e) + (36000*A - 14400*I*B)*a^3*c*sin(10*f*x + 10*e) + (180000*A - 72000*I*
B)*a^3*c*sin(8*f*x + 8*e) + (360000*A - 144000*I*B)*a^3*c*sin(6*f*x + 6*e)
+ (360000*A - 144000*I*B)*a^3*c*sin(4*f*x + 4*e) + (180000*A - 72000*I*B)*a
^3*c*sin(2*f*x + 2*e) + 7200*(-5*I*A - 2*B)*a^3*c)*log(cos(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
 1) - (7200*(5*I*A + 2*B)*a^3*c*cos(10*f*x + 10*e) + 36000*(5*I*A + 2*B)*a^
3*c*cos(8*f*x + 8*e) + 72000*(5*I*A + 2*B)*a^3*c*cos(6*f*x + 6*e) + 72000*(
5*I*A + 2*B)*a^3*c*cos(4*f*x + 4*e) + 36000*(5*I*A + 2*B)*a^3*c*cos(2*f*x +
 2*e) - (36000*A - 14400*I*B)*a^3*c*sin(10*f*x + 10*e) - (180000*A - 72000*
```

```
I*B)*a^3*c*sin(8*f*x + 8*e) - (360000*A - 144000*I*B)*a^3*c*sin(6*f*x + 6*e
) - (360000*A - 144000*I*B)*a^3*c*sin(4*f*x + 4*e) - (180000*A - 72000*I*B)
*a^3*c*sin(2*f*x + 2*e) + 7200*(5*I*A + 2*B)*a^3*c)*log(cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 1))*sqrt(a)*sqrt(c)/(f*(-115200*I*cos(10*f*x + 10*e) - 576000*I*cos(8*f*x
 + 8*e) - 1152000*I*cos(6*f*x + 6*e) - 1152000*I*cos(4*f*x + 4*e) - 576000*
I*cos(2*f*x + 2*e) + 115200*sin(10*f*x + 10*e) + 576000*sin(8*f*x + 8*e) +
1152000*sin(6*f*x + 6*e) + 1152000*sin(4*f*x + 4*e) + 576000*sin(2*f*x + 2*
e) - 115200*I))
```

Fricas [B] time = 1.71096, size = 1787, normalized size = 6.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/240*(4*((-75*I*A - 30*B)*a^3*c*e^(8*I*f*x + 8*I*e) + (290*I*A + 500*B)*a^
3*c*e^(6*I*f*x + 6*I*e) + (640*I*A + 256*B)*a^3*c*e^(4*I*f*x + 4*I*e) + (35
0*I*A + 140*B)*a^3*c*e^(2*I*f*x + 2*I*e) + (75*I*A + 30*B)*a^3*c)*sqrt(a/(e
^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)
+ 15*sqrt((25*A^2 - 20*I*A*B - 4*B^2)*a^7*c^3/f^2)*(f*e^(8*I*f*x + 8*I*e) +
 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e
) + f)*log(2*(((20*I*A + 8*B)*a^3*c*e^(2*I*f*x + 2*I*e) + (20*I*A + 8*B)*a^
3*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^
(I*f*x + I*e) + 2*sqrt((25*A^2 - 20*I*A*B - 4*B^2)*a^7*c^3/f^2)*(f*e^(2*I*f
*x + 2*I*e) - f))/((5*I*A + 2*B)*a^3*c*e^(2*I*f*x + 2*I*e) + (5*I*A + 2*B)*
a^3*c)) - 15*sqrt((25*A^2 - 20*I*A*B - 4*B^2)*a^7*c^3/f^2)*(f*e^(8*I*f*x +
8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x
 + 2*I*e) + f)*log(2*(((20*I*A + 8*B)*a^3*c*e^(2*I*f*x + 2*I*e) + (20*I*A +
 8*B)*a^3*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e)
+ 1))*e^(I*f*x + I*e) - 2*sqrt((25*A^2 - 20*I*A*B - 4*B^2)*a^7*c^3/f^2)*(f*
e^(2*I*f*x + 2*I*e) - f))/((5*I*A + 2*B)*a^3*c*e^(2*I*f*x + 2*I*e) + (5*I*A
 + 2*B)*a^3*c)))/(f*e^(8*I*f*x + 8*I*e) + 4*f*e^(6*I*f*x + 6*I*e) + 6*f*e^(
4*I*f*x + 4*I*e) + 4*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B \tan \left(fx+e\right)+A\right)\left(i a \tan \left(fx+e\right)+a\right)^{\frac{7}{2}}\left(-i c \tan \left(fx+e\right)+c\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)*(-I*c*tan(f*x +
 e) + c)^(3/2), x)
```

3.820 $\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}$

Optimal. Leaf size=272

$$-\frac{5a^{7/2}\sqrt{c}(3B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{5a^3(3B+4iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{5a^2(3B+4iA}{}$$

```
[Out] (-5*a^(7/2)*((4*I)*A + 3*B)*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*
x]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (5*a^3*((4*I)*A + 3*B)*
Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (5*a^2*((4*I
)*A + 3*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(24*f)
+ (a*((4*I)*A + 3*B)*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]
])/(12*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*Sqrt[c - I*c*Tan[e + f*x]])/(4*
f)
```

Rubi [A] time = 0.320036, antiderivative size = 272, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 80, 50, 63, 217, 203}

$$-\frac{5a^{7/2}\sqrt{c}(3B+4iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f}+\frac{5a^3(3B+4iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{8f}+\frac{5a^2(3B+4iA}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e +
f*x]],x]
```

```
[Out] (-5*a^(7/2)*((4*I)*A + 3*B)*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*
x]])/(Sqrt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(4*f) + (5*a^3*((4*I)*A + 3*B)*
Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(8*f) + (5*a^2*((4*I
)*A + 3*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(24*f)
+ (a*((4*I)*A + 3*B)*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]
])/(12*f) + (B*(a + I*a*Tan[e + f*x])^(7/2)*Sqrt[c - I*c*Tan[e + f*x]])/(4*
f)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
```

```
Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{B(a+ia\tan(e+fx))^{7/2}\sqrt{c-ic\tan(e+fx)}}{4f} + \frac{(a}{}$$

$$= \frac{a(4iA+3B)(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e}}{12f}$$

$$= \frac{5a^2(4iA+3B)(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(}}{24f}$$

$$= \frac{5a^3(4iA+3B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e}}{8f}$$

$$= \frac{5a^3(4iA+3B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e}}{8f}$$

$$= \frac{5a^3(4iA+3B)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e}}{8f}$$

$$= -\frac{5a^{7/2}(4iA+3B)\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{4f} + $$

Mathematica [A] time = 11.427, size = 465, normalized size = 1.71

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left(\sec(e)\left(-\frac{1}{12}\sin(3e)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x])*Sqrt[c - I*c*Ta
n[e + f*x]],x]
```

```
[Out] (((-5*I)/4)*(4*A - (3*I)*B)*c*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^(
(2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A
+ B*Tan[e + f*x]))/(E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*S
```

```
ec[e + f*x]^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e +
 f*x])) + (Cos[e + f*x]^4*(Sec[e]*Sec[e + f*x]^2*(4*A*Cos[e] - (12*I)*B*Cos
[e] + 3*B*Sin[e])*((-I/12)*Cos[3*e] - Sin[3*e]/12) + Sec[e]*((32*I)*A*Cos[e
] + 32*B*Cos[e] - 12*A*Sin[e] + (17*I)*B*Sin[e])*(Cos[3*e]/8 - (I/8)*Sin[3*
e]) - I*B*Sec[e]*Sec[e + f*x]^3*(Cos[3*e]/4 - (I/4)*Sin[3*e])*Sin[f*x] + Se
c[e]*Sec[e + f*x]*(Cos[3*e]/8 - (I/8)*Sin[3*e])*(-12*A*Sin[f*x] + (17*I)*B*
Sin[f*x]))*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a + I*a*
Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*C
os[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.102, size = 349, normalized size = 1.3

$$-\frac{a^3}{24 f}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\left(6\,iB\left(\tan\left(fx+e\right)\right)^3\sqrt{ac\left(1+\left(\tan\left(fx+e\right)\right)^2\right)}\sqrt{ac}+8\,iA\left(\tan\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e)),x)
```

```
[Out] -1/24/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*a^3*(6*I*B*
tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+8*I*A*tan(f*x+e)^2*(a
*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+45*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+ta
n(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-45*I*B*(a*c)^(1/2)*(a*c*(1
+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+24*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(
1/2)*(a*c)^(1/2)-88*I*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)-60*A*ln((a
*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+36
*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-72*B*(a*c)^(1/2)*(a*
c*(1+tan(f*x+e)^2))^(1/2))/(a*c)^(1/2)/(a*c*(1+tan(f*x+e)^2))^(1/2)
```

Maxima [B] time = 6.57883, size = 1800, normalized size = 6.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e)
),x, algorithm="maxima")
```

```
[Out] ((50688*A - 56448*I*B)*a^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + (112128*A - 84096*I*B)*a^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + (84480*A - 63360*I*B)*a^3*cos(3/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + (23040*A - 17280*I*B)*a^3*cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) + 1152*(44*I*A + 49*B)*a^3*sin(7/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) + 28032*(4*I*A + 3*B)*a^3*sin(5/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) + 21120*(4*I*A + 3*B)*a^3*sin(3/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 5760*(4*I*A + 3*B)*a^3*sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - ((11520*A - 8640*I*B)*a^3*cos(8*f
*x + 8*e) + (46080*A - 34560*I*B)*a^3*cos(6*f*x + 6*e) + (69120*A - 51840*I
*B)*a^3*cos(4*f*x + 4*e) + (46080*A - 34560*I*B)*a^3*cos(2*f*x + 2*e) - 288
0*(-4*I*A - 3*B)*a^3*sin(8*f*x + 8*e) - 11520*(-4*I*A - 3*B)*a^3*sin(6*f*x
+ 6*e) - 17280*(-4*I*A - 3*B)*a^3*sin(4*f*x + 4*e) - 11520*(-4*I*A - 3*B)*a
^3*sin(2*f*x + 2*e) + (11520*A - 8640*I*B)*a^3)*arctan2(cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + 1) - ((11520*A - 8640*I*B)*a^3*cos(8*f*x + 8*e) + (46080*A -
 34560*I*B)*a^3*cos(6*f*x + 6*e) + (69120*A - 51840*I*B)*a^3*cos(4*f*x + 4*
e) + (46080*A - 34560*I*B)*a^3*cos(2*f*x + 2*e) - 2880*(-4*I*A - 3*B)*a^3*s
in(8*f*x + 8*e) - 11520*(-4*I*A - 3*B)*a^3*sin(6*f*x + 6*e) - 17280*(-4*I*A
 - 3*B)*a^3*sin(4*f*x + 4*e) - 11520*(-4*I*A - 3*B)*a^3*sin(2*f*x + 2*e) +
(11520*A - 8640*I*B)*a^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (
1440*(-4*I*A - 3*B)*a^3*cos(8*f*x + 8*e) + 5760*(-4*I*A - 3*B)*a^3*cos(6*f*
x + 6*e) + 8640*(-4*I*A - 3*B)*a^3*cos(4*f*x + 4*e) + 5760*(-4*I*A - 3*B)*a
^3*cos(2*f*x + 2*e) + (5760*A - 4320*I*B)*a^3*sin(8*f*x + 8*e) + (23040*A -
 17280*I*B)*a^3*sin(6*f*x + 6*e) + (34560*A - 25920*I*B)*a^3*sin(4*f*x + 4*
e) + (23040*A - 17280*I*B)*a^3*sin(2*f*x + 2*e) + 1440*(-4*I*A - 3*B)*a^3)*
log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + 1) + (1440*(4*I*A + 3*B)*a^3*cos(8*f*x + 8*e) + 57
60*(4*I*A + 3*B)*a^3*cos(6*f*x + 6*e) + 8640*(4*I*A + 3*B)*a^3*cos(4*f*x +
4*e) + 5760*(4*I*A + 3*B)*a^3*cos(2*f*x + 2*e) - (5760*A - 4320*I*B)*a^3*si
n(8*f*x + 8*e) - (23040*A - 17280*I*B)*a^3*sin(6*f*x + 6*e) - (34560*A - 25
920*I*B)*a^3*sin(4*f*x + 4*e) - (23040*A - 17280*I*B)*a^3*sin(2*f*x + 2*e)
+ 1440*(4*I*A + 3*B)*a^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/(f*(
-4608*I*cos(8*f*x + 8*e) - 18432*I*cos(6*f*x + 6*e) - 27648*I*cos(4*f*x + 4
*e) - 18432*I*cos(2*f*x + 2*e) + 4608*sin(8*f*x + 8*e) + 18432*sin(6*f*x +
6*e) + 27648*sin(4*f*x + 4*e) + 18432*sin(2*f*x + 2*e) - 4608*I))
```

Fricas [B] time = 1.73749, size = 1612, normalized size = 5.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e)
),x, algorithm="fricas")
```

```
[Out] 1/48*(4*((132*I*A + 147*B)*a^3*e^(6*I*f*x + 6*I*e) + (292*I*A + 219*B)*a^3*
e^(4*I*f*x + 4*I*e) + (220*I*A + 165*B)*a^3*e^(2*I*f*x + 2*I*e) + (60*I*A +
 45*B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) +
 1))*e^(I*f*x + I*e) + 3*sqrt((400*A^2 - 600*I*A*B - 225*B^2)*a^7*c/f^2)*(f
*e^(6*I*f*x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) +
f)*log(2*(((80*I*A + 60*B)*a^3*e^(2*I*f*x + 2*I*e) + (80*I*A + 60*B)*a^3)*s
qrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x
 + I*e) + 2*sqrt((400*A^2 - 600*I*A*B - 225*B^2)*a^7*c/f^2)*(f*e^(2*I*f*x +
 2*I*e) - f))/((20*I*A + 15*B)*a^3*e^(2*I*f*x + 2*I*e) + (20*I*A + 15*B)*a^
3)) - 3*sqrt((400*A^2 - 600*I*A*B - 225*B^2)*a^7*c/f^2)*(f*e^(6*I*f*x + 6*I
*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)*log(2*(((80*I*
A + 60*B)*a^3*e^(2*I*f*x + 2*I*e) + (80*I*A + 60*B)*a^3)*sqrt(a/(e^(2*I*f*x
 + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt(
(400*A^2 - 600*I*A*B - 225*B^2)*a^7*c/f^2)*(f*e^(2*I*f*x + 2*I*e) - f))/((2
0*I*A + 15*B)*a^3*e^(2*I*f*x + 2*I*e) + (20*I*A + 15*B)*a^3)))/(f*e^(6*I*f*
x + 6*I*e) + 3*f*e^(4*I*f*x + 4*I*e) + 3*f*e^(2*I*f*x + 2*I*e) + f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+
e)),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}\sqrt{-ic\tan\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e)
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)*sqrt(-I*c*tan(f
*x + e) + c), x)
```

3.821 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=283

$$\frac{5a^{7/2}(4B+3iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{5a^3(4B+3iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2cf}-\frac{5a^2(4B+3iA)(a+i$$

```
[Out] (5*a^(7/2)*((3*I)*A + 4*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*(a + I*a*Tan[e
+ f*x])^(7/2))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (5*a^3*((3*I)*A + 4*B)*Sqrt
[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*c*f) - (5*a^2*((3*I)*
A + 4*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(6*c*f) -
 (a*((3*I)*A + 4*B)*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]]
)/(3*c*f)
```

Rubi [A] time = 0.335987, antiderivative size = 283, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 50, 63, 217, 203}

$$\frac{5a^{7/2}(4B+3iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f}-\frac{5a^3(4B+3iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2cf}-\frac{5a^2(4B+3iA)(a+i$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*Tan[e
+ f*x]],x]
```


```
[Out] (5*a^(7/2)*((3*I)*A + 4*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[c]*f) - ((I*A + B)*(a + I*a*Tan[e
+ f*x])^(7/2))/(f*Sqrt[c - I*c*Tan[e + f*x]]) - (5*a^3*((3*I)*A + 4*B)*Sqrt
[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*c*f) - (5*a^2*((3*I)*
A + 4*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])/(6*c*f) -
 (a*((3*I)*A + 4*B)*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]]
)/(3*c*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{(a(3A-4iB))\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}}{\sqrt{c-icx}}\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{a(3iA+4B)(a+ia\tan(e+fx))^{5/}}{3cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{5a^2(3iA+4B)(a+ia\tan(e+fx)}{6cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{5a^3(3iA+4B)\sqrt{a+ia\tan(e+fx}}{2cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{5a^3(3iA+4B)\sqrt{a+ia\tan(e+fx}}{2cf}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{f\sqrt{c-ic\tan(e+fx)}} - \frac{5a^3(3iA+4B)\sqrt{a+ia\tan(e+fx}}{2cf}$$

$$= \frac{5a^{7/2}(3iA+4B)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{c}f} - \frac{(iA+B)(a+ia\tan(e+f}{f\sqrt{c-ic\tan(e+fx}}$$

Mathematica [A] time = 13.4676, size = 481, normalized size = 1.7

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((A-iB)\cos(2fx)\left(-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/Sqrt[c - I*c*
Tan[e + f*x]],x]
```

```
[Out] (5*((3*I)*A + 4*B)*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e +
f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e +
```

```
 f*x]))/(E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e + f*x]
^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])) + (
Cos[e + f*x]^4*((A - I*B)*Cos[2*f*x]*(((-4*I)*Cos[e])/c - (4*Sin[e])/c) + S
ec[e]*(16*A*Cos[e] - (24*I)*B*Cos[e] + I*A*Sin[e] + 4*B*Sin[e])*(((-I/2)*Co
s[3*e])/c - Sin[3*e]/(2*c)) + Sec[e + f*x]^2*((B*Cos[3*e])/(3*c) - ((I/3)*B
*Sin[3*e])/c) + Sec[e]*Sec[e + f*x]*(Cos[3*e]/(2*c) - ((I/2)*Sin[3*e])/c)*(
A*Sin[f*x] - (4*I)*B*Sin[f*x]) + (A - I*B)*((4*Cos[e])/c - ((4*I)*Sin[e])/c
)*Sin[2*f*x])*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a + I
*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(
A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.175, size = 627, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/6/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c*(-60*I
*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2)
)*tan(f*x+e)^2*a*c+8*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e
)^3-2*B*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+90*I*A*ln((a*
c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x
+e)*a*c+18*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2+45*A*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)^2*a*c-3*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+60
*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/
2))*a*c+128*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+120*B*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)*a*c+24*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-72*
I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-45*A*ln((a*c*tan(f*x+e)+(a*c*(
1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-93*A*(a*c)^(1/2)*(a*c*
(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-94*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^
(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^2/(a*c)^(1/2)
```

Maxima [B] time = 4.64865, size = 1794, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] -((648*A - 1440*I*B)*a^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + (1152*A - 2112*I*B)*a^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + 72*(9*I*A + 20*B)*a^3*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 192*(6*I*A + 11*B)*a^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) - ((540*A - 720*I*B)*a^3*cos(6*f*x + 6*e) + (1620*A - 2160*I*B)
*a^3*cos(4*f*x + 4*e) + (1620*A - 2160*I*B)*a^3*cos(2*f*x + 2*e) - 180*(-3*
I*A - 4*B)*a^3*sin(6*f*x + 6*e) - 540*(-3*I*A - 4*B)*a^3*sin(4*f*x + 4*e) -
 540*(-3*I*A - 4*B)*a^3*sin(2*f*x + 2*e) + (540*A - 720*I*B)*a^3)*arctan2(c
os(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 1) - ((540*A - 720*I*B)*a^3*cos(6*f*x + 6*
e) + (1620*A - 2160*I*B)*a^3*cos(4*f*x + 4*e) + (1620*A - 2160*I*B)*a^3*cos
(2*f*x + 2*e) - 180*(-3*I*A - 4*B)*a^3*sin(6*f*x + 6*e) - 540*(-3*I*A - 4*B
)*a^3*sin(4*f*x + 4*e) - 540*(-3*I*A - 4*B)*a^3*sin(2*f*x + 2*e) + (540*A -
 720*I*B)*a^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
, -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((576*A - 57
6*I*B)*a^3*cos(6*f*x + 6*e) + (1728*A - 1728*I*B)*a^3*cos(4*f*x + 4*e) + (1
728*A - 1728*I*B)*a^3*cos(2*f*x + 2*e) + 576*(I*A + B)*a^3*sin(6*f*x + 6*e)
 + 1728*(I*A + B)*a^3*sin(4*f*x + 4*e) + 1728*(I*A + B)*a^3*sin(2*f*x + 2*e
) + (1080*A - 1440*I*B)*a^3)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + (90*(-3*I*A - 4*B)*a^3*cos(6*f*x + 6*e) + 270*(-3*I*A - 4*B)*a^3*c
os(4*f*x + 4*e) + 270*(-3*I*A - 4*B)*a^3*cos(2*f*x + 2*e) + (270*A - 360*I*
B)*a^3*sin(6*f*x + 6*e) + (810*A - 1080*I*B)*a^3*sin(4*f*x + 4*e) + (810*A
- 1080*I*B)*a^3*sin(2*f*x + 2*e) + 90*(-3*I*A - 4*B)*a^3)*log(cos(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 1) + (90*(3*I*A + 4*B)*a^3*cos(6*f*x + 6*e) + 270*(3*I*A + 4*B)*a^3
*cos(4*f*x + 4*e) + 270*(3*I*A + 4*B)*a^3*cos(2*f*x + 2*e) - (270*A - 360*I
*B)*a^3*sin(6*f*x + 6*e) - (810*A - 1080*I*B)*a^3*sin(4*f*x + 4*e) - (810*A
 - 1080*I*B)*a^3*sin(2*f*x + 2*e) + 90*(3*I*A + 4*B)*a^3)*log(cos(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 1) + (576*(I*A + B)*a^3*cos(6*f*x + 6*e) + 1728*(I*A + B)*a^3*cos(4
*f*x + 4*e) + 1728*(I*A + B)*a^3*cos(2*f*x + 2*e) - (576*A - 576*I*B)*a^3*s
in(6*f*x + 6*e) - (1728*A - 1728*I*B)*a^3*sin(4*f*x + 4*e) - (1728*A - 1728
*I*B)*a^3*sin(2*f*x + 2*e) + 360*(3*I*A + 4*B)*a^3)*sin(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((-72*I*c*cos(6*f*x + 6*e) -
 216*I*c*cos(4*f*x + 4*e) - 216*I*c*cos(2*f*x + 2*e) + 72*c*sin(6*f*x + 6*e
) + 216*c*sin(4*f*x + 4*e) + 216*c*sin(2*f*x + 2*e) - 72*I*c)*f)
```

Fricas [B] time = 1.5423, size = 1557, normalized size = 5.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(2*((-48*I*A - 48*B)*a^3*e^(6*I*f*x + 6*I*e) + (-198*I*A - 264*B)*a^3*
e^(4*I*f*x + 4*I*e) + (-240*I*A - 320*B)*a^3*e^(2*I*f*x + 2*I*e) + (-90*I*A
 - 120*B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e
) + 1))*e^(I*f*x + I*e) - 3*sqrt((225*A^2 - 600*I*A*B - 400*B^2)*a^7/(c*f^2
))*(c*f*e^(4*I*f*x + 4*I*e) + 2*c*f*e^(2*I*f*x + 2*I*e) + c*f)*log(2*(((60*
I*A + 80*B)*a^3*e^(2*I*f*x + 2*I*e) + (60*I*A + 80*B)*a^3)*sqrt(a/(e^(2*I*f
*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*sqr
t((225*A^2 - 600*I*A*B - 400*B^2)*a^7/(c*f^2))*(c*f*e^(2*I*f*x + 2*I*e) - c
*f))/((15*I*A + 20*B)*a^3*e^(2*I*f*x + 2*I*e) + (15*I*A + 20*B)*a^3)) + 3*s
qrt((225*A^2 - 600*I*A*B - 400*B^2)*a^7/(c*f^2))*(c*f*e^(4*I*f*x + 4*I*e) +
 2*c*f*e^(2*I*f*x + 2*I*e) + c*f)*log(2*(((60*I*A + 80*B)*a^3*e^(2*I*f*x +
2*I*e) + (60*I*A + 80*B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(
2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 2*sqrt((225*A^2 - 600*I*A*B - 400*
B^2)*a^7/(c*f^2))*(c*f*e^(2*I*f*x + 2*I*e) - c*f))/((15*I*A + 20*B)*a^3*e^(
2*I*f*x + 2*I*e) + (15*I*A + 20*B)*a^3)))/(c*f*e^(4*I*f*x + 4*I*e) + 2*c*f*
e^(2*I*f*x + 2*I*e) + c*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\sqrt{-ic\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/sqrt(-I*c*tan(f
*x + e) + c), x)
```

3.822 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=285

$$-\frac{5a^{7/2}(5B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f}+\frac{5a^3(5B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2c^2f}+\frac{5a^2(5B+2iA)(a}{}$$

```
[Out] (-5*a^(7/2)*((2*I)*A + 5*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sq
rt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(c^(3/2)*f) - ((I*A + B)*(a + I*a*Tan[e
 + f*x])^(7/2))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*((2*I)*A + 5*B)*(
a + I*a*Tan[e + f*x])^(5/2))/(3*c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (5*a^3*((
2*I)*A + 5*B)*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*c^2
*f) + (5*a^2*((2*I)*A + 5*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[
e + f*x]])/(6*c^2*f)
```

Rubi [A] time = 0.34433, antiderivative size = 285, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$-\frac{5a^{7/2}(5B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f}+\frac{5a^3(5B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2c^2f}+\frac{5a^2(5B+2iA)(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(3/2),x]
```


```
[Out] (-5*a^(7/2)*((2*I)*A + 5*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sq
rt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(c^(3/2)*f) - ((I*A + B)*(a + I*a*Tan[e
 + f*x])^(7/2))/(3*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a*((2*I)*A + 5*B)*(
a + I*a*Tan[e + f*x])^(5/2))/(3*c*f*Sqrt[c - I*c*Tan[e + f*x]]) + (5*a^3*((
2*I)*A + 5*B)*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*c^2
*f) + (5*a^2*((2*I)*A + 5*B)*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[
e + f*x]])/(6*c^2*f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{3f(c-ic\tan(e+fx))^{3/2}} - \frac{(a(2A-5iB))\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}}{(c-icx)^{3/2}}\right.}{3f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(2iA+5B)(a+ia\tan(e+fx}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(2iA+5B)(a+ia\tan(e+fx}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(2iA+5B)(a+ia\tan(e+fx}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(2iA+5B)(a+ia\tan(e+fx}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{3f(c-ic\tan(e+fx))^{3/2}} + \frac{2a(2iA+5B)(a+ia\tan(e+fx}{3cf\sqrt{c-ic\tan(e+fx)}}$$

$$= -\frac{5a^{7/2}(2iA+5B)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{3/2}f} - \frac{(iA+B)(a+ia\tan(e}{3f(c-ic\tan(e+f}$$

Mathematica [A] time = 17.4703, size = 517, normalized size = 1.81

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((11B+5iA)\cos(2\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(3/2),x]
```

```
[Out] ((-5*I)*(2*A - (5*I)*B)*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*
(e + f*x)))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Ta
n[e + f*x]))/(c*E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e
 + f*x]^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x
])) + (Cos[e + f*x]^4*(((5*I)*A + 11*B)*Cos[2*f*x]*((2*Cos[e])/(3*c^2) - ((
(2*I)/3)*Sin[e])/c^2) + (A - I*B)*Cos[4*f*x]*((((-2*I)/3)*Cos[e])/c^2 + (2*
Sin[e])/(3*c^2)) + Sec[e]*((10*I)*A*Cos[e] + 26*B*Cos[e] + I*B*Sin[e])*(Cos
[3*e]/(2*c^2) - ((I/2)*Sin[3*e])/c^2) + I*B*Sec[e]*Sec[e + f*x]*(Cos[3*e]/(
2*c^2) - ((I/2)*Sin[3*e])/c^2)*Sin[f*x] + (5*A - (11*I)*B)*((-2*Cos[e])/(3*
c^2) + (((2*I)/3)*Sin[e])/c^2)*Sin[2*f*x] + (A - I*B)*((2*Cos[e])/(3*c^2) +
 (((2*I)/3)*Sin[e])/c^2)*Sin[4*f*x])*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*
c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos
[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.115, size = 731, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/6/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^2*(6*I*
A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3-114*I*A*(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-75*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+
tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c-118*I*B*(a*
c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+30*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f
*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+3*I*B*(a*c*(1+ta
n(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^4+185*I*B*(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2)*tan(f*x+e)^2+225*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^
2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+21*B*(a*c*(1+tan(f*x+e
)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+225*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-30*I*A*ln((a*c*t
an(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-90*A*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)*a*c-74*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+90*
I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2
```

```
))*tan(f*x+e)^2*a*c-75*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a
*c)^(1/2))/(a*c)^(1/2))*a*c-279*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*
tan(f*x+e)+46*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(tan(f*x+e)+I)^3/
(a*c)^(1/2)/(a*c*(1+tan(f*x+e)^2))^(1/2)
```

Maxima [B] time = 3.24362, size = 1598, normalized size = 5.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -(((120*A - 300*I*B)*a^3*cos(4*f*x + 4*e) + (240*A - 600*I*B)*a^3*cos(2*f*x
 + 2*e) - 60*(-2*I*A - 5*B)*a^3*sin(4*f*x + 4*e) - 120*(-2*I*A - 5*B)*a^3*s
in(2*f*x + 2*e) + (120*A - 300*I*B)*a^3)*arctan2(cos(1/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 1) + ((120*A - 300*I*B)*a^3*cos(4*f*x + 4*e) + (240*A - 600*I*B)*a^
3*cos(2*f*x + 2*e) - 60*(-2*I*A - 5*B)*a^3*sin(4*f*x + 4*e) - 120*(-2*I*A -
 5*B)*a^3*sin(2*f*x + 2*e) + (120*A - 300*I*B)*a^3)*arctan2(cos(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 1) + ((32*A - 32*I*B)*a^3*cos(4*f*x + 4*e) + (64*A - 64
*I*B)*a^3*cos(2*f*x + 2*e) - 32*(-I*A - B)*a^3*sin(4*f*x + 4*e) - 64*(-I*A
- B)*a^3*sin(2*f*x + 2*e) - (16*A - 232*I*B)*a^3)*cos(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - ((192*A - 384*I*B)*a^3*cos(4*f*x + 4*e) + (38
4*A - 768*I*B)*a^3*cos(2*f*x + 2*e) + 192*(I*A + 2*B)*a^3*sin(4*f*x + 4*e)
+ 384*(I*A + 2*B)*a^3*sin(2*f*x + 2*e) + (240*A - 600*I*B)*a^3)*cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (30*(-2*I*A - 5*B)*a^3*cos(4*f*
x + 4*e) + 60*(-2*I*A - 5*B)*a^3*cos(2*f*x + 2*e) + (60*A - 150*I*B)*a^3*si
n(4*f*x + 4*e) + (120*A - 300*I*B)*a^3*sin(2*f*x + 2*e) + 30*(-2*I*A - 5*B)
*a^3)*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) + 1) - (30*(2*I*A + 5*B)*a^3*cos(4*f*x + 4*e)
+ 60*(2*I*A + 5*B)*a^3*cos(2*f*x + 2*e) - (60*A - 150*I*B)*a^3*sin(4*f*x +
4*e) - (120*A - 300*I*B)*a^3*sin(2*f*x + 2*e) + 30*(2*I*A + 5*B)*a^3)*log(c
os(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 1) - (32*(-I*A - B)*a^3*cos(4*f*x + 4*e) + 64*(-I*A - B
)*a^3*cos(2*f*x + 2*e) + (32*A - 32*I*B)*a^3*sin(4*f*x + 4*e) + (64*A - 64*
I*B)*a^3*sin(2*f*x + 2*e) + 8*(2*I*A + 29*B)*a^3)*sin(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - (192*(I*A + 2*B)*a^3*cos(4*f*x + 4*e) + 384*(
```

```
I*A + 2*B)*a^3*cos(2*f*x + 2*e) - (192*A - 384*I*B)*a^3*sin(4*f*x + 4*e) -
(384*A - 768*I*B)*a^3*sin(2*f*x + 2*e) + 120*(2*I*A + 5*B)*a^3)*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((-24*I*c^2*cos(
4*f*x + 4*e) - 48*I*c^2*cos(2*f*x + 2*e) + 24*c^2*sin(4*f*x + 4*e) + 48*c^2
*sin(2*f*x + 2*e) - 24*I*c^2)*f)
```

Fricas [B] time = 1.65747, size = 1477, normalized size = 5.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(2*((-8*I*A - 8*B)*a^3*e^(6*I*f*x + 6*I*e) + (32*I*A + 80*B)*a^3*e^(4*
I*f*x + 4*I*e) + (100*I*A + 250*B)*a^3*e^(2*I*f*x + 2*I*e) + (60*I*A + 150*
B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))
*e^(I*f*x + I*e) + 3*(c^2*f*e^(2*I*f*x + 2*I*e) + c^2*f)*sqrt((100*A^2 - 50
0*I*A*B - 625*B^2)*a^7/(c^3*f^2))*log(2*(((40*I*A + 100*B)*a^3*e^(2*I*f*x +
 2*I*e) + (40*I*A + 100*B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e
^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + 2*(c^2*f*e^(2*I*f*x + 2*I*e) - c
^2*f)*sqrt((100*A^2 - 500*I*A*B - 625*B^2)*a^7/(c^3*f^2)))/((10*I*A + 25*B)
*a^3*e^(2*I*f*x + 2*I*e) + (10*I*A + 25*B)*a^3)) - 3*(c^2*f*e^(2*I*f*x + 2*
I*e) + c^2*f)*sqrt((100*A^2 - 500*I*A*B - 625*B^2)*a^7/(c^3*f^2))*log(2*(((
40*I*A + 100*B)*a^3*e^(2*I*f*x + 2*I*e) + (40*I*A + 100*B)*a^3)*sqrt(a/(e^(
2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) -
2*(c^2*f*e^(2*I*f*x + 2*I*e) - c^2*f)*sqrt((100*A^2 - 500*I*A*B - 625*B^2)*
a^7/(c^3*f^2)))/((10*I*A + 25*B)*a^3*e^(2*I*f*x + 2*I*e) + (10*I*A + 25*B)*
a^3)))/(c^2*f*e^(2*I*f*x + 2*I*e) + c^2*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(3/2), x)
```

3.823 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=283

$$\frac{2a^{7/2}(6B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{5/2}f}-\frac{a^3(6B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{c^3f}-\frac{2a^2(6B+iA)(a+ia\tan}{3c^2f\sqrt{c-ic\tan(e}$$

```
[Out] (2*a^(7/2)*(I*A + 6*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(c^(5/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*
x])^(7/2))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a*(I*A + 6*B)*(a + I*a*T
an[e + f*x])^(5/2))/(15*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^2*(I*A + 6
*B)*(a + I*a*Tan[e + f*x])^(3/2))/(3*c^2*f*Sqrt[c - I*c*Tan[e + f*x]]) - (a
^3*(I*A + 6*B)*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c^3*
f)
```

Rubi [A] time = 0.347681, antiderivative size = 283, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$\frac{2a^{7/2}(6B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{5/2}f}-\frac{a^3(6B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{c^3f}-\frac{2a^2(6B+iA)(a+ia\tan}{3c^2f\sqrt{c-ic\tan(e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(5/2),x]
```


```
[Out] (2*a^(7/2)*(I*A + 6*B)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(c^(5/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*
x])^(7/2))/(5*f*(c - I*c*Tan[e + f*x])^(5/2)) + (2*a*(I*A + 6*B)*(a + I*a*T
an[e + f*x])^(5/2))/(15*c*f*(c - I*c*Tan[e + f*x])^(3/2)) - (2*a^2*(I*A + 6
*B)*(a + I*a*Tan[e + f*x])^(3/2))/(3*c^2*f*Sqrt[c - I*c*Tan[e + f*x]]) - (a
^3*(I*A + 6*B)*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(c^3*
f)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{5f(c-ic\tan(e+fx))^{5/2}} - \frac{(a(A-6iB))\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}}{(c-icx)^{5/2}}\,dx\right.}{5f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2a(iA+6B)(a+ia\tan(e+fx))^{5/}}{15cf(c-ic\tan(e+fx))^{3/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2a(iA+6B)(a+ia\tan(e+fx))^{5/}}{15cf(c-ic\tan(e+fx))^{3/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2a(iA+6B)(a+ia\tan(e+fx))^{5/}}{15cf(c-ic\tan(e+fx))^{3/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2a(iA+6B)(a+ia\tan(e+fx))^{5/}}{15cf(c-ic\tan(e+fx))^{3/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{5f(c-ic\tan(e+fx))^{5/2}} + \frac{2a(iA+6B)(a+ia\tan(e+fx))^{5/}}{15cf(c-ic\tan(e+fx))^{3/2}}$$

$$= \frac{2a^{7/2}(iA+6B)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{5/2}f} - \frac{(iA+B)(a+ia\tan(e+fx}{5f(c-ic\tan(e+fx))^{5/}}$$

Mathematica [A] time = 17.5773, size = 528, normalized size = 1.87

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((A-6iB)\cos(2fx)\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(5/2),x]
```

```
[Out] (2*(I*A + 6*B)*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)
))]*ArcTan[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x
]))/(c^2*E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e + f*x]
^(9/2)*(Cos[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])) + (
Cos[e + f*x]^4*((A - (6*I)*B)*Cos[2*f*x]*((((-2*I)/3)*Cos[e])/c^3 - (2*Sin[
e])/(3*c^3)) + (I*A + 6*B)*Cos[4*f*x]*((2*Cos[e])/(15*c^3) + (((2*I)/15)*Si
n[e])/c^3) + (A - (6*I)*B)*(((-I)*Cos[3*e])/c^3 - Sin[3*e]/c^3) + (A - I*B)
*Cos[6*f*x]*(((-I/5)*Cos[3*e])/c^3 + Sin[3*e]/(5*c^3)) + (A - (6*I)*B)*((2*
Cos[e])/(3*c^3) - (((2*I)/3)*Sin[e])/c^3)*Sin[2*f*x] + (A - (6*I)*B)*((-2*C
os[e])/(15*c^3) - (((2*I)/15)*Sin[e])/c^3)*Sin[4*f*x] + (A - I*B)*(Cos[3*e]
/(5*c^3) + ((I/5)*Sin[3*e])/c^3)*Sin[6*f*x])*Sqrt[Sec[e + f*x]*(c*Cos[e + f
*x] - I*c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))
/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [B] time = 0.121, size = 833, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/15/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^3*(-9
0*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1
/2))*tan(f*x+e)^4*a*c-474*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(
f*x+e)+15*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a
*c)^(1/2))*tan(f*x+e)^4*a*c+540*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2
))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+246*I*B*(a*c*(1+tan(f*x
+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+360*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+15*B*tan(f*x+e
)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+60*I*A*ln((a*c*tan(f*x+e)+(a*c
*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c-60*I*A*
ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*t
an(f*x+e)*a*c-90*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1
/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c-46*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))
^(1/2)*(a*c)^(1/2)-90*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2))/(a*c)^(1/2))*a*c+26*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2
)-360*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^
(1/2))*tan(f*x+e)*a*c-564*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)
```

```
^(1/2)-94*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2+15*A*ln
((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c
+74*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+141*B*(a*c)^(1/2)
*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan(f*x+e)+I)^
4/(a*c)^(1/2)
```

Maxima [B] time = 2.68146, size = 1315, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] (((450*A - 2700*I*B)*a^3*cos(2*f*x + 2*e) - 450*(-I*A - 6*B)*a^3*sin(2*f*x
+ 2*e) + (450*A - 2700*I*B)*a^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
1) + ((450*A - 2700*I*B)*a^3*cos(2*f*x + 2*e) - 450*(-I*A - 6*B)*a^3*sin(2*
f*x + 2*e) + (450*A - 2700*I*B)*a^3)*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) - ((180*A - 180*I*B)*a^3*cos(2*f*x + 2*e) + 180*(I*A + B)*a^3*sin(2
*f*x + 2*e) + (180*A - 180*I*B)*a^3)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + ((300*A - 900*I*B)*a^3*cos(2*f*x + 2*e) - 300*(-I*A - 3*B)
*a^3*sin(2*f*x + 2*e) + (300*A - 900*I*B)*a^3)*cos(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - ((900*A - 4500*I*B)*a^3*cos(2*f*x + 2*e) + 900*(
I*A + 5*B)*a^3*sin(2*f*x + 2*e) + (900*A - 5400*I*B)*a^3)*cos(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) - (225*(-I*A - 6*B)*a^3*cos(2*f*x + 2*e
) + (225*A - 1350*I*B)*a^3*sin(2*f*x + 2*e) + 225*(-I*A - 6*B)*a^3)*log(cos
(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) + 1) - (225*(I*A + 6*B)*a^3*cos(2*f*x + 2*e) - (225*A - 135
0*I*B)*a^3*sin(2*f*x + 2*e) + 225*(I*A + 6*B)*a^3)*log(cos(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
 1) - (180*(I*A + B)*a^3*cos(2*f*x + 2*e) - (180*A - 180*I*B)*a^3*sin(2*f*x
 + 2*e) + 180*(I*A + B)*a^3)*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) - (300*(-I*A - 3*B)*a^3*cos(2*f*x + 2*e) + (300*A - 900*I*B)*a^3*sin
(2*f*x + 2*e) + 300*(-I*A - 3*B)*a^3)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) - (900*(I*A + 5*B)*a^3*cos(2*f*x + 2*e) - (900*A - 4500*I*B
)*a^3*sin(2*f*x + 2*e) + 900*(I*A + 6*B)*a^3)*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((-450*I*c^3*cos(2*f*x + 2*e) + 45
```

```
0*c^3*sin(2*f*x + 2*e) - 450*I*c^3)*f)
```

Fricas [B] time = 1.69032, size = 1311, normalized size = 4.63

$$-\frac{15\,c^{3}\sqrt{\frac{\left(4\,A^{2}-48i\,AB-144\,B^{2}\right)a^{7}}{c^{5}f^{2}}}\,f\log\left(\frac{2\left(\left((4i\,A+24\,B)a^{3}e^{\left(2i\,fx+2i\,e\right)}+(4i\,A+24\,B)a^{3}\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(c^{3}fe^{\left(2i\,fx+2i\,e\right)}-c^{3}f\right)\sqrt{(4}\right.}{(i\,A+6\,B)a^{3}e^{\left(2i\,fx+2i\,e\right)}+(i\,A+6\,B)a^{3}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] -1/60*(15*c^3*sqrt((4*A^2 - 48*I*A*B - 144*B^2)*a^7/(c^5*f^2))*f*log(2*(((4
*I*A + 24*B)*a^3*e^(2*I*f*x + 2*I*e) + (4*I*A + 24*B)*a^3)*sqrt(a/(e^(2*I*f
*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + (c^3*
f*e^(2*I*f*x + 2*I*e) - c^3*f)*sqrt((4*A^2 - 48*I*A*B - 144*B^2)*a^7/(c^5*f
^2)))/((I*A + 6*B)*a^3*e^(2*I*f*x + 2*I*e) + (I*A + 6*B)*a^3)) - 15*c^3*sqr
t((4*A^2 - 48*I*A*B - 144*B^2)*a^7/(c^5*f^2))*f*log(2*(((4*I*A + 24*B)*a^3*
e^(2*I*f*x + 2*I*e) + (4*I*A + 24*B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))
*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (c^3*f*e^(2*I*f*x + 2*
I*e) - c^3*f)*sqrt((4*A^2 - 48*I*A*B - 144*B^2)*a^7/(c^5*f^2)))/((I*A + 6*B
)*a^3*e^(2*I*f*x + 2*I*e) + (I*A + 6*B)*a^3)) - 2*((-12*I*A - 12*B)*a^3*e^(
6*I*f*x + 6*I*e) + (8*I*A + 48*B)*a^3*e^(4*I*f*x + 4*I*e) + (-40*I*A - 240*
B)*a^3*e^(2*I*f*x + 2*I*e) + (-60*I*A - 360*B)*a^3)*sqrt(a/(e^(2*I*f*x + 2*
I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))/(c^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(B\tan(fx+e)+A)(ia\tan(fx+e)+a)^{\frac{7}{2}}}{(-ic\tan(fx+e)+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(5/2), x)
```

3.824 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=251

$$-\frac{2a^{7/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{7/2}f}+\frac{2a^3B\sqrt{a+ia\tan(e+fx)}}{c^3f\sqrt{c-ic\tan(e+fx)}}-\frac{2a^2B(a+ia\tan(e+fx))^{3/2}}{3c^2f(c-ic\tan(e+fx))^{3/2}}-\frac{(B+iA)(a+ia\tan(e+\ldots}{7f(c-ic\tan(e+fx))\ldots}$$

```
[Out] (-2*a^(7/2)*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(c^(7/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2)
)/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (2*a*B*(a + I*a*Tan[e + f*x])^(5/2))
/(5*c*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*a^2*B*(a + I*a*Tan[e + f*x])^(3/
2))/(3*c^2*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a^3*B*Sqrt[a + I*a*Tan[e +
f*x]])/(c^3*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.315253, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 47, 63, 217, 203}

$$-\frac{2a^{7/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{7/2}f}+\frac{2a^3B\sqrt{a+ia\tan(e+fx)}}{c^3f\sqrt{c-ic\tan(e+fx)}}-\frac{2a^2B(a+ia\tan(e+fx))^{3/2}}{3c^2f(c-ic\tan(e+fx))^{3/2}}-\frac{(B+iA)(a+ia\tan(e+\ldots}{7f(c-ic\tan(e+fx))\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(7/2),x]
```


```
[Out] (-2*a^(7/2)*B*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(c^(7/2)*f) - ((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2)
)/(7*f*(c - I*c*Tan[e + f*x])^(7/2)) + (2*a*B*(a + I*a*Tan[e + f*x])^(5/2))
/(5*c*f*(c - I*c*Tan[e + f*x])^(5/2)) - (2*a^2*B*(a + I*a*Tan[e + f*x])^(3/
2))/(3*c^2*f*(c - I*c*Tan[e + f*x])^(3/2)) + (2*a^3*B*Sqrt[a + I*a*Tan[e +
f*x]])/(c^3*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
```

```
a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{7/2}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{9/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{(iaB)\operatorname{Subst}\left(\int \frac{(a+iax)^{5/2}}{(c-icx)^{7/2}}\,dx, x, \text{ta}\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{2aB(a+ia\tan(e+fx))^{5/2}}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{(ia}{}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{2aB(a+ia\tan(e+fx))^{5/2}}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{2a}{3c}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{2aB(a+ia\tan(e+fx))^{5/2}}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{2a}{3c}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{2aB(a+ia\tan(e+fx))^{5/2}}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{2a}{3c}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}} + \frac{2aB(a+ia\tan(e+fx))^{5/2}}{5cf(c-ic\tan(e+fx))^{5/2}} - \frac{2a}{3c}$$

$$= -\frac{2a^{7/2}B\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{c^{7/2}f} - \frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{7f(c-ic\tan(e+fx))^{7/2}}$$

Mathematica [B] time = 17.5833, size = 570, normalized size = 2.27

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((9B-5iA)\cos(6f\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(7/2),x]
```

```
[Out] (-2*B*Sqrt[E^(I*f*x)]*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTa
n[E^(I*(e + f*x))]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c^3*
```

```
E^(I*(4*e + f*x))*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*f*Sec[e + f*x]^(9/2)*(C
os[f*x] + I*Sin[f*x])^(7/2)*(A*Cos[e + f*x] + B*Sin[e + f*x])) + (Cos[e + f
*x]^4*((B*Cos[3*e])/c^4 + Cos[4*f*x]*((-2*B*Cos[e])/(15*c^4) - (((2*I)/15)*
B*Sin[e])/c^4) + Cos[2*f*x]*((2*B*Cos[e])/(3*c^4) - (((2*I)/3)*B*Sin[e])/c^
4) - (I*B*Sin[3*e])/c^4 + ((-5*I)*A + 9*B)*Cos[6*f*x]*(Cos[3*e]/(70*c^4) +
((I/70)*Sin[3*e])/c^4) + (A - I*B)*Cos[8*f*x]*(((-I/14)*Cos[5*e])/c^4 + Sin
[5*e]/(14*c^4)) + ((((2*I)/3)*B*Cos[e])/c^4 + (2*B*Sin[e])/(3*c^4))*Sin[2*f
*x] + ((((-2*I)/15)*B*Cos[e])/c^4 + (2*B*Sin[e])/(15*c^4))*Sin[4*f*x] + (5*
A + (9*I)*B)*(Cos[3*e]/(70*c^4) + ((I/70)*Sin[3*e])/c^4)*Sin[6*f*x] + (A -
I*B)*(Cos[5*e]/(14*c^4) + ((I/14)*Sin[5*e])/c^4)*Sin[8*f*x])*Sqrt[Sec[e + f
*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])^(7/2)*(A +
B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f
*x]))
```

Maple [B] time = 0.117, size = 638, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2),x)
```

```
[Out] 1/105/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^4*(-1
05*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(
1/2))*tan(f*x+e)^5*a*c+1050*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(
1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+337*I*B*(a*c*(1+tan(f*x+e)^
2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^4+525*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x
+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^4*a*c+30*I*A*tan(f*x+e)^
3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-15*A*tan(f*x+e)^4*(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2)-525*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2)
)^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-1176*I*B*(a*c*(1+tan(f*x+e
)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2-1050*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(
f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c-950*B*(a*c*(1+t
an(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+30*I*A*(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2)*tan(f*x+e)+167*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/
2)+105*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)
^(1/2))*a*c+730*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+15*A*
(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(tan
(f*x+e)+I)^5/(a*c)^(1/2)
```

Maxima [A] time = 2.57147, size = 335, normalized size = 1.33

$$-\frac{\left(210\,Ba^3\arctan\left(\cos\left(fx+e\right),\sin\left(fx+e\right)+1\right)+210\,Ba^3\arctan\left(\cos\left(fx+e\right),-\sin\left(fx+e\right)+1\right)-30\,(-i\,A-B)a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="maxima")
```

```
[Out] -1/210*(210*B*a^3*arctan2(cos(f*x + e), sin(f*x + e) + 1) + 210*B*a^3*arcta
n2(cos(f*x + e), -sin(f*x + e) + 1) - 30*(-I*A - B)*a^3*cos(7*f*x + 7*e) -
84*B*a^3*cos(5*f*x + 5*e) + 140*B*a^3*cos(3*f*x + 3*e) - 420*B*a^3*cos(f*x
+ e) + 105*I*B*a^3*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1
) - 105*I*B*a^3*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1) -
 (30*A - 30*I*B)*a^3*sin(7*f*x + 7*e) - 84*I*B*a^3*sin(5*f*x + 5*e) + 140*I
*B*a^3*sin(3*f*x + 3*e) - 420*I*B*a^3*sin(f*x + e))*sqrt(a)/(c^(7/2)*f)
```

Fricas [B] time = 1.46666, size = 1075, normalized size = 4.28

$$\frac{105\,c^4f\sqrt{-\frac{B^2a^7}{c^7f^2}}\log\left(\frac{4\left(2\left(Ba^3e^{(2i\,fx+2i\,e)}+Ba^3\right)\sqrt{\frac{a}{e^{(2i\,fx+2i\,e)}+1}}\sqrt{\frac{c}{e^{(2i\,fx+2i\,e)}+1}}e^{(i\,fx+i\,e)}+\left(c^4fe^{(2i\,fx+2i\,e)}-c^4f\right)\sqrt{-\frac{B^2a^7}{c^7f^2}}\right)}{Ba^3e^{(2i\,fx+2i\,e)}+Ba^3}\right)-105\,c^4f\sqrt{-\frac{B^2a^7}{c^7f^2}}\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="fricas")
```

```
[Out] 1/210*(105*c^4*f*sqrt(-B^2*a^7/(c^7*f^2))*log(4*(2*(B*a^3*e^(2*I*f*x + 2*I*
e) + B*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) +
 1))*e^(I*f*x + I*e) + (c^4*f*e^(2*I*f*x + 2*I*e) - c^4*f)*sqrt(-B^2*a^7/(c
^7*f^2)))/(B*a^3*e^(2*I*f*x + 2*I*e) + B*a^3)) - 105*c^4*f*sqrt(-B^2*a^7/(c
^7*f^2))*log(4*(2*(B*a^3*e^(2*I*f*x + 2*I*e) + B*a^3)*sqrt(a/(e^(2*I*f*x +
2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (c^4*f*e^(
2*I*f*x + 2*I*e) - c^4*f)*sqrt(-B^2*a^7/(c^7*f^2)))/(B*a^3*e^(2*I*f*x + 2*I
*e) + B*a^3)) + ((-30*I*A - 30*B)*a^3*e^(8*I*f*x + 8*I*e) + (-30*I*A + 54*B
)*a^3*e^(6*I*f*x + 6*I*e) - 56*B*a^3*e^(4*I*f*x + 4*I*e) + 280*B*a^3*e^(2*I
*f*x + 2*I*e) + 420*B*a^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I
```

```
*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))/(c^4*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(7
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(7/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(7/2), x)
```

3.825 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=102

$$-\frac{(-8B+iA)(a+ia\tan(e+fx))^{7/2}}{63cf(c-ic\tan(e+fx))^{7/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{7/2}}{9f(c-ic\tan(e+fx))^{9/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(9*f*(c - I*c*Tan[e + f*x])^(9/2)
) - ((I*A - 8*B)*(a + I*a*Tan[e + f*x])^(7/2))/(63*c*f*(c - I*c*Tan[e + f*x
])^(7/2))
```

Rubi [A] time = 0.228282, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$-\frac{(-8B+iA)(a+ia\tan(e+fx))^{7/2}}{63cf(c-ic\tan(e+fx))^{7/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{7/2}}{9f(c-ic\tan(e+fx))^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(9/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(9*f*(c - I*c*Tan[e + f*x])^(9/2)
) - ((I*A - 8*B)*(a + I*a*Tan[e + f*x])^(7/2))/(63*c*f*(c - I*c*Tan[e + f*x
])^(7/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{9/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{11/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{9f(c-ic\tan(e+fx))^{9/2}} + \frac{(a(A+8iB))\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}}{(c-icx)^{9/2}}\,dx\right.}{9f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{9f(c-ic\tan(e+fx))^{9/2}} - \frac{(iA-8B)(a+ia\tan(e+fx))^{7/2}}{63cf(c-ic\tan(e+fx))^{7/2}}$$

Mathematica [B] time = 13.7657, size = 335, normalized size = 3.28

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((B-iA)\cos(6fx)\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(9/2),x]
```

```
[Out] (Cos[e + f*x]^4*(((-I)*A + B)*Cos[6*f*x]*(Cos[3*e]/(28*c^5) + ((I/28)*Sin[3
*e])/c^5) + ((-8*I)*A + B)*Cos[8*f*x]*(Cos[5*e]/(126*c^5) + ((I/126)*Sin[5*
e])/c^5) + (A - I*B)*Cos[10*f*x]*(((-I/36)*Cos[7*e])/c^5 + Sin[7*e]/(36*c^5
)) + (A + I*B)*(Cos[3*e]/(28*c^5) + ((I/28)*Sin[3*e])/c^5)*Sin[6*f*x] + (8*
A + I*B)*(Cos[5*e]/(126*c^5) + ((I/126)*Sin[5*e])/c^5)*Sin[8*f*x] + (A - I*
B)*(Cos[7*e]/(36*c^5) + ((I/36)*Sin[7*e])/c^5)*Sin[10*f*x])*Sqrt[Sec[e + f*
x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B
*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*
x]))
```

Maple [A] time = 0.114, size = 134, normalized size = 1.3

$$-\frac{a^3\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(8\,iB\left(\tan\left(fx+e\right)\right)^3+6\,iA\left(\tan\left(fx+e\right)\right)^2+A\left(\tan\left(fx+e\right)\right)^3-6\,iB\tan\left(fx+e\right)+15\,B\left(\right.}{63\,fc^5\left(\tan\left(fx+e\right)+i\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2),x)
```

```
[Out] -1/63/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^5*(1+
tan(f*x+e)^2)*(8*I*B*tan(f*x+e)^3+6*I*A*tan(f*x+e)^2+A*tan(f*x+e)^3-6*I*B*t
an(f*x+e)+15*B*tan(f*x+e)^2-8*I*A+15*A*tan(f*x+e)+B)/(tan(f*x+e)+I)^6
```

Maxima [B] time = 2.76656, size = 225, normalized size = 2.21

$$-\frac{\left((882\,A-882i\,B)a^3\cos\left(11\,fx+11\,e\right)+(2016\,A+252i\,B)a^3\cos\left(9\,fx+9\,e\right)+(1134\,A+1134i\,B)a^3\cos\left(7\,fx+7\,e\right)\right.}{\left(-15876i\,c^5\cos\left(2\,fx+2\,e\right)+1587\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="maxima")
```

```
[Out] -((882*A - 882*I*B)*a^3*cos(11*f*x + 11*e) + (2016*A + 252*I*B)*a^3*cos(9*f
*x + 9*e) + (1134*A + 1134*I*B)*a^3*cos(7*f*x + 7*e) - 882*(-I*A - B)*a^3*s
in(11*f*x + 11*e) - 252*(-8*I*A + B)*a^3*sin(9*f*x + 9*e) - 1134*(-I*A + B)
*a^3*sin(7*f*x + 7*e))*sqrt(a)*sqrt(c)/((-15876*I*c^5*cos(2*f*x + 2*e) + 15
876*c^5*sin(2*f*x + 2*e) - 15876*I*c^5)*f)
```

Fricas [A] time = 1.41371, size = 304, normalized size = 2.98

$$\frac{\left((-7i\,A-7\,B)a^3e^{\left(10i\,fx+10i\,e\right)}+(-16i\,A+2\,B)a^3e^{\left(8i\,fx+8i\,e\right)}+(-9i\,A+9\,B)a^3e^{\left(6i\,fx+6i\,e\right)}\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\right.}}{126\,c^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="fricas")
```

```
[Out] 1/126*((-7*I*A - 7*B)*a^3*e^(10*I*f*x + 10*I*e) + (-16*I*A + 2*B)*a^3*e^(8*
I*f*x + 8*I*e) + (-9*I*A + 9*B)*a^3*e^(6*I*f*x + 6*I*e))*sqrt(a/(e^(2*I*f*x
 + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^5*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(9
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(9/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(9/2), x)
```

3.826 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{11/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{(-9B+2iA)(a+ia\tan(e+fx))^{7/2}}{693c^2f(c-ic\tan(e+fx))^{7/2}}-\frac{(-9B+2iA)(a+ia\tan(e+fx))^{7/2}}{99cf(c-ic\tan(e+fx))^{9/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{7/2}}{11f(c-ic\tan(e+fx))^{11/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(11*f*(c - I*c*Tan[e + f*x])^(11/
2)) - (((2*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(7/2))/(99*c*f*(c - I*c*Tan[e
 + f*x])^(9/2)) - (((2*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(7/2))/(693*c^2*f
*(c - I*c*Tan[e + f*x])^(7/2))
```

Rubi [A] time = 0.263789, antiderivative size = 155, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{(-9B+2iA)(a+ia\tan(e+fx))^{7/2}}{693c^2f(c-ic\tan(e+fx))^{7/2}}-\frac{(-9B+2iA)(a+ia\tan(e+fx))^{7/2}}{99cf(c-ic\tan(e+fx))^{9/2}}-\frac{(B+iA)(a+ia\tan(e+fx))^{7/2}}{11f(c-ic\tan(e+fx))^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(11/2),x]
```


```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(11*f*(c - I*c*Tan[e + f*x])^(11/
2)) - (((2*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(7/2))/(99*c*f*(c - I*c*Tan[e
 + f*x])^(9/2)) - (((2*I)*A - 9*B)*(a + I*a*Tan[e + f*x])^(7/2))/(693*c^2*f
*(c - I*c*Tan[e + f*x])^(7/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{11/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{13/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{11f(c-ic\tan(e+fx))^{11/2}} + \frac{(a(2A+9iB))\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}}{(c-icx)^{11/2}}\right.}{11f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(2iA-9B)(a+ia\tan(e+fx))^{7/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{11f(c-ic\tan(e+fx))^{11/2}} - \frac{(2iA-9B)(a+ia\tan(e+fx))^{7/2}}{99cf(c-ic\tan(e+fx))^{9/2}}$$

Mathematica [B] time = 15.7224, size = 417, normalized size = 2.69

$$\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((B-iA)\cos(6fx)\left(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(11/2),x]
```

```
[Out] (Cos[e + f*x]^4*(((-I)*A + B)*Cos[6*f*x]*(Cos[3*e]/(56*c^6) + ((I/56)*Sin[3
*e])/c^6) + ((-23*I)*A + 9*B)*Cos[8*f*x]*(Cos[5*e]/(504*c^6) + ((I/504)*Sin
[5*e])/c^6) + (31*A - (9*I)*B)*Cos[10*f*x]*(((-I/792)*Cos[7*e])/c^6 + Sin[7
*e]/(792*c^6)) + (A - I*B)*Cos[12*f*x]*(((-I/88)*Cos[9*e])/c^6 + Sin[9*e]/(
88*c^6)) + (A + I*B)*(Cos[3*e]/(56*c^6) + ((I/56)*Sin[3*e])/c^6)*Sin[6*f*x]
 + (23*A + (9*I)*B)*(Cos[5*e]/(504*c^6) + ((I/504)*Sin[5*e])/c^6)*Sin[8*f*x
] + (31*A - (9*I)*B)*(Cos[7*e]/(792*c^6) + ((I/792)*Sin[7*e])/c^6)*Sin[10*f
*x] + (A - I*B)*(Cos[9*e]/(88*c^6) + ((I/88)*Sin[9*e])/c^6)*Sin[12*f*x])*Sq
rt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])
^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] +
 B*Sin[e + f*x]))
```

Maple [A] time = 0.11, size = 161, normalized size = 1.

$$\frac{\frac{i}{693}a^3\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(2\,iA\left(\tan\left(fx+e\right)\right)^4-63\,iB\left(\tan\left(fx+e\right)\right)^3-9\,B\left(\tan\left(fx+e\right)\right)^4-45\,iA\left(\tan\left(fx+e\right)\right)^2\right.}{fc^6\left(\tan\left(fx+e\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/2),x)
```

```
[Out] 1/693*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^6*(
1+tan(f*x+e)^2)*(2*I*A*tan(f*x+e)^4-63*I*B*tan(f*x+e)^3-9*B*tan(f*x+e)^4-45
*I*A*tan(f*x+e)^2-14*A*tan(f*x+e)^3+63*I*B*tan(f*x+e)-144*B*tan(f*x+e)^2+79
*I*A-140*A*tan(f*x+e)-9*B)/(tan(f*x+e)+I)^7
```

Maxima [A] time = 3.05426, size = 270, normalized size = 1.74

$$\left(63\,(-i\,A-B)a^3\cos\left(\frac{11}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)-154i\,Aa^3\cos\left(\frac{9}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="maxima")
```

```
[Out] 1/2772*(63*(-I*A - B)*a^3*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) - 154*I*A*a^3*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 9
9*(-I*A + B)*a^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (63
*A - 63*I*B)*a^3*sin(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 15
4*A*a^3*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (99*A + 99*I
*B)*a^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)/(c^(1
1/2)*f)
```

Fricas [A] time = 1.41822, size = 375, normalized size = 2.42

$$\frac{\left((-63i\,A-63\,B)a^3e^{\left(12i\,fx+12i\,e\right)}+(-217i\,A-63\,B)a^3e^{\left(10i\,fx+10i\,e\right)}+(-253i\,A+99\,B)a^3e^{\left(8i\,fx+8i\,e\right)}+(-99i\,A+99\,B)a^3e^{\left(6i\right.}}{2772\,c^6 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="fricas")
```

```
[Out] 1/2772*((-63*I*A - 63*B)*a^3*e^(12*I*f*x + 12*I*e) + (-217*I*A - 63*B)*a^3*
e^(10*I*f*x + 10*I*e) + (-253*I*A + 99*B)*a^3*e^(8*I*f*x + 8*I*e) + (-99*I*
A + 99*B)*a^3*e^(6*I*f*x + 6*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c
/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)/(c^6*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
1/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(11/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(11/2), x)
```

3.827 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{13/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{2(-10B+3iA)(a+ia\tan(e+fx))^{7/2}}{9009c^3f(c-ic\tan(e+fx))^{7/2}}-\frac{2(-10B+3iA)(a+ia\tan(e+fx))^{7/2}}{1287c^2f(c-ic\tan(e+fx))^{9/2}}-\frac{(-10B+3iA)(a+ia\tan(e+fx))^{7/2}}{143cf(c-ic\tan(e+fx))^{11/2}}-$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(13*f*(c - I*c*Tan[e + f*x])^(13/
2)) - (((3*I)*A - 10*B)*(a + I*a*Tan[e + f*x])^(7/2))/(143*c*f*(c - I*c*Tan
[e + f*x])^(11/2)) - (2*((3*I)*A - 10*B)*(a + I*a*Tan[e + f*x])^(7/2))/(128
7*c^2*f*(c - I*c*Tan[e + f*x])^(9/2)) - (2*((3*I)*A - 10*B)*(a + I*a*Tan[e
+ f*x])^(7/2))/(9009*c^3*f*(c - I*c*Tan[e + f*x])^(7/2))
```

Rubi [A] time = 0.285863, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-10B+3iA)(a+ia\tan(e+fx))^{7/2}}{9009c^3f(c-ic\tan(e+fx))^{7/2}}-\frac{2(-10B+3iA)(a+ia\tan(e+fx))^{7/2}}{1287c^2f(c-ic\tan(e+fx))^{9/2}}-\frac{(-10B+3iA)(a+ia\tan(e+fx))^{7/2}}{143cf(c-ic\tan(e+fx))^{11/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(13/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(13*f*(c - I*c*Tan[e + f*x])^(13/
2)) - (((3*I)*A - 10*B)*(a + I*a*Tan[e + f*x])^(7/2))/(143*c*f*(c - I*c*Tan
[e + f*x])^(11/2)) - (2*((3*I)*A - 10*B)*(a + I*a*Tan[e + f*x])^(7/2))/(128
7*c^2*f*(c - I*c*Tan[e + f*x])^(9/2)) - (2*((3*I)*A - 10*B)*(a + I*a*Tan[e
+ f*x])^(7/2))/(9009*c^3*f*(c - I*c*Tan[e + f*x])^(7/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{13/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{15/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{13f(c-ic\tan(e+fx))^{13/2}} + \frac{(a(3A+10iB))\,\text{Subst}\left(\int \frac{(a+iax)^{5/2}}{(c-icx)^{1}}\right.}{13f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(3iA-10B)(a+ia\tan(e+fx))}{143cf(c-ic\tan(e+fx))^{11/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(3iA-10B)(a+ia\tan(e+fx))}{143cf(c-ic\tan(e+fx))^{11/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{13f(c-ic\tan(e+fx))^{13/2}} - \frac{(3iA-10B)(a+ia\tan(e+fx))}{143cf(c-ic\tan(e+fx))^{11/2}}$$

Mathematica [B] time = 17.0674, size = 495, normalized size = 2.38

$$\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((B-iA)\cos(6fx)\left(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(13/2),x]
```

```
[Out] (Cos[e + f*x]^4*(((-I)*A + B)*Cos[6*f*x]*(Cos[3*e]/(112*c^7) + ((I/112)*Sin
[3*e])/c^7) + ((-15*I)*A + 8*B)*Cos[8*f*x]*(Cos[5*e]/(504*c^7) + ((I/504)*S
in[5*e])/c^7) + ((-30*I)*A + B)*Cos[10*f*x]*(Cos[7*e]/(792*c^7) + ((I/792)*
Sin[7*e])/c^7) + (25*A - (12*I)*B)*Cos[12*f*x]*(((-I/1144)*Cos[9*e])/c^7 +
Sin[9*e]/(1144*c^7)) + (A - I*B)*Cos[14*f*x]*(((-I/208)*Cos[11*e])/c^7 + Si
n[11*e]/(208*c^7)) + (A + I*B)*(Cos[3*e]/(112*c^7) + ((I/112)*Sin[3*e])/c^7
)*Sin[6*f*x] + (15*A + (8*I)*B)*(Cos[5*e]/(504*c^7) + ((I/504)*Sin[5*e])/c^
7)*Sin[8*f*x] + (30*A + I*B)*(Cos[7*e]/(792*c^7) + ((I/792)*Sin[7*e])/c^7)*
Sin[10*f*x] + (25*A - (12*I)*B)*(Cos[9*e]/(1144*c^7) + ((I/1144)*Sin[9*e])/
c^7)*Sin[12*f*x] + (A - I*B)*(Cos[11*e]/(208*c^7) + ((I/208)*Sin[11*e])/c^7
)*Sin[14*f*x])*Sqrt[Sec[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a +
I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*
(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.114, size = 184, normalized size = 0.9

$$\frac{i}{9009}a^3\left(1+(\tan(fx+e))^2\right)\left(6\,iA(\tan(fx+e))^5-160\,iB(\tan(fx+e))^4-20\,B(\tan(fx+e))^5-177\,iA(\tan(fx+e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/2),x)
```

```
[Out] 1/9009*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^7*
(1+tan(f*x+e)^2)*(6*I*A*tan(f*x+e)^5-160*I*B*tan(f*x+e)^4-20*B*tan(f*x+e)^5
-177*I*A*tan(f*x+e)^3-48*A*tan(f*x+e)^4-1643*I*B*tan(f*x+e)^2+590*B*tan(f*x
+e)^3-1569*I*A*tan(f*x+e)+408*A*tan(f*x+e)^2-97*I*B-776*B*tan(f*x+e)-930*A)
/(tan(f*x+e)+I)^8
```

Maxima [A] time = 3.11868, size = 373, normalized size = 1.79

$$\frac{\left(693\,(-i\,A-B)a^3\cos\left(\frac{13}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)+819\,(-3i\,A-B)a^3\cos\left(\frac{11}{2}\,\arctan\left(\sin\left(2\,fx+\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/
2),x, algorithm="maxima")
```

```
[Out] 1/72072*(693*(-I*A - B)*a^3*cos(13/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + 819*(-3*I*A - B)*a^3*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 1001*(-3*I*A + B)*a^3*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 1287*(-I*A + B)*a^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + (693*A - 693*I*B)*a^3*sin(13/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + (2457*A - 819*I*B)*a^3*sin(11/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + (3003*A + 1001*I*B)*a^3*sin(9/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) + (1287*A + 1287*I*B)*a^3*sin(7/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))))*sqrt(a)/(c^(13/2)*f)
```

Fricas [A] time = 1.30005, size = 458, normalized size = 2.2

$$\frac{\left((-693i\,A-693\,B)a^3e^{(14i\,fx+14i\,e)}+(-3150i\,A-1512\,B)a^3e^{(12i\,fx+12i\,e)}+(-5460i\,A+182\,B)a^3e^{(10i\,fx+10i\,e)}+(-4290i\,A\right.}{72072\,c^7f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/
2),x, algorithm="fricas")
```

```
[Out] 1/72072*((-693*I*A - 693*B)*a^3*e^(14*I*f*x + 14*I*e) + (-3150*I*A - 1512*B
)*a^3*e^(12*I*f*x + 12*I*e) + (-5460*I*A + 182*B)*a^3*e^(10*I*f*x + 10*I*e)
 + (-4290*I*A + 2288*B)*a^3*e^(8*I*f*x + 8*I*e) + (-1287*I*A + 1287*B)*a^3*
e^(6*I*f*x + 6*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x +
 2*I*e) + 1))*e^(I*f*x + I*e)/(c^7*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
3/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(13/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(13/2), x)
```

3.828 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{15/2}}\,dx$

Optimal. Leaf size=261

$$-\frac{2(-11B+4iA)(a+ia\tan(e+fx))^{7/2}}{45045c^4f(c-ic\tan(e+fx))^{7/2}}-\frac{2(-11B+4iA)(a+ia\tan(e+fx))^{7/2}}{6435c^3f(c-ic\tan(e+fx))^{9/2}}-\frac{(-11B+4iA)(a+ia\tan(e+fx))^{7/2}}{715c^2f(c-ic\tan(e+fx))^{11/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(15*f*(c - I*c*Tan[e + f*x])^(15/
2)) - (((4*I)*A - 11*B)*(a + I*a*Tan[e + f*x])^(7/2))/(195*c*f*(c - I*c*Tan
[e + f*x])^(13/2)) - (((4*I)*A - 11*B)*(a + I*a*Tan[e + f*x])^(7/2))/(715*c
^2*f*(c - I*c*Tan[e + f*x])^(11/2)) - (2*((4*I)*A - 11*B)*(a + I*a*Tan[e +
f*x])^(7/2))/(6435*c^3*f*(c - I*c*Tan[e + f*x])^(9/2)) - (2*((4*I)*A - 11*B
)*(a + I*a*Tan[e + f*x])^(7/2))/(45045*c^4*f*(c - I*c*Tan[e + f*x])^(7/2))
```

Rubi [A] time = 0.315509, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-11B+4iA)(a+ia\tan(e+fx))^{7/2}}{45045c^4f(c-ic\tan(e+fx))^{7/2}}-\frac{2(-11B+4iA)(a+ia\tan(e+fx))^{7/2}}{6435c^3f(c-ic\tan(e+fx))^{9/2}}-\frac{(-11B+4iA)(a+ia\tan(e+fx))^{7/2}}{715c^2f(c-ic\tan(e+fx))^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(15/2),x]
```


```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(15*f*(c - I*c*Tan[e + f*x])^(15/
2)) - (((4*I)*A - 11*B)*(a + I*a*Tan[e + f*x])^(7/2))/(195*c*f*(c - I*c*Tan
[e + f*x])^(13/2)) - (((4*I)*A - 11*B)*(a + I*a*Tan[e + f*x])^(7/2))/(715*c
^2*f*(c - I*c*Tan[e + f*x])^(11/2)) - (2*((4*I)*A - 11*B)*(a + I*a*Tan[e +
f*x])^(7/2))/(6435*c^3*f*(c - I*c*Tan[e + f*x])^(9/2)) - (2*((4*I)*A - 11*B
)*(a + I*a*Tan[e + f*x])^(7/2))/(45045*c^4*f*(c - I*c*Tan[e + f*x])^(7/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{15/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{17/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{15f(c-ic\tan(e+fx))^{15/2}} + \frac{(a(4A+11iB))\,\mathrm{Subst}\left(\int \frac{(a+iax)^{5}}{(c-icx)^{1}}\right.}{15f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{15f(c-ic\tan(e+fx))^{15/2}} - \frac{(4iA-11B)(a+ia\tan(e+fx))}{195cf(c-ic\tan(e+fx))^{13/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{15f(c-ic\tan(e+fx))^{15/2}} - \frac{(4iA-11B)(a+ia\tan(e+fx))}{195cf(c-ic\tan(e+fx))^{13/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{15f(c-ic\tan(e+fx))^{15/2}} - \frac{(4iA-11B)(a+ia\tan(e+fx))}{195cf(c-ic\tan(e+fx))^{13/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{15f(c-ic\tan(e+fx))^{15/2}} - \frac{(4iA-11B)(a+ia\tan(e+fx))}{195cf(c-ic\tan(e+fx))^{13/2}}$$

Mathematica [B] time = 17.3174, size = 577, normalized size = 2.21

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\left((B-iA)\cos(6fx)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(15/2),x]
```

```
[Out] (Cos[e + f*x]^4*(((-I)*A + B)*Cos[6*f*x]*(Cos[3*e]/(224*c^8) + ((I/224)*Sin
[3*e])/c^8) + ((-37*I)*A + 23*B)*Cos[8*f*x]*(Cos[5*e]/(2016*c^8) + ((I/2016
)*Sin[5*e])/c^8) + ((-49*I)*A + 11*B)*Cos[10*f*x]*(Cos[7*e]/(1584*c^8) + ((
I/1584)*Sin[7*e])/c^8) + (61*A - (11*I)*B)*Cos[12*f*x]*(((-I/2288)*Cos[9*e]
)/c^8 + Sin[9*e]/(2288*c^8)) + (73*A - (43*I)*B)*Cos[14*f*x]*(((-I/6240)*Co
s[11*e])/c^8 + Sin[11*e]/(6240*c^8)) + (A - I*B)*Cos[16*f*x]*(((-I/480)*Cos
[13*e])/c^8 + Sin[13*e]/(480*c^8)) + (A + I*B)*(Cos[3*e]/(224*c^8) + ((I/22
4)*Sin[3*e])/c^8)*Sin[6*f*x] + (37*A + (23*I)*B)*(Cos[5*e]/(2016*c^8) + ((I
/2016)*Sin[5*e])/c^8)*Sin[8*f*x] + (49*A + (11*I)*B)*(Cos[7*e]/(1584*c^8) +
 ((I/1584)*Sin[7*e])/c^8)*Sin[10*f*x] + (61*A - (11*I)*B)*(Cos[9*e]/(2288*c
^8) + ((I/2288)*Sin[9*e])/c^8)*Sin[12*f*x] + (73*A - (43*I)*B)*(Cos[11*e]/(
6240*c^8) + ((I/6240)*Sin[11*e])/c^8)*Sin[14*f*x] + (A - I*B)*(Cos[13*e]/(4
80*c^8) + ((I/480)*Sin[13*e])/c^8)*Sin[16*f*x])*Sqrt[Sec[e + f*x]*(c*Cos[e
```

```
+ f*x] - I*c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x
]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin[e + f*x]))
```

Maple [A] time = 0.122, size = 206, normalized size = 0.8

$$-\frac{a^3\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(22\,iB\left(\tan\left(fx+e\right)\right)^6+72\,iA\left(\tan\left(fx+e\right)\right)^5+8\,A\left(\tan\left(fx+e\right)\right)^6-825\,iB\left(\tan\left(fx+e\right)\right)^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(15/2),x)
```

```
[Out] -1/45045/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^8*
(1+tan(f*x+e)^2)*(22*I*B*tan(f*x+e)^6+72*I*A*tan(f*x+e)^5+8*A*tan(f*x+e)^6-
825*I*B*tan(f*x+e)^4-198*B*tan(f*x+e)^5-780*I*A*tan(f*x+e)^3-300*A*tan(f*x+
e)^4-7260*I*B*tan(f*x+e)^2+2145*B*tan(f*x+e)^3-6858*I*A*tan(f*x+e)+1455*A*t
an(f*x+e)^2-407*I*B-3663*B*tan(f*x+e)-4243*A)/(tan(f*x+e)+I)^9
```

Maxima [A] time = 3.28053, size = 448, normalized size = 1.72

$$\frac{\left(3003\left(-i\,A-B\right)a^3\cos\left(\frac{15}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)\right)\right)+6930\left(-2i\,A-B\right)a^3\cos\left(\frac{13}{2}\,\arctan\left(\sin\left(2\,fx+\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(15/
2),x, algorithm="maxima")
```

```
[Out] 1/720720*(3003*(-I*A - B)*a^3*cos(15/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 6930*(-2*I*A - B)*a^3*cos(13/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) - 24570*I*A*a^3*cos(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + 10010*(-2*I*A + B)*a^3*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + 6435*(-I*A + B)*a^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + (3003*A - 3003*I*B)*a^3*sin(15/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + (13860*A - 6930*I*B)*a^3*sin(13/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + 24570*A*a^3*sin(11/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + (20020*A + 10010*I*B)*a^3*sin(9/2*arctan2(sin(2*f*x + 2*e),
```

```
 cos(2*f*x + 2*e))) + (6435*A + 6435*I*B)*a^3*sin(7/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))))*sqrt(a)/(c^(15/2)*f)
```

Fricas [A] time = 1.41013, size = 537, normalized size = 2.06

$$\frac{\left((-3003i\,A-3003\,B)a^3e^{(16i\,fx+16i\,e)}+(-16863i\,A-9933\,B)a^3e^{(14i\,fx+14i\,e)}+(-38430i\,A-6930\,B)a^3e^{(12i\,fx+12i\,e)}+(-4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(15/
2),x, algorithm="fricas")
```

```
[Out] 1/720720*((-3003*I*A - 3003*B)*a^3*e^(16*I*f*x + 16*I*e) + (-16863*I*A - 99
33*B)*a^3*e^(14*I*f*x + 14*I*e) + (-38430*I*A - 6930*B)*a^3*e^(12*I*f*x + 1
2*I*e) + (-44590*I*A + 10010*B)*a^3*e^(10*I*f*x + 10*I*e) + (-26455*I*A + 1
6445*B)*a^3*e^(8*I*f*x + 8*I*e) + (-6435*I*A + 6435*B)*a^3*e^(6*I*f*x + 6*I
*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^
(I*f*x + I*e)/(c^8*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
5/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(15/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(15/2), x)
```

3.829 $\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{17/2}}\,dx$

Optimal. Leaf size=314

$$-\frac{8(-12B+5iA)(a+ia\tan(e+fx))^{7/2}}{765765c^5f(c-ic\tan(e+fx))^{7/2}}-\frac{8(-12B+5iA)(a+ia\tan(e+fx))^{7/2}}{109395c^4f(c-ic\tan(e+fx))^{9/2}}-\frac{4(-12B+5iA)(a+ia\tan(e+fx))^{7/2}}{12155c^3f(c-ic\tan(e+fx))^{11/2}}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(17*f*(c - I*c*Tan[e + f*x])^(17/
2)) - (((5*I)*A - 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(255*c*f*(c - I*c*Tan
[e + f*x])^(15/2)) - (4*((5*I)*A - 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(331
5*c^2*f*(c - I*c*Tan[e + f*x])^(13/2)) - (4*((5*I)*A - 12*B)*(a + I*a*Tan[e
 + f*x])^(7/2))/(12155*c^3*f*(c - I*c*Tan[e + f*x])^(11/2)) - (8*((5*I)*A -
 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(109395*c^4*f*(c - I*c*Tan[e + f*x])^(
9/2)) - (8*((5*I)*A - 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(765765*c^5*f*(c
- I*c*Tan[e + f*x])^(7/2))
```

Rubi [A] time = 0.353886, antiderivative size = 314, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{8(-12B+5iA)(a+ia\tan(e+fx))^{7/2}}{765765c^5f(c-ic\tan(e+fx))^{7/2}}-\frac{8(-12B+5iA)(a+ia\tan(e+fx))^{7/2}}{109395c^4f(c-ic\tan(e+fx))^{9/2}}-\frac{4(-12B+5iA)(a+ia\tan(e+fx))^{7/2}}{12155c^3f(c-ic\tan(e+fx))^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[e + f*
x])^(17/2),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(7/2))/(17*f*(c - I*c*Tan[e + f*x])^(17/
2)) - (((5*I)*A - 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(255*c*f*(c - I*c*Tan
[e + f*x])^(15/2)) - (4*((5*I)*A - 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(331
5*c^2*f*(c - I*c*Tan[e + f*x])^(13/2)) - (4*((5*I)*A - 12*B)*(a + I*a*Tan[e
 + f*x])^(7/2))/(12155*c^3*f*(c - I*c*Tan[e + f*x])^(11/2)) - (8*((5*I)*A -
 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(109395*c^4*f*(c - I*c*Tan[e + f*x])^(
9/2)) - (8*((5*I)*A - 12*B)*(a + I*a*Tan[e + f*x])^(7/2))/(765765*c^5*f*(c
- I*c*Tan[e + f*x])^(7/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))}{(c-ic\tan(e+fx))^{17/2}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{(a+iax)^{5/2}(A+Bx)}{(c-icx)^{19/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{17f(c-ic\tan(e+fx))^{17/2}} + \frac{(a(5A+12iB))\operatorname{Subst}\left(\int \frac{(a+iax)^{5}}{(c-icx)^{1}}\right.}{17f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{17f(c-ic\tan(e+fx))^{17/2}} - \frac{(5iA-12B)(a+ia\tan(e+fx))}{255cf(c-ic\tan(e+fx))^{15/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{17f(c-ic\tan(e+fx))^{17/2}} - \frac{(5iA-12B)(a+ia\tan(e+fx))}{255cf(c-ic\tan(e+fx))^{15/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{17f(c-ic\tan(e+fx))^{17/2}} - \frac{(5iA-12B)(a+ia\tan(e+fx))}{255cf(c-ic\tan(e+fx))^{15/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{17f(c-ic\tan(e+fx))^{17/2}} - \frac{(5iA-12B)(a+ia\tan(e+fx))}{255cf(c-ic\tan(e+fx))^{15/2}}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{7/2}}{17f(c-ic\tan(e+fx))^{17/2}} - \frac{(5iA-12B)(a+ia\tan(e+fx))}{255cf(c-ic\tan(e+fx))^{15/2}}$$

Mathematica [B] time = 17.7227, size = 655, normalized size = 2.09

$$\frac{\cos^4(e+fx)(a+ia\tan(e+fx))^{7/2}(A+B\tan(e+fx))\sqrt{\sec(e+fx)(c\cos(e+fx)-ic\sin(e+fx))}\Big((B-iA)\cos(6fx)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + I*a*Tan[e + f*x])^(7/2)*(A + B*Tan[e + f*x]))/(c - I*c*Tan[
e + f*x])^(17/2),x]
```

```
[Out] (Cos[e + f*x]^4*(((-I)*A + B)*Cos[6*f*x]*(Cos[3*e]/(448*c^9) + ((I/448)*Sin
[3*e])/c^9) + ((-22*I)*A + 15*B)*Cos[8*f*x]*(Cos[5*e]/(2016*c^9) + ((I/2016
)*Sin[5*e])/c^9) + ((-145*I)*A + 51*B)*Cos[10*f*x]*(Cos[7*e]/(6336*c^9) + (
(I/6336)*Sin[7*e])/c^9) + ((-60*I)*A + B)*Cos[12*f*x]*(Cos[9*e]/(2288*c^9)
+ ((I/2288)*Sin[9*e])/c^9) + (215*A - (69*I)*B)*Cos[14*f*x]*(((-I/12480)*Co
s[11*e])/c^9 + Sin[11*e]/(12480*c^9)) + (50*A - (33*I)*B)*Cos[16*f*x]*(((-I
/8160)*Cos[13*e])/c^9 + Sin[13*e]/(8160*c^9)) + (A - I*B)*Cos[18*f*x]*(((-I
/1088)*Cos[15*e])/c^9 + Sin[15*e]/(1088*c^9)) + (A + I*B)*(Cos[3*e]/(448*c^
9) + ((I/448)*Sin[3*e])/c^9)*Sin[6*f*x] + (22*A + (15*I)*B)*(Cos[5*e]/(2016
*c^9) + ((I/2016)*Sin[5*e])/c^9)*Sin[8*f*x] + (145*A + (51*I)*B)*(Cos[7*e]/
```

```
(6336*c^9) + ((I/6336)*Sin[7*e])/c^9)*Sin[10*f*x] + (60*A + I*B)*(Cos[9*e]/
(2288*c^9) + ((I/2288)*Sin[9*e])/c^9)*Sin[12*f*x] + (215*A - (69*I)*B)*(Cos
[11*e]/(12480*c^9) + ((I/12480)*Sin[11*e])/c^9)*Sin[14*f*x] + (50*A - (33*I
)*B)*(Cos[13*e]/(8160*c^9) + ((I/8160)*Sin[13*e])/c^9)*Sin[16*f*x] + (A - I
*B)*(Cos[15*e]/(1088*c^9) + ((I/1088)*Sin[15*e])/c^9)*Sin[18*f*x])*Sqrt[Sec
[e + f*x]*(c*Cos[e + f*x] - I*c*Sin[e + f*x])]*(a + I*a*Tan[e + f*x])^(7/2)
*(A + B*Tan[e + f*x]))/(f*(Cos[f*x] + I*Sin[f*x])^3*(A*Cos[e + f*x] + B*Sin
[e + f*x]))
```

Maple [A] time = 0.124, size = 230, normalized size = 0.7

$$\frac{\frac{i}{765765}a^3\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(109881\,iB\left(\tan\left(fx+e\right)\right)^2+5871\,iB-96\,B\left(\tan\left(fx+e\right)\right)^7+40\,iA\left(\tan\left(fx+e\right)\right)^7-40\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(17/2),x)
```

```
[Out] 1/765765*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)*a^3/c^
9*(1+tan(f*x+e)^2)*(109881*I*B*tan(f*x+e)^2+5871*I*B-96*B*tan(f*x+e)^7+40*I
*A*tan(f*x+e)^7-400*A*tan(f*x+e)^6-960*I*B*tan(f*x+e)^6+4464*B*tan(f*x+e)^5
+103165*I*A*tan(f*x+e)+5400*A*tan(f*x+e)^4+12960*I*B*tan(f*x+e)^4-26820*B*t
an(f*x+e)^3-1860*I*A*tan(f*x+e)^5-18030*A*tan(f*x+e)^2+11175*I*A*tan(f*x+e)
^3+58710*B*tan(f*x+e)+66260*A)/(tan(f*x+e)+I)^10
```

Maxima [A] time = 3.40804, size = 554, normalized size = 1.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(17/
2),x, algorithm="maxima")
```

```
[Out] 1/24504480*(45045*(-I*A - B)*a^3*cos(17/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 51051*(-5*I*A - 3*B)*a^3*cos(15/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 117810*(-5*I*A - B)*a^3*cos(13/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + 139230*(-5*I*A + B)*a^3*cos(11/2*arctan2(sin(2*f*x
```

```
 + 2*e), cos(2*f*x + 2*e))) + 85085*(-5*I*A + 3*B)*a^3*cos(9/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) + 109395*(-I*A + B)*a^3*cos(7/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + (45045*A - 45045*I*B)*a^3*sin(17/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (255255*A - 153153*I*B)*a^3*sin
(15/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (589050*A - 117810*I*B
)*a^3*sin(13/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (696150*A + 1
39230*I*B)*a^3*sin(11/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (425
425*A + 255255*I*B)*a^3*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) + (109395*A + 109395*I*B)*a^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))))*sqrt(a)/(c^(17/2)*f)
```

Fricas [A] time = 1.43199, size = 635, normalized size = 2.02

$$\frac{\left((-45045i\,A - 45045\,B)a^3e^{\left(18i\,fx+18i\,e\right)} + (-300300i\,A - 198198\,B)a^3e^{\left(16i\,fx+16i\,e\right)} + (-844305i\,A - 270963\,B)a^3e^{\left(14i\,fx+1\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(17/
2),x, algorithm="fricas")
```

```
[Out] 1/24504480*((-45045*I*A - 45045*B)*a^3*e^(18*I*f*x + 18*I*e) + (-300300*I*A
 - 198198*B)*a^3*e^(16*I*f*x + 16*I*e) + (-844305*I*A - 270963*B)*a^3*e^(14
*I*f*x + 14*I*e) + (-1285200*I*A + 21420*B)*a^3*e^(12*I*f*x + 12*I*e) + (-1
121575*I*A + 394485*B)*a^3*e^(10*I*f*x + 10*I*e) + (-534820*I*A + 364650*B)
*a^3*e^(8*I*f*x + 8*I*e) + (-109395*I*A + 109395*B)*a^3*e^(6*I*f*x + 6*I*e)
)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*
f*x + I*e)/(c^9*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1
7/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^{\frac{7}{2}}}{\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{17}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(7/2)*(A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(17/
2),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(7/2)/(-I*c*tan(f*x +
 e) + c)^(17/2), x)
```

3.830 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{\sqrt{a+ia\tan(e+fx)}}\,dx$

Optimal. Leaf size=228

$$\frac{3c^{5/2}(-3B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f}+\frac{3c^2(-3B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2af}+\frac{c(-3B+2iA)\sqrt{}}{}$$

```
[Out] (3*((2*I)*A - 3*B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[a]*f) + (3*((2*I)*A - 3*B)*c^2*Sqr
t[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*a*f) + (((2*I)*A - 3
*B)*c*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(2*a*f) + ((
I*A - B)*(c - I*c*Tan[e + f*x])^(5/2))/(f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rubi [A] time = 0.296598, antiderivative size = 228, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 50, 63, 217, 203}

$$\frac{3c^{5/2}(-3B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f}+\frac{3c^2(-3B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2af}+\frac{c(-3B+2iA)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/Sqrt[a + I*a*Tan[e
+ f*x]],x]
```



```
[Out] (3*((2*I)*A - 3*B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[a]*f) + (3*((2*I)*A - 3*B)*c^2*Sqr
t[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*a*f) + (((2*I)*A - 3
*B)*c*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(2*a*f) + ((
I*A - B)*(c - I*c*Tan[e + f*x])^(5/2))/(f*Sqrt[a + I*a*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{\sqrt{a+ia\tan(e+fx)}}dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{(a+iax)^{3/2}}dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{f\sqrt{a+ia\tan(e+fx)}} - \frac{((2A+3iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{3/2}}{\sqrt{a+iax}}dx\right.}{f}$$

$$= \frac{(2iA-3B)c\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}{2af} + \frac{(iA-B)(c}{f\sqrt{a+}}$$

$$= \frac{3(2iA-3B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2af} + \frac{(2iA-3B)}{}$$

$$= \frac{3(2iA-3B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2af} + \frac{(2iA-3B)}{}$$

$$= \frac{3(2iA-3B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2af} + \frac{(2iA-3B)}{}$$

$$= \frac{3(2iA-3B)c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f} + \frac{3(2iA-3B)c^2\sqrt{a+ia\,\text{ta}}}{}$$

Mathematica [A] time = 8.249, size = 185, normalized size = 0.81

$$-\frac{c^3\sec(e+fx)(\cos(fx)+i\sin(fx))\left(6(3B-2iA)(\cos(fx)-i\sin(fx))\tan^{-1}(\cos(e+fx)+i\sin(e+fx))+\frac{1}{2}\sec^2(e+\right.}{2f\sqrt{a+ia\tan(e+fx)}\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/Sqrt[a + I*a*
Tan[e + f*x]],x]
```

```
[Out] -(c^3*Sec[e + f*x]*(Cos[f*x] + I*Sin[f*x])*(6*((-2*I)*A + 3*B)*ArcTan[Cos[e
 + f*x] + I*Sin[e + f*x]]*(Cos[f*x] - I*Sin[f*x]) + (Sec[e + f*x]^2*(5*((-2
*I)*A + 3*B) + ((-10*I)*A + 13*B)*Cos[2*(e + f*x)] + (2*A + (5*I)*B)*Sin[2*
(e + f*x)])*(Cos[e + 2*f*x] - I*Sin[e + 2*f*x]))/2))/(2*f*Sqrt[a + I*a*Tan[
e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])
```

Maple [B] time = 0.196, size = 566, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/2*I/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*c^2/a*(6*I*
A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))
*tan(f*x+e)^2*a*c+18*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a
*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c+4*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2)*tan(f*x+e)^2-9*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)
*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+B*(a*c*(1+tan(f*x+e)^2))^(1/2)*
(a*c)^(1/2)*tan(f*x+e)^3-6*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-12*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)
^(1/2)*tan(f*x+e)+12*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c
)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c+2*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2)
)^(1/2)*(a*c)^(1/2)-14*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+9*B*ln(
(a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+
19*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-10*A*(a*c*(1+tan(f
*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(-tan(f*x+e)+I)^2
/(a*c)^(1/2)
```

Maxima [B] time = 4.10663, size = 1779, normalized size = 7.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] ((96*A + 144*I*B)*c^2*cos(4*f*x + 4*e) + (160*A + 240*I*B)*c^2*cos(2*f*x +
2*e) + 48*(2*I*A - 3*B)*c^2*sin(4*f*x + 4*e) + 80*(2*I*A - 3*B)*c^2*sin(2*f
*x + 2*e) + (64*A + 64*I*B)*c^2 + ((48*A + 72*I*B)*c^2*cos(5/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) + (96*A + 144*I*B)*c^2*cos(3/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + (48*A + 72*I*B)*c^2*cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 24*(2*I*A - 3*B)*c^2*sin(5/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 48*(2*I*A - 3*B)*c^2*sin(3/2*arctan2(s
```

```
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 24*(2*I*A - 3*B)*c^2*sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan2(cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) + ((48*A + 72*I*B)*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + (96*A + 144*I*B)*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + (48*A + 72*I*B)*c^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) + 24*(2*I*A - 3*B)*c^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 48*(2*I*A - 3*B)*c^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 24*(2*I*A - 3*B)*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))))*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))),
 -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (12*(2*I*A -
3*B)*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 24*(2*I*A -
 3*B)*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 12*(2*I*A
- 3*B)*c^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (24*A + 3
6*I*B)*c^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (48*A + 7
2*I*B)*c^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (24*A + 3
6*I*B)*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*log(cos(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + 1) + (12*(-2*I*A + 3*B)*c^2*cos(5/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + 24*(-2*I*A + 3*B)*c^2*cos(3/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + 12*(-2*I*A + 3*B)*c^2*cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + (24*A + 36*I*B)*c^2*sin(5/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + (48*A + 72*I*B)*c^2*sin(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + (24*A + 36*I*B)*c^2*sin(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))))*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/((-1
6*I*a*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 32*I*a*cos(3/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*I*a*cos(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*a*sin(5/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 32*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 16*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

Fricas [B] time = 1.74717, size = 1593, normalized size = 6.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] 1/4*(2*((-10*I*A + 14*B)*c^2*e^(5*I*f*x + 5*I*e) + (12*I*A - 18*B)*c^2*e^(4
*I*f*x + 4*I*e) + (-20*I*A + 28*B)*c^2*e^(3*I*f*x + 3*I*e) + (20*I*A - 30*B
)*c^2*e^(2*I*f*x + 2*I*e) + (-10*I*A + 14*B)*c^2*e^(I*f*x + I*e) + (8*I*A -
 8*B)*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) +
1))*e^(I*f*x + I*e) - sqrt((36*A^2 + 108*I*A*B - 81*B^2)*c^5/(a*f^2))*(a*f*
e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))*log((2*((6*I*A - 9*B)*c^2*e^
(2*I*f*x + 2*I*e) + (6*I*A - 9*B)*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sq
rt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + sqrt((36*A^2 + 108*I*A*B
- 81*B^2)*c^5/(a*f^2))*(a*f*e^(2*I*f*x + 2*I*e) - a*f))/((-12*I*A + 18*B)*c
^2*e^(2*I*f*x + 2*I*e) + (-12*I*A + 18*B)*c^2)) + sqrt((36*A^2 + 108*I*A*B
- 81*B^2)*c^5/(a*f^2))*(a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))*
log((2*((6*I*A - 9*B)*c^2*e^(2*I*f*x + 2*I*e) + (6*I*A - 9*B)*c^2)*sqrt(a/(
e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e)
 - sqrt((36*A^2 + 108*I*A*B - 81*B^2)*c^5/(a*f^2))*(a*f*e^(2*I*f*x + 2*I*e)
 - a*f))/((-12*I*A + 18*B)*c^2*e^(2*I*f*x + 2*I*e) + (-12*I*A + 18*B)*c^2))
)/(a*f*e^(4*I*f*x + 4*I*e) + a*f*e^(2*I*f*x + 2*I*e))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2)/(a+I*a*tan(f*x+e))**(1
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}{\sqrt{ia\tan\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(5/2)/sqrt(I*a*tan(f
*x + e) + a), x)
```

3.831 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{\sqrt{a+ia\tan(e+fx)}}\,dx$

Optimal. Leaf size=169

$$\frac{2c^{3/2}(-2B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f}+\frac{c(-2B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{af}+\frac{(-B+iA)(c-ic\tan(e}{f\sqrt{a+ia\tan(e}}$$

```
[Out] (2*(I*A - 2*B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[a]*f) + ((I*A - 2*B)*c*Sqrt[a + I*a*Ta
n[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(a*f) + ((I*A - B)*(c - I*c*Tan[e +
 f*x])^(3/2))/(f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rubi [A] time = 0.26395, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 50, 63, 217, 203}

$$\frac{2c^{3/2}(-2B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f}+\frac{c(-2B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{af}+\frac{(-B+iA)(c-ic\tan(e}{f\sqrt{a+ia\tan(e}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/Sqrt[a + I*a*Tan[e
 + f*x]],x]
```


```
[Out] (2*(I*A - 2*B)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(Sqrt[a]*f) + ((I*A - 2*B)*c*Sqrt[a + I*a*Ta
n[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(a*f) + ((I*A - B)*(c - I*c*Tan[e +
 f*x])^(3/2))/(f*Sqrt[a + I*a*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{\sqrt{a+ia\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{(a+iax)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{f\sqrt{a+ia\tan(e+fx)}} - \frac{((A+2iB)c)\,\text{Subst}\left(\int \frac{\sqrt{c-icx}}{\sqrt{a+iax}}\,dx, x, \text{t}\right.}{f}$$

$$= \frac{(iA-2B)c\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(iA-B)(c-ic\,\text{t}}{f\sqrt{a+ia\,\text{ta}}}$$

$$= \frac{(iA-2B)c\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(iA-B)(c-ic\,\text{t}}{f\sqrt{a+ia\,\text{ta}}}$$

$$= \frac{(iA-2B)c\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{af} + \frac{(iA-B)(c-ic\,\text{t}}{f\sqrt{a+ia\,\text{ta}}}$$

$$= \frac{2(iA-2B)c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f} + \frac{(iA-2B)c\sqrt{a+ia\tan(e+}}{af}$$

Mathematica [A] time = 6.35624, size = 161, normalized size = 0.95

$$\frac{c^2(\cos(fx)+i\sin(fx))(\sin(fx)+i\cos(fx))(A+B\tan(e+fx))\left(\cos(e+fx)(\tan(e+fx)+i)(-2iA+iB\tan(e+fx)+3\right.}{f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}(A\cos(e+fx)+B\sin(e+fx}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/Sqrt[a + I*a*
Tan[e + f*x]],x]
```

```
[Out] (c^2*(Cos[f*x] + I*Sin[f*x])*(I*Cos[f*x] + Sin[f*x])*(A + B*Tan[e + f*x])*(
2*(A + (2*I)*B)*ArcTan[Cos[e + f*x] + I*Sin[e + f*x]] + Cos[e + f*x]*(I + T
an[e + f*x])*((-2*I)*A + 3*B + I*B*Tan[e + f*x])))/(f*(A*Cos[e + f*x] + B*S
in[e + f*x])*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])
```

Maple [B] time = 0.219, size = 499, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a*c*(-2*I*B*ln(
(a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(
f*x+e)^2*a*c+2*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1
/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2)
)^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+2*I*B*ln((a*c*tan(f*x+e)
+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+4*I*B*(a*c*(1+t
an(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-4*B*ln((a*c*tan(f*x+e)+(a*c*(1+t
an(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-B*tan(f*x+e)^2
*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-2*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2
)*(a*c)^(1/2)+A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)
)/(a*c)^(1/2))*a*c+2*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)+
3*B*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/
(-tan(f*x+e)+I)^2/(a*c)^(1/2)
```

Maxima [B] time = 2.75616, size = 1229, normalized size = 7.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] ((4*A + 8*I*B)*c*cos(2*f*x + 2*e) + 4*(I*A - 2*B)*c*sin(2*f*x + 2*e) + (4*A
 + 4*I*B)*c + ((2*A + 4*I*B)*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + (2*A + 4*I*B)*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 2*(I*A - 2*B)*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + 2*(I*A - 2*B)*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*ar
ctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((2*A + 4*I*B)*c*cos(3/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (2*A + 4*I*B)*c*cos(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(I*A - 2*B)*c*sin(3/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(I*A - 2*B)*c*sin(1/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))))*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1)
- ((-I*A + 2*B)*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (-
I*A + 2*B)*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (A + 2*
I*B)*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (A + 2*I*B)*c
```

```
*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*log(cos(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1) - ((I*A - 2*B)*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + (I*A - 2*B)*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (
A + 2*I*B)*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (A + 2*
I*B)*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*log(cos(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 1))*sqrt(a)*sqrt(c)/((-2*I*a*cos(3/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) - 2*I*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) + 2*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*a*sin(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

Fricas [B] time = 1.68285, size = 1308, normalized size = 7.74

$$-\frac{\left(a\sqrt{\frac{\left(4\,A^2+16i\,AB-16\,B^2\right)c^3}{af^2}}fe^{\left(2i\,fx+2i\,e\right)}\log\left(\frac{2\left(\left(2i\,A-4\,B\right)ce^{\left(2i\,fx+2i\,e\right)}+\left(2i\,A-4\,B\right)c\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(afe^{\left(2i\,fx+2i\,e\right)}-af\right)\sqrt{\frac{\left(4\,A\right.}{}}}{\left(-4i\,A+8\,B\right)ce^{\left(2i\,fx+2i\,e\right)}+\left(-4i\,A+8\,B\right)c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] -1/4*(a*sqrt((4*A^2 + 16*I*A*B - 16*B^2)*c^3/(a*f^2))*f*e^(2*I*f*x + 2*I*e)
*log((2*((2*I*A - 4*B)*c*e^(2*I*f*x + 2*I*e) + (2*I*A - 4*B)*c)*sqrt(a/(e^(
2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) +
(a*f*e^(2*I*f*x + 2*I*e) - a*f)*sqrt((4*A^2 + 16*I*A*B - 16*B^2)*c^3/(a*f^2
)))/((-4*I*A + 8*B)*c*e^(2*I*f*x + 2*I*e) + (-4*I*A + 8*B)*c)) - a*sqrt((4*
A^2 + 16*I*A*B - 16*B^2)*c^3/(a*f^2))*f*e^(2*I*f*x + 2*I*e)*log((2*((2*I*A
- 4*B)*c*e^(2*I*f*x + 2*I*e) + (2*I*A - 4*B)*c)*sqrt(a/(e^(2*I*f*x + 2*I*e)
 + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (a*f*e^(2*I*f*x
+ 2*I*e) - a*f)*sqrt((4*A^2 + 16*I*A*B - 16*B^2)*c^3/(a*f^2)))/((-4*I*A + 8
*B)*c*e^(2*I*f*x + 2*I*e) + (-4*I*A + 8*B)*c)) - 2*((-4*I*A + 6*B)*c*e^(3*I
*f*x + 3*I*e) + (4*I*A - 8*B)*c*e^(2*I*f*x + 2*I*e) + (-4*I*A + 6*B)*c*e^(I
*f*x + I*e) + (4*I*A - 4*B)*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^
(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-2*I*f*x - 2*I*e)/(a*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2)/(a+I*a*tan(f*x+e))**(1
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\sqrt{ia\tan\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(3/2)/sqrt(I*a*tan(f
*x + e) + a), x)
```

3.832 $\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{\sqrt{a+ia\tan(e+fx)}}\,dx$

Optimal. Leaf size=110

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{f\sqrt{a+ia\tan(e+fx)}}-\frac{2B\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f}$$

```
[Out] (-2*B*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(Sqrt[a]*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/
(f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rubi [A] time = 0.219041, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3588, 78, 63, 217, 203}

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{f\sqrt{a+ia\tan(e+fx)}}-\frac{2B\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/Sqrt[a + I*a*Tan[e +
f*x]],x]
```

```
[Out] (-2*B*Sqrt[c]*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(Sqrt[a]*f) + ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/
(f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{\sqrt{a+ia\tan(e+fx)}}\,dx = \frac{(ac)\operatorname{Subst}\left(\int \frac{A+Bx}{(a+iax)^{3/2}\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{f\sqrt{a+ia\tan(e+fx)}} - \frac{(iBc)\operatorname{Subst}\left(\int \frac{1}{\sqrt{a+iax}\sqrt{c-icx}}\,dx, x, \tan(e+$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{f\sqrt{a+ia\tan(e+fx)}} - \frac{(2Bc)\operatorname{Subst}\left(\int \frac{1}{\sqrt{2c-\frac{cx^2}{a}}}\,dx, x, \sqrt{a+ia\tan}\right.}{af}$$

$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{f\sqrt{a+ia\tan(e+fx)}} - \frac{(2Bc)\operatorname{Subst}\left(\int \frac{1}{1+\frac{cx^2}{a}}\,dx, x, \frac{\sqrt{a+ia\tan(e+fx)}}{\sqrt{c-ic\tan(e+fx)}}\right.}{af}$$

$$= -\frac{2B\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{\sqrt{a}f} + \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{f\sqrt{a+ia\tan(e+fx)}}$$

Mathematica [A] time = 3.98718, size = 152, normalized size = 1.38

$$\frac{c\sec(e+fx)\left(\sin\left(\frac{1}{2}(e+fx)\right)+i\cos\left(\frac{1}{2}(e+fx)\right)\right)\left((A+iB)\left(\cos\left(\frac{1}{2}(e+fx)\right)-i\sin\left(\frac{1}{2}(e+fx)\right)\right)+2iB\left(\cos\left(\frac{1}{2}(e+fx)\right)\right.\right.}{f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/Sqrt[a + I*a*Ta
n[e + f*x]],x]
```

```
[Out] (c*Sec[e + f*x]*((A + I*B)*(Cos[(e + f*x)/2] - I*Sin[(e + f*x)/2]) + (2*I)*
B*ArcTan[Cos[e + f*x] + I*Sin[e + f*x]]*(Cos[(e + f*x)/2] + I*Sin[(e + f*x)
/2]))*(I*Cos[(e + f*x)/2] + Sin[(e + f*x)/2]))/(f*Sqrt[a + I*a*Tan[e + f*x]
]*Sqrt[c - I*c*Tan[e + f*x]])
```

Maple [B] time = 0.18, size = 323, normalized size = 2.9

$$\frac{-i}{af\left(-\tan\left(fx+e\right)+i\right)^{2}}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\left(-2\,iB\ln\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\tan\left(\right.\right.\right.}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2),x)
```

```
[Out] -I/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a*(-2*I*B*ln((
a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f
*x+e)*a*c+B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a
*c)^(1/2))*tan(f*x+e)^2*a*c+I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*ta
n(f*x+e)+I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-B*ln((a*c*tan(f*x+e)+
(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-B*(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^
(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(-tan(f*x+e)+I)^2/(a*c)^(1/2)
```

Maxima [A] time = 2.37535, size = 189, normalized size = 1.72

$$-\frac{\left(2\,B\arctan\left(\cos\left(fx+e\right),\sin\left(fx+e\right)+1\right)+2\,B\arctan\left(\cos\left(fx+e\right),-\sin\left(fx+e\right)+1\right)-2\,(i\,A-B)\cos\left(fx+e\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] -1/2*(2*B*arctan2(cos(f*x + e), sin(f*x + e) + 1) + 2*B*arctan2(cos(f*x + e
), -sin(f*x + e) + 1) - 2*(I*A - B)*cos(f*x + e) + I*B*log(cos(f*x + e)^2 +
 sin(f*x + e)^2 + 2*sin(f*x + e) + 1) - I*B*log(cos(f*x + e)^2 + sin(f*x +
e)^2 - 2*sin(f*x + e) + 1) - (2*A + 2*I*B)*sin(f*x + e))*sqrt(c)/(sqrt(a)*f
)
```

Fricas [B] time = 1.59364, size = 1013, normalized size = 9.21

$$\frac{\left(af\sqrt{-\frac{B^2c}{af^2}}e^{\left(2i\,fx+2i\,e\right)}\log\left(-\frac{2\left(Be^{\left(2i\,fx+2i\,e\right)}+B\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(i\,fx+i\,e\right)}+\left(afe^{\left(2i\,fx+2i\,e\right)}-af\right)\sqrt{-\frac{B^2c}{af^2}}}{2\left(Be^{\left(2i\,fx+2i\,e\right)}+B\right)}\right)-af\sqrt{-\frac{B^2c}{af^2}}e^{\left(2i\,fx+2i\,e\right)}\,\mathrm{lo}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] 1/2*(a*f*sqrt(-B^2*c/(a*f^2))*e^(2*I*f*x + 2*I*e)*log(-1/2*(2*(B*e^(2*I*f*x
 + 2*I*e) + B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e
) + 1))*e^(I*f*x + I*e) + (a*f*e^(2*I*f*x + 2*I*e) - a*f)*sqrt(-B^2*c/(a*f^
2)))/(B*e^(2*I*f*x + 2*I*e) + B)) - a*f*sqrt(-B^2*c/(a*f^2))*e^(2*I*f*x + 2
*I*e)*log(-1/2*(2*(B*e^(2*I*f*x + 2*I*e) + B)*sqrt(a/(e^(2*I*f*x + 2*I*e) +
 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - (a*f*e^(2*I*f*x +
2*I*e) - a*f)*sqrt(-B^2*c/(a*f^2)))/(B*e^(2*I*f*x + 2*I*e) + B)) + ((-2*I*A
 + 2*B)*e^(3*I*f*x + 3*I*e) + (2*I*A - 2*B)*e^(2*I*f*x + 2*I*e) + (-2*I*A +
 2*B)*e^(I*f*x + I*e) + 2*I*A - 2*B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt
(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-2*I*f*x - 2*I*e)/(a*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-c\left(i\tan\left(e+fx\right)-1\right)}\left(A+B\tan\left(e+fx\right)\right)}{\sqrt{a\left(i\tan\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(1
/2),x)
```

```
[Out] Integral(sqrt(-c*(I*tan(e + f*x) - 1))*(A + B*tan(e + f*x))/sqrt(a*(I*tan(e
 + f*x) + 1)), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{-i\,c\tan\left(fx+e\right)+c}}{\sqrt{i\,a\tan\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(-I*c*tan(f*x + e) + c)/sqrt(I*a*tan(f*x
 + e) + a), x)
```

3.833 $\int \frac{A+B\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=92

$$\frac{iA\sqrt{c-ic\tan(e+fx)}}{cf\sqrt{a+ia\tan(e+fx)}}-\frac{B+iA}{f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}$$

```
[Out] -((I*A + B)/(f*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])) + (I
*A*Sqrt[c - I*c*Tan[e + f*x]])/(c*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rubi [A] time = 0.199729, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$\frac{iA\sqrt{c-ic\tan(e+fx)}}{cf\sqrt{a+ia\tan(e+fx)}}-\frac{B+iA}{f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/(Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f
*x]]),x]
```

```
[Out] -((I*A + B)/(f*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])) + (I
*A*Sqrt[c - I*c*Tan[e + f*x]])/(c*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
```

```
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^{3/2}(c-icx)^{3/2}}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= -\frac{iA+B}{f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}} + \frac{(aA)\,\text{Subst}\left(\int \frac{1}{(a+iax)^{3/2}\sqrt{\cdots}}\right.}{f}$$

$$= -\frac{iA+B}{f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}} + \frac{iA\sqrt{c-ic\tan(e+fx)}}{cf\sqrt{a+ia\tan(e+fx)}}$$

Mathematica [A] time = 3.77169, size = 77, normalized size = 0.84

$$-\frac{\sqrt{c-ic\tan(e+fx)}(\cos(e+fx)+i\sin(e+fx))(B\cos(e+fx)-A\sin(e+fx))}{cf\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/(Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan
[e + f*x]]),x]
```

```
[Out] -(((Cos[e + f*x] + I*Sin[e + f*x])*(B*Cos[e + f*x] - A*Sin[e + f*x])*Sqrt[c
 - I*c*Tan[e + f*x]])/(c*f*Sqrt[a + I*a*Tan[e + f*x]]))
```

Maple [A] time = 0.193, size = 99, normalized size = 1.1

$$\frac{A\left(\tan\left(fx+e\right)\right)^{3}-B\left(\tan\left(fx+e\right)\right)^{2}+A\tan\left(fx+e\right)-B}{afc\left(-\tan\left(fx+e\right)+i\right)^{2}\left(\tan\left(fx+e\right)+i\right)^{2}}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a/c*(A*tan(f*x+
e)^3-B*tan(f*x+e)^2+A*tan(f*x+e)-B)/(-tan(f*x+e)+I)^2/(tan(f*x+e)+I)^2
```

Maxima [A] time = 2.52534, size = 170, normalized size = 1.85

$$-\frac{\left((2\,A-2i\,B)\cos\left(4\,fx+4\,e\right)-4i\,B\cos\left(2\,fx+2\,e\right)-2\,(-i\,A-B)\sin\left(4\,fx+4\,e\right)+4\,B\sin\left(2\,fx+2\,e\right)-2\,A-2i\,B\right)\sqrt{}}{\left(-4i\,ac\cos\left(3\,fx+3\,e\right)-4i\,ac\cos\left(fx+e\right)+4\,ac\sin\left(3\,fx+3\,e\right)+4\,ac\sin\left(fx+e\right)\right)f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="maxima")
```

```
[Out] -((2*A - 2*I*B)*cos(4*f*x + 4*e) - 4*I*B*cos(2*f*x + 2*e) - 2*(-I*A - B)*si
n(4*f*x + 4*e) + 4*B*sin(2*f*x + 2*e) - 2*A - 2*I*B)*sqrt(a)*sqrt(c)/((-4*I
*a*c*cos(3*f*x + 3*e) - 4*I*a*c*cos(f*x + e) + 4*a*c*sin(3*f*x + 3*e) + 4*a
*c*sin(f*x + e))*f)
```

Fricas [A] time = 1.31045, size = 290, normalized size = 3.15

$$\frac{\left((-i\,A-B)e^{\left(4i\,fx+4i\,e\right)}+2\,Be^{\left(3i\,fx+3i\,e\right)}-2\,Be^{\left(2i\,fx+2i\,e\right)}+2\,Be^{\left(i\,fx+i\,e\right)}+i\,A-B\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2i\,e\right)}+1}}e^{\left(-i\,fx-i\,e\right)}}{2\,acf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="fricas")
```

```
[Out] 1/2*((-I*A - B)*e^(4*I*f*x + 4*I*e) + 2*B*e^(3*I*f*x + 3*I*e) - 2*B*e^(2*I*
f*x + 2*I*e) + 2*B*e^(I*f*x + I*e) + I*A - B)*sqrt(a/(e^(2*I*f*x + 2*I*e) +
 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-I*f*x - I*e)/(a*c*f)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{A+B\tan\left(e+fx\right)}{\sqrt{a\left(i\tan\left(e+fx\right)+1\right)}\sqrt{-c\left(i\tan\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(1/2)/(c-I*c*tan(f*x+e))**(1
/2),x)
```

```
[Out] Integral((A + B*tan(e + f*x))/(sqrt(a*(I*tan(e + f*x) + 1))*sqrt(-c*(I*tan(
e + f*x) - 1))), x)
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\sqrt{i\,a\tan\left(fx+e\right)+a}\sqrt{-i\,c\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(1/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/(sqrt(I*a*tan(f*x + e) + a)*sqrt(-I*c*tan(f*
x + e) + c)), x)
```

3.834 $\int \frac{A+B\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=157

$$\frac{-B+iA}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}-\frac{(-B+2iA)\sqrt{a+ia\tan(e+fx)}}{3acf\sqrt{c-ic\tan(e+fx)}}-\frac{(-B+2iA)\sqrt{a+ia\tan(e+fx)}}{3af(c-ic\tan(e+fx))^{3/2}}$$

```
[Out] (I*A - B)/(f*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2)) - (((
2*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*a*f*(c - I*c*Tan[e + f*x])^(3/2)
) - (((2*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*a*c*f*Sqrt[c - I*c*Tan[e
+ f*x]])
```

Rubi [A] time = 0.251288, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$\frac{-B+iA}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}-\frac{(-B+2iA)\sqrt{a+ia\tan(e+fx)}}{3acf\sqrt{c-ic\tan(e+fx)}}-\frac{(-B+2iA)\sqrt{a+ia\tan(e+fx)}}{3af(c-ic\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/(Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])
^(3/2)),x]
```

```
[Out] (I*A - B)/(f*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2)) - (((
2*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*a*f*(c - I*c*Tan[e + f*x])^(3/2)
) - (((2*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(3*a*c*f*Sqrt[c - I*c*Tan[e
+ f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^{3/2}(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}} + \frac{((2A+iB)c)\,\mathrm{Subst}\Big(\int$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}} - \frac{(2iA-B)\sqrt{a+ia\tan}}{3af(c-ic\tan(e+}$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}} - \frac{(2iA-B)\sqrt{a+ia\tan}}{3af(c-ic\tan(e+}$$

Mathematica [A] time = 7.03764, size = 103, normalized size = 0.66

$$\frac{i\sqrt{c-ic\tan(e+fx)}(\cos(2(e+fx))+i\sin(2(e+fx)))((B-2iA)\sin(2(e+fx))+(A+2iB)\cos(2(e+fx))-3A)}{6c^2f\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/(Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e +
 f*x])^(3/2)),x]
```

```
[Out] ((I/6)*(Cos[2*(e + f*x)] + I*Sin[2*(e + f*x)])*(-3*A + (A + (2*I)*B)*Cos[2*
(e + f*x)] + ((-2*I)*A + B)*Sin[2*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(
c^2*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.19, size = 151, normalized size = 1.

$$-\frac{\frac{i}{3}\left(2\,iA\left(\tan\left(fx+e\right)\right)^{4}-iB\left(\tan\left(fx+e\right)\right)^{3}-B\left(\tan\left(fx+e\right)\right)^{4}+3\,iA\left(\tan\left(fx+e\right)\right)^{2}-2\,A\left(\tan\left(fx+e\right)\right)^{3}-iB\tan}{afc^{2}\left(-\tan\left(fx+e\right)+i\right)^{2}\left(\tan\left(fx+e\right)+i\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/3*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a/c^2*(2*I
*A*tan(f*x+e)^4-I*B*tan(f*x+e)^3-B*tan(f*x+e)^4+3*I*A*tan(f*x+e)^2-2*A*tan(
f*x+e)^3-I*B*tan(f*x+e)+I*A-2*A*tan(f*x+e)+B)/(-tan(f*x+e)+I)^2/(tan(f*x+e)
+I)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.44176, size = 389, normalized size = 2.48

$$\frac{\left((-iA-B)e^{(6ifx+6ie)}+(-7iA-B)e^{(4ifx+4ie)}+(4iA+4B)e^{(3ifx+3ie)}+(-3iA-3B)e^{(2ifx+2ie)}+(4iA+4B)e^{(ifx+ie)}\right.}{12\,ac^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*((-I*A - B)*e^(6*I*f*x + 6*I*e) + (-7*I*A - B)*e^(4*I*f*x + 4*I*e) + (
4*I*A + 4*B)*e^(3*I*f*x + 3*I*e) + (-3*I*A - 3*B)*e^(2*I*f*x + 2*I*e) + (4*
I*A + 4*B)*e^(I*f*x + I*e) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))
*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-I*f*x - I*e)/(a*c^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(1/2)/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\sqrt{ia\tan\left(fx+e\right)+a}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/(sqrt(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x +
e) + c)^(3/2)), x)
```

3.835 $\int \frac{A+B\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=213

$$-\frac{2(-2B+3iA)\sqrt{a+ia\tan(e+fx)}}{15ac^2f\sqrt{c-ic\tan(e+fx)}}-\frac{2(-2B+3iA)\sqrt{a+ia\tan(e+fx)}}{15acf(c-ic\tan(e+fx))^{3/2}}-\frac{(-2B+3iA)\sqrt{a+ia\tan(e+fx)}}{5af(c-ic\tan(e+fx))^{5/2}}+\frac{}{f\sqrt{a+ia}}$$

```
[Out] (I*A - B)/(f*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/2)) - (((
3*I)*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(5*a*f*(c - I*c*Tan[e + f*x])^(5/
2)) - (2*((3*I)*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*a*c*f*(c - I*c*Tan
[e + f*x])^(3/2)) - (2*((3*I)*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*a*c^
2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.275042, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-2B+3iA)\sqrt{a+ia\tan(e+fx)}}{15ac^2f\sqrt{c-ic\tan(e+fx)}}-\frac{2(-2B+3iA)\sqrt{a+ia\tan(e+fx)}}{15acf(c-ic\tan(e+fx))^{3/2}}-\frac{(-2B+3iA)\sqrt{a+ia\tan(e+fx)}}{5af(c-ic\tan(e+fx))^{5/2}}+\frac{}{f\sqrt{a+ia}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/(Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])
^(5/2)),x]
```


```
[Out] (I*A - B)/(f*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/2)) - (((
3*I)*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(5*a*f*(c - I*c*Tan[e + f*x])^(5/
2)) - (2*((3*I)*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*a*c*f*(c - I*c*Tan
[e + f*x])^(3/2)) - (2*((3*I)*A - 2*B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*a*c^
2*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^{3/2}(c-icx)^{7/2}}\,dx,x,\tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}} + \frac{((3A+2iB)c)\,\text{Subst}\big(}{}$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}} - \frac{(3iA-2B)\sqrt{a+ia\,\text{ta}}}{5af(c-ic\tan(e+}$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}} - \frac{(3iA-2B)\sqrt{a+ia\,\text{ta}}}{5af(c-ic\tan(e+}$$

$$= \frac{iA-B}{f\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{5/2}} - \frac{(3iA-2B)\sqrt{a+ia\,\text{ta}}}{5af(c-ic\tan(e+}$$

Mathematica [A] time = 10.8351, size = 128, normalized size = 0.6

$$\frac{\sqrt{c-ic\tan(e+fx)}(\cos(3(e+fx))+i\sin(3(e+fx)))((3A+2iB)(3\sin(3(e+fx))-5\sin(e+fx))+5(B-6iA)\cos(e+}{60c^3f\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/(Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e +
 f*x])^(5/2)),x]
```

```
[Out] ((Cos[3*(e + f*x)] + I*Sin[3*(e + f*x)])*(5*((-6*I)*A + B)*Cos[e + f*x] + (
(6*I)*A - 9*B)*Cos[3*(e + f*x)] + (3*A + (2*I)*B)*(-5*Sin[e + f*x] + 3*Sin[
3*(e + f*x)]))*Sqrt[c - I*c*Tan[e + f*x]])/(60*c^3*f*Sqrt[a + I*a*Tan[e + f
*x]])
```

Maple [A] time = 0.188, size = 184, normalized size = 0.9

$$\frac{4\,iB\left(\tan\left(fx+e\right)\right)^{5}+12\,iA\left(\tan\left(fx+e\right)\right)^{4}+6\,A\left(\tan\left(fx+e\right)\right)^{5}+2\,iB\left(\tan\left(fx+e\right)\right)^{3}-8\,B\left(\tan\left(fx+e\right)\right)^{4}+18\,iA\,(}{15\,afc^{3}\left(-\tan\left(fx+e\right)+i\right)^{2}\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a/c^3*(4*I*B
*tan(f*x+e)^5+12*I*A*tan(f*x+e)^4+6*A*tan(f*x+e)^5+2*I*B*tan(f*x+e)^3-8*B*t
an(f*x+e)^4+18*I*A*tan(f*x+e)^2+3*A*tan(f*x+e)^3-2*I*B*tan(f*x+e)-7*B*tan(f
*x+e)^2+6*I*A-3*A*tan(f*x+e)+B)/(-tan(f*x+e)+I)^2/(tan(f*x+e)+I)^4
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.41208, size = 447, normalized size = 2.1

$$\frac{\left((-3i\,A-3\,B)e^{\left(8i\,fx+8i\,e\right)}+(-18i\,A-8\,B)e^{\left(6i\,fx+6i\,e\right)}+(-60i\,A+10\,B)e^{\left(4i\,fx+4i\,e\right)}+(48i\,A+8\,B)e^{\left(3i\,fx+3i\,e\right)}-30i\,Ae^{\left(2i\,fx-\right.}\right.}{120\,ac^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/120*((-3*I*A - 3*B)*e^(8*I*f*x + 8*I*e) + (-18*I*A - 8*B)*e^(6*I*f*x + 6*
I*e) + (-60*I*A + 10*B)*e^(4*I*f*x + 4*I*e) + (48*I*A + 8*B)*e^(3*I*f*x + 3
*I*e) - 30*I*A*e^(2*I*f*x + 2*I*e) + (48*I*A + 8*B)*e^(I*f*x + I*e) + 15*I*
A - 15*B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
))*e^(-I*f*x - I*e)/(a*c^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(1/2)/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\sqrt{i\,a\tan\left(fx+e\right)+a}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(1/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/(sqrt(I*a*tan(f*x + e) + a)*(-I*c*tan(f*x +
e) + c)^(5/2)), x)
```

3.836 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=287

$$-\frac{5c^{7/2}(-5B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f}-\frac{5c^3(-5B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^2f}-\frac{5c^2(-5B+2i}{}$$

```
[Out] (-5*((2*I)*A - 5*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sq
rt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(3/2)*f) - (5*((2*I)*A - 5*B)*c^3*Sq
rt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*a^2*f) - (5*((2*I)*
A - 5*B)*c^2*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(6*a^
2*f) - (2*((2*I)*A - 5*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(3*a*f*Sqrt[a + I
*a*Tan[e + f*x]]) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(3*f*(a + I*a*
Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.342676, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$-\frac{5c^{7/2}(-5B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f}-\frac{5c^3(-5B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^2f}-\frac{5c^2(-5B+2i}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[e + f*
x])^(3/2),x]
```


```
[Out] (-5*((2*I)*A - 5*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sq
rt[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(3/2)*f) - (5*((2*I)*A - 5*B)*c^3*Sq
rt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*a^2*f) - (5*((2*I)*
A - 5*B)*c^2*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(6*a^
2*f) - (2*((2*I)*A - 5*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(3*a*f*Sqrt[a + I
*a*Tan[e + f*x]]) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(3*f*(a + I*a*
Tan[e + f*x])^(3/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{5/2}}{(a+iax)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{3f(a+ia\tan(e+fx))^{3/2}} - \frac{((2A+5iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{5/2}}{(a+iax)^{3/2}}\,dx \right.}{3f}$$

$$= -\frac{2(2iA-5B)c(c-ic\tan(e+fx))^{5/2}}{3af\sqrt{a+ia\tan(e+fx)}} + \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{3f(a+ia\tan(e+fx))^{3/2}}$$

$$= -\frac{5(2iA-5B)c^2\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}{6a^2f} - \frac{2(2iA-}{3a}$$

$$= -\frac{5(2iA-5B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^2f} - \frac{5(2iA-5}{}$$

$$= -\frac{5(2iA-5B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^2f} - \frac{5(2iA-5}{}$$

$$= -\frac{5(2iA-5B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^2f} - \frac{5(2iA-5}{}$$

$$= -\frac{5(2iA-5B)c^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f} - \frac{5(2iA-5B)c^3\sqrt{a+ia\,\text{t}}}{}$$

Mathematica [A] time = 13.3648, size = 255, normalized size = 0.89

$$\frac{\sqrt{\sec(e+fx)}(A+B\tan(e+fx))\left(\frac{5c^4(5B-2iA)e^{i(e+fx)}\sqrt{\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}}\tan^{-1}\left(e^{i(e+fx)}\right)}{\sqrt{\frac{c}{1+e^{2i(e+fx)}}}} + \frac{1}{12}c^3\sec^{\frac{3}{2}}(e+fx)\sqrt{c-ic\tan(e+fx)}(33(5B\right.}{f(a+ia\tan(e+fx))^{3/2}(A\cos(}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[
e + f*x])^(3/2),x]
```

```
[Out] (Sqrt[Sec[e + f*x]]*(A + B*Tan[e + f*x])*((5*((-2*I)*A + 5*B)*c^4*E^(I*(e +
 f*x))*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*ArcTan[E^(I*(e + f*x
))])/Sqrt[c/(1 + E^((2*I)*(e + f*x)))] + (c^3*Sec[e + f*x]^(3/2)*(33*((-2*I
)*A + 5*B)*Cos[e + f*x] + ((-26*I)*A + 71*B)*Cos[3*(e + f*x)] + 2*(34*A + (
82*I)*B + (34*A + (79*I)*B)*Cos[2*(e + f*x)])*Sin[e + f*x])*Sqrt[c - I*c*Ta
n[e + f*x]])/12))/(f*(A*Cos[e + f*x] + B*Sin[e + f*x])*(a + I*a*Tan[e + f*x
])^(3/2))
```

Maple [B] time = 0.137, size = 733, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/6/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*c^3/a^2*(6*I*
A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3-114*I*A*(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)-75*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+
tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c-118*I*B*(a*
c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-30*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f
*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+3*I*B*(a*c*(1+ta
n(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^4+185*I*B*(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2)*tan(f*x+e)^2-225*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^
2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c-21*B*(a*c*(1+tan(f*x+e
)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+225*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c-30*I*A*ln((a*c*t
an(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+90*A*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)*a*c+74*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+90*
I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2
))*tan(f*x+e)^2*a*c+75*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a
*c)^(1/2))/(a*c)^(1/2))*a*c+279*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*
tan(f*x+e)-46*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c*(1+tan(f*x+e
)^2))^(1/2)/(a*c)^(1/2)/(-tan(f*x+e)+I)^3
```

Maxima [B] time = 5.96431, size = 1854, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] -((1440*A + 3600*I*B)*c^3*cos(6*f*x + 6*e) + (2400*A + 6000*I*B)*c^3*cos(4*
f*x + 4*e) + (768*A + 1920*I*B)*c^3*cos(2*f*x + 2*e) + 720*(2*I*A - 5*B)*c^
3*sin(6*f*x + 6*e) + 1200*(2*I*A - 5*B)*c^3*sin(4*f*x + 4*e) + 384*(2*I*A -
 5*B)*c^3*sin(2*f*x + 2*e) - (192*A + 192*I*B)*c^3 + ((720*A + 1800*I*B)*c^
3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (1440*A + 3600*I*B
)*c^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (720*A + 1800*
I*B)*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 360*(2*I*A
- 5*B)*c^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 720*(2*I*
A - 5*B)*c^3*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 360*(2*
I*A - 5*B)*c^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan
2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + ((720*A + 1800*I*B)*c^3*cos(7/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (1440*A + 3600*I*B)*c^3*cos(5/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (720*A + 1800*I*B)*c^3*cos
(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 360*(2*I*A - 5*B)*c^3*s
in(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 720*(2*I*A - 5*B)*c^3
*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 360*(2*I*A - 5*B)*c
^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan2(cos(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + 1) + (180*(2*I*A - 5*B)*c^3*cos(7/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 360*(2*I*A - 5*B)*c^3*cos(5/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) + 180*(2*I*A - 5*B)*c^3*cos(3/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) - (360*A + 900*I*B)*c^3*sin(7/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (720*A + 1800*I*B)*c^3*sin(5/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - (360*A + 900*I*B)*c^3*sin(3/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*log(cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) + (1
80*(-2*I*A + 5*B)*c^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 360*(-2*I*A + 5*B)*c^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 180*(-2*I*A + 5*B)*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + (360*A + 900*I*B)*c^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + (720*A + 1800*I*B)*c^3*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + (360*A + 900*I*B)*c^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*
```

```
f*x + 2*e))))*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sqrt(a)*sqrt(c)/((-144*I*a^2*cos
(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 288*I*a^2*cos(5/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 144*I*a^2*cos(3/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) + 144*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 288*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 144*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

Fricas [B] time = 1.75218, size = 1729, normalized size = 6.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(2*((46*I*A - 118*B)*c^3*e^(7*I*f*x + 7*I*e) + (-60*I*A + 150*B)*c^3*e
^(6*I*f*x + 6*I*e) + (92*I*A - 236*B)*c^3*e^(5*I*f*x + 5*I*e) + (-100*I*A +
 250*B)*c^3*e^(4*I*f*x + 4*I*e) + (46*I*A - 118*B)*c^3*e^(3*I*f*x + 3*I*e)
+ (-32*I*A + 80*B)*c^3*e^(2*I*f*x + 2*I*e) + (8*I*A - 8*B)*c^3)*sqrt(a/(e^(
2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) +
3*(a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I*e))*sqrt((100*A^2 + 5
00*I*A*B - 625*B^2)*c^7/(a^3*f^2))*log((2*((10*I*A - 25*B)*c^3*e^(2*I*f*x +
 2*I*e) + (10*I*A - 25*B)*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^
(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + (a^2*f*e^(2*I*f*x + 2*I*e) - a^2*
f)*sqrt((100*A^2 + 500*I*A*B - 625*B^2)*c^7/(a^3*f^2)))/((-20*I*A + 50*B)*c
^3*e^(2*I*f*x + 2*I*e) + (-20*I*A + 50*B)*c^3)) - 3*(a^2*f*e^(6*I*f*x + 6*I
*e) + a^2*f*e^(4*I*f*x + 4*I*e))*sqrt((100*A^2 + 500*I*A*B - 625*B^2)*c^7/(
a^3*f^2))*log((2*((10*I*A - 25*B)*c^3*e^(2*I*f*x + 2*I*e) + (10*I*A - 25*B)
*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e
^(I*f*x + I*e) - (a^2*f*e^(2*I*f*x + 2*I*e) - a^2*f)*sqrt((100*A^2 + 500*I*
A*B - 625*B^2)*c^7/(a^3*f^2)))/((-20*I*A + 50*B)*c^3*e^(2*I*f*x + 2*I*e) +
(-20*I*A + 50*B)*c^3)))/(a^2*f*e^(6*I*f*x + 6*I*e) + a^2*f*e^(4*I*f*x + 4*I
*e))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2)/(a+I*a*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(7/2)/(I*a*tan(f*x +
 e) + a)^(3/2), x)
```

3.837 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=229

$$-\frac{2c^{5/2}(-4B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f}-\frac{c^2(-4B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^2f}-\frac{2c(-4B+iA)(c-ic}{3af\sqrt{a+ia\,\mathrm{ta}}}$$

```
[Out] (-2*(I*A - 4*B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a
]*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(3/2)*f) - ((I*A - 4*B)*c^2*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(a^2*f) - (2*(I*A - 4*B)*c*(c -
I*c*Tan[e + f*x])^(3/2))/(3*a*f*Sqrt[a + I*a*Tan[e + f*x]]) + ((I*A - B)*(c
 - I*c*Tan[e + f*x])^(5/2))/(3*f*(a + I*a*Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.307727, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$-\frac{2c^{5/2}(-4B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f}-\frac{c^2(-4B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^2f}-\frac{2c(-4B+iA)(c-ic}{3af\sqrt{a+ia\,\mathrm{ta}}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[e + f*
x])^(3/2),x]
```



```
[Out] (-2*(I*A - 4*B)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a
]*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(3/2)*f) - ((I*A - 4*B)*c^2*Sqrt[a + I*a
*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(a^2*f) - (2*(I*A - 4*B)*c*(c -
I*c*Tan[e + f*x])^(3/2))/(3*a*f*Sqrt[a + I*a*Tan[e + f*x]]) + ((I*A - B)*(c
 - I*c*Tan[e + f*x])^(5/2))/(3*f*(a + I*a*Tan[e + f*x])^(3/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
```

```
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{(a+iax)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{3f(a+ia\tan(e+fx))^{3/2}} - \frac{((A+4iB)c)\,\mathrm{Subst}\left(\int \frac{(c-icx)^{3/2}}{(a+iax)^{3/2}}\,dx, x\right.}{3f}$$

$$= -\frac{2(iA-4B)c(c-ic\tan(e+fx))^{3/2}}{3af\sqrt{a+ia\tan(e+fx)}} + \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{3f(a+ia\tan(e+fx))^{3/2}}$$

$$= -\frac{(iA-4B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^2f} - \frac{2(iA-4B)c(c}{3af\sqrt{a+}}$$

$$= -\frac{(iA-4B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^2f} - \frac{2(iA-4B)c(c}{3af\sqrt{a+}}$$

$$= -\frac{(iA-4B)c^2\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^2f} - \frac{2(iA-4B)c(c}{3af\sqrt{a+}}$$

$$= -\frac{2(iA-4B)c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f} - \frac{(iA-4B)c^2\sqrt{a+ia\tan(e}{a^2}$$

Mathematica [A] time = 11.2828, size = 174, normalized size = 0.76

$$-\frac{4\sqrt{2}\left(\frac{c}{1+e^{2i(e+fx)}}\right)^{5/2}\left(3(A+4iB)e^{3i(e+fx)}\left(1+e^{2i(e+fx)}\right)\tan^{-1}\left(e^{i(e+fx)}\right)+A\left(2e^{2i(e+fx)}+3e^{4i(e+fx)}-1\right)+iB\left(8e^{2i(e+fx)}+12\right.\right.}{3af(\tan(e+fx)-i)\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[
e + f*x])^(3/2),x]
```

```
[Out] (-4*Sqrt[2]*(c/(1 + E^((2*I)*(e + f*x))))^(5/2)*(A*(-1 + 2*E^((2*I)*(e + f*
x)) + 3*E^((4*I)*(e + f*x))) + I*B*(-1 + 8*E^((2*I)*(e + f*x)) + 12*E^((4*I
```

```
)*(e + f*x))) + 3*(A + (4*I)*B)*E^((3*I)*(e + f*x))*(1 + E^((2*I)*(e + f*x)
))*ArcTan[E^(I*(e + f*x))]))/(3*a*f*(-I + Tan[e + f*x])*Sqrt[a + I*a*Tan[e
+ f*x]])
```

Maple [B] time = 0.125, size = 669, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/3/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*c^2/a^2*(-12*
I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2
))*tan(f*x+e)^3*a*c+9*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c-3*A*ln((a*c*tan(f*x+e)+(a*c*(1+ta
n(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+36*I*B*ln((a*
c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x
+e)*a*c+29*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2-36*B*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)^2*a*c-3*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3-3*
I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2
))*a*c-12*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+9*A*ln((a
*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*
x+e)*a*c+8*A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-19*I*B*(
a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+12*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan
(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c+45*B*(a*c*(1+tan(f*x+e)^2))
^(1/2)*(a*c)^(1/2)*tan(f*x+e)-4*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))
/(a*c*(1+tan(f*x+e)^2))^(1/2)/(-tan(f*x+e)+I)^3/(a*c)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.78026, size = 1447, normalized size = 6.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*(3*a^2*sqrt((4*A^2 + 32*I*A*B - 64*B^2)*c^5/(a^3*f^2))*f*e^(4*I*f*x +
4*I*e)*log((2*((2*I*A - 8*B)*c^2*e^(2*I*f*x + 2*I*e) + (2*I*A - 8*B)*c^2)*s
qrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x
 + I*e) + (a^2*f*e^(2*I*f*x + 2*I*e) - a^2*f)*sqrt((4*A^2 + 32*I*A*B - 64*B
^2)*c^5/(a^3*f^2)))/((-4*I*A + 16*B)*c^2*e^(2*I*f*x + 2*I*e) + (-4*I*A + 16
*B)*c^2)) - 3*a^2*sqrt((4*A^2 + 32*I*A*B - 64*B^2)*c^5/(a^3*f^2))*f*e^(4*I*
f*x + 4*I*e)*log((2*((2*I*A - 8*B)*c^2*e^(2*I*f*x + 2*I*e) + (2*I*A - 8*B)*
c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^
(I*f*x + I*e) - (a^2*f*e^(2*I*f*x + 2*I*e) - a^2*f)*sqrt((4*A^2 + 32*I*A*B
- 64*B^2)*c^5/(a^3*f^2)))/((-4*I*A + 16*B)*c^2*e^(2*I*f*x + 2*I*e) + (-4*I*
A + 16*B)*c^2)) + 2*((8*I*A - 38*B)*c^2*e^(5*I*f*x + 5*I*e) + (-12*I*A + 48
*B)*c^2*e^(4*I*f*x + 4*I*e) + (8*I*A - 38*B)*c^2*e^(3*I*f*x + 3*I*e) + (-8*
I*A + 32*B)*c^2*e^(2*I*f*x + 2*I*e) + (4*I*A - 4*B)*c^2)*sqrt(a/(e^(2*I*f*x
 + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-4*I*
f*x - 4*I*e)/(a^2*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2)/(a+I*a*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(5/2)/(I*a*tan(f*x +
 e) + a)^(3/2), x)
```

3.838 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=157

$$\frac{2Bc^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{3f(a+ia\tan(e+fx))^{3/2}}+\frac{2Bc\sqrt{c-ic\tan(e+fx)}}{af\sqrt{a+ia\tan(e+fx)}}$$

```
[Out] (2*B*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
I*c*Tan[e + f*x]])])/(a^(3/2)*f) + (2*B*c*Sqrt[c - I*c*Tan[e + f*x]])/(a*f*
Sqrt[a + I*a*Tan[e + f*x]]) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f
*(a + I*a*Tan[e + f*x])^(3/2))
```

Rubi [A] time = 0.265271, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 47, 63, 217, 203}

$$\frac{2Bc^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{3f(a+ia\tan(e+fx))^{3/2}}+\frac{2Bc\sqrt{c-ic\tan(e+fx)}}{af\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[e + f*
x])^(3/2),x]
```

```
[Out] (2*B*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
I*c*Tan[e + f*x]])])/(a^(3/2)*f) + (2*B*c*Sqrt[c - I*c*Tan[e + f*x]])/(a*f*
Sqrt[a + I*a*Tan[e + f*x]]) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(3*f
*(a + I*a*Tan[e + f*x])^(3/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{(a+iax)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{3f(a+ia\tan(e+fx))^{3/2}} - \frac{(iBc)\,\text{Subst}\left(\int \frac{\sqrt{c-icx}}{(a+iax)^{3/2}}\,dx, x, \tan(e\right.}{f}$$

$$= \frac{2Bc\sqrt{c-ic\tan(e+fx)}}{af\sqrt{a+ia\tan(e+fx)}} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{\left(iBc^2\right)\text{Su}}{}$$

$$= \frac{2Bc\sqrt{c-ic\tan(e+fx)}}{af\sqrt{a+ia\tan(e+fx)}} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{\left(2Bc^2\right)\text{Su}}{}$$

$$= \frac{2Bc\sqrt{c-ic\tan(e+fx)}}{af\sqrt{a+ia\tan(e+fx)}} + \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{\left(2Bc^2\right)\text{Su}}{}$$

$$= \frac{2Bc^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{3/2}f} + \frac{2Bc\sqrt{c-ic\tan(e+fx)}}{af\sqrt{a+ia\tan(e+fx)}} + \frac{(iA-B)}{3f(a}$$

Mathematica [A] time = 7.36481, size = 114, normalized size = 0.73

$$\frac{\sqrt{2}ce^{-2i(e+fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}\left(iA+B\left(-1+6e^{2i(e+fx)}\right)+6Be^{3i(e+fx)}\tan^{-1}\left(e^{i(e+fx)}\right)\right)}{3af\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[
e + f*x])^(3/2),x]
```

```
[Out] (Sqrt[2]*c*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*(I*A + B*(-1 + 6*E^((2*I)*(e +
 f*x))) + 6*B*E^((3*I)*(e + f*x))*ArcTan[E^(I*(e + f*x))]))/(3*a*E^((2*I)*(
e + f*x))*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [B] time = 0.119, size = 408, normalized size = 2.6

$$\frac{c}{3 f a^2 \left(-\tan\left(fx+e\right)+i\right)^3}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\left(-3 iB\ln\left(\left(ac\tan\left(fx+e\right)+\sqrt{ac\left(1+\left(\mathrm{ta}\right.\right.}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/3/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a^2*c*(-3*I*B
*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*
tan(f*x+e)^3*a*c+9*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c
)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c+7*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*
c)^(1/2)*tan(f*x+e)^2-9*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+A*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)
^2))^(1/2)*(a*c)^(1/2)-5*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+3*B*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*
c+12*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+A*(a*c*(1+tan(f*
x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(-tan(f*x+e)+I)^3/
(a*c)^(1/2)
```

Maxima [A] time = 2.84403, size = 228, normalized size = 1.45

$$\frac{\left(6\,Bc\arctan\left(\cos\left(fx+e\right),\sin\left(fx+e\right)+1\right)+6\,Bc\arctan\left(\cos\left(fx+e\right),-\sin\left(fx+e\right)+1\right)-2\left(-iA+B\right)c\cos\left(3\,fx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] 1/6*(6*B*c*arctan2(cos(f*x + e), sin(f*x + e) + 1) + 6*B*c*arctan2(cos(f*x
+ e), -sin(f*x + e) + 1) - 2*(-I*A + B)*c*cos(3*f*x + 3*e) + 12*B*c*cos(f*x
 + e) + 3*I*B*c*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) -
 3*I*B*c*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1) + (2*A +
 2*I*B)*c*sin(3*f*x + 3*e) - 12*I*B*c*sin(f*x + e))*sqrt(c)/(a^(3/2)*f)
```

Fricas [B] time = 1.6577, size = 1143, normalized size = 7.28

$$-\frac{\left(3\,a^2f\sqrt{-\frac{B^2c^3}{a^3f^2}}e^{\left(4i\,fx+4ie\right)}\log\left(-\frac{2\left(Bce^{\left(2i\,fx+2ie\right)}+Bc\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2ie\right)}+1}}\sqrt{\frac{c}{e^{\left(2i\,fx+2ie\right)}+1}}e^{\left(i\,fx+ie\right)}+\left(a^2fe^{\left(2i\,fx+2ie\right)}-a^2f\right)\sqrt{-\frac{B^2c^3}{a^3f^2}}}{2\left(Bce^{\left(2i\,fx+2ie\right)}+Bc\right)}\right)-3\,a^2f\sqrt{-\frac{B^2c^3}{a^3f^2}}e\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] -1/6*(3*a^2*f*sqrt(-B^2*c^3/(a^3*f^2))*e^(4*I*f*x + 4*I*e)*log(-1/2*(2*(B*c
*e^(2*I*f*x + 2*I*e) + B*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*
I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + (a^2*f*e^(2*I*f*x + 2*I*e) - a^2*f)*
sqrt(-B^2*c^3/(a^3*f^2)))/(B*c*e^(2*I*f*x + 2*I*e) + B*c)) - 3*a^2*f*sqrt(-
B^2*c^3/(a^3*f^2))*e^(4*I*f*x + 4*I*e)*log(-1/2*(2*(B*c*e^(2*I*f*x + 2*I*e)
 + B*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))
*e^(I*f*x + I*e) - (a^2*f*e^(2*I*f*x + 2*I*e) - a^2*f)*sqrt(-B^2*c^3/(a^3*f
^2)))/(B*c*e^(2*I*f*x + 2*I*e) + B*c)) - ((-2*I*A - 10*B)*c*e^(5*I*f*x + 5*
I*e) + 12*B*c*e^(4*I*f*x + 4*I*e) + (-2*I*A - 10*B)*c*e^(3*I*f*x + 3*I*e) +
 (2*I*A + 10*B)*c*e^(2*I*f*x + 2*I*e) + (2*I*A - 2*B)*c)*sqrt(a/(e^(2*I*f*x
 + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-4*I*
f*x - 4*I*e)/(a^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2)/(a+I*a*tan(f*x+e))**(3
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(3/2)/(I*a*tan(f*x +
 e) + a)^(3/2), x)
```

3.839 $\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=104

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{3f(a+ia\tan(e+fx))^{3/2}}+\frac{(2B+iA)\sqrt{c-ic\tan(e+fx)}}{3af\sqrt{a+ia\tan(e+fx)}}$$

```
[Out] ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*f*(a + I*a*Tan[e + f*x])^(3/2)) +
 ((I*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*a*f*Sqrt[a + I*a*Tan[e + f*x]]
)
```

Rubi [A] time = 0.214955, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{3f(a+ia\tan(e+fx))^{3/2}}+\frac{(2B+iA)\sqrt{c-ic\tan(e+fx)}}{3af\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e + f*x]
)^(3/2),x]
```


```
[Out] ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*f*(a + I*a*Tan[e + f*x])^(3/2)) +
 ((I*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*a*f*Sqrt[a + I*a*Tan[e + f*x]]
)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
```

```
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^{5/2}\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{((A-2iB)c)\,\text{Subst}\left(\int \frac{1}{(a+iax)^{3/2}\sqrt{c-icx}}\,dx\right.}{3f}$$
$$= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{(iA+2B)\sqrt{c-ic\tan(e+fx)}}{3af\sqrt{a+ia\tan(e+fx)}}$$

Mathematica [A] time = 4.14039, size = 81, normalized size = 0.78

$$\frac{\sqrt{c-ic\tan(e+fx)}((2B+iA)\tan(e+fx)+2A-iB)}{3af(\tan(e+fx)-i)\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e
+ f*x])^(3/2),x]
```

```
[Out] ((2*A - I*B + (I*A + 2*B)*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(3*a*f*
(-I + Tan[e + f*x])*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.114, size = 103, normalized size = 1.

$$\frac{2\,iB\left(\tan\left(fx+e\right)\right)^{2}+3\,iA\tan\left(fx+e\right)-A\left(\tan\left(fx+e\right)\right)^{2}-iB+3\,B\tan\left(fx+e\right)+2\,A}{3\,fa^{2}\left(-\tan\left(fx+e\right)+i\right)^{3}}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/3/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a^2*(2*I*B*ta
n(f*x+e)^2+3*I*A*tan(f*x+e)-A*tan(f*x+e)^2-I*B+3*B*tan(f*x+e)+2*A)/(-tan(f*
x+e)+I)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.32497, size = 348, normalized size = 3.35

$$\frac{\left((-4i\,A-2\,B)e^{\left(5i\,fx+5i\,e\right)}+(3i\,A+3\,B)e^{\left(4i\,fx+4i\,e\right)}+(-4i\,A-2\,B)e^{\left(3i\,fx+3i\,e\right)}+(4i\,A+2\,B)e^{\left(2i\,fx+2i\,e\right)}+i\,A-B\right)\sqrt{\frac{a}{e^{\left(2i\,fx+2i\,e\right)}}}}{6\,a^2 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/6*((-4*I*A - 2*B)*e^(5*I*f*x + 5*I*e) + (3*I*A + 3*B)*e^(4*I*f*x + 4*I*e)
 + (-4*I*A - 2*B)*e^(3*I*f*x + 3*I*e) + (4*I*A + 2*B)*e^(2*I*f*x + 2*I*e) +
 I*A - B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1
))*e^(-3*I*f*x - 3*I*e)/(a^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(3
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{-ic\tan\left(fx+e\right)+c}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(-I*c*tan(f*x + e) + c)/(I*a*tan(f*x + e
) + a)^(3/2), x)
```

3.840 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=152

$$-\frac{B+iA}{f(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}}+\frac{(B+2iA)\sqrt{c-ic\tan(e+fx)}}{3acf\sqrt{a+ia\tan(e+fx)}}+\frac{(B+2iA)\sqrt{c-ic\tan(e+fx)}}{3cf(a+ia\tan(e+fx))^{3/2}}$$

```
[Out] -((I*A + B)/(f*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])) +
(((2*I)*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*c*f*(a + I*a*Tan[e + f*x])^(3
/2)) + (((2*I)*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*a*c*f*Sqrt[a + I*a*Tan
[e + f*x]])
```

Rubi [A] time = 0.246077, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{B+iA}{f(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}}+\frac{(B+2iA)\sqrt{c-ic\tan(e+fx)}}{3acf\sqrt{a+ia\tan(e+fx)}}+\frac{(B+2iA)\sqrt{c-ic\tan(e+fx)}}{3cf(a+ia\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e +
 f*x]]),x]
```

```
[Out] -((I*A + B)/(f*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]])) +
(((2*I)*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*c*f*(a + I*a*Tan[e + f*x])^(3
/2)) + (((2*I)*A + B)*Sqrt[c - I*c*Tan[e + f*x]])/(3*a*c*f*Sqrt[a + I*a*Tan
[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^{5/2}(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(a(2A-iB))\,\mathrm{Subst}}{}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(2iA+B)\sqrt{c-ic\,\mathrm{ta}}}{3cf(a+ia\tan(e+}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{3/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(2iA+B)\sqrt{c-ic\,\mathrm{ta}}}{3cf(a+ia\tan(e+}$$

Mathematica [A] time = 4.81573, size = 85, normalized size = 0.56

$$-\frac{i\sqrt{c-ic\tan(e+fx)}((B+2iA)\sin(2(e+fx))+(A-2iB)\cos(2(e+fx))-3A)}{6acf\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*T
an[e + f*x]]),x]
```

```
[Out] ((-I/6)*(-3*A + (A - (2*I)*B)*Cos[2*(e + f*x)] + ((2*I)*A + B)*Sin[2*(e + f
*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(a*c*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.187, size = 152, normalized size = 1.

$$\frac{\frac{i}{3}\left(2\,iA\left(\tan\left(fx+e\right)\right)^{4}-iB\left(\tan\left(fx+e\right)\right)^{3}+B\left(\tan\left(fx+e\right)\right)^{4}+3\,iA\left(\tan\left(fx+e\right)\right)^{2}+2\,A\left(\tan\left(fx+e\right)\right)^{3}-iB\tan\left(\right.\right.}{fa^{2}c\left(-\tan\left(fx+e\right)+i\right)^{3}\left(\tan\left(fx+e\right)+i\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/3*I/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a^2/c*(2*I*
A*tan(f*x+e)^4-I*B*tan(f*x+e)^3+B*tan(f*x+e)^4+3*I*A*tan(f*x+e)^2+2*A*tan(f
*x+e)^3-I*B*tan(f*x+e)+I*A+2*A*tan(f*x+e)-B)/(-tan(f*x+e)+I)^3/(tan(f*x+e)+
I)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.3744, size = 400, normalized size = 2.63

$$\frac{\left((-3i\,A-3\,B)e^{(6i\,fx+6i\,e)}+(-4i\,A+4\,B)e^{(5i\,fx+5i\,e)}+(3i\,A-3\,B)e^{(4i\,fx+4i\,e)}+(-4i\,A+4\,B)e^{(3i\,fx+3i\,e)}+(7i\,A-B)e^{(2i\,fx+2}\right.}{12\,a^{2}cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/12*((-3*I*A - 3*B)*e^(6*I*f*x + 6*I*e) + (-4*I*A + 4*B)*e^(5*I*f*x + 5*I*
e) + (3*I*A - 3*B)*e^(4*I*f*x + 4*I*e) + (-4*I*A + 4*B)*e^(3*I*f*x + 3*I*e)
 + (7*I*A - B)*e^(2*I*f*x + 2*I*e) + I*A - B)*sqrt(a/(e^(2*I*f*x + 2*I*e) +
 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-3*I*f*x - 3*I*e)/(a^2*c*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2)/(a+I*a*tan(f*x+e))**(3
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{-ic\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^(3/2)*sqrt(-I*c*tan(
f*x + e) + c)), x)
```

3.841 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=150

$$-\frac{B+iA}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}}+\frac{2A\tan(e+fx)}{3acf\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}+\frac{}{3cf(a+ia\tan(e+fx}$$

```
[Out] -(I*A + B)/(3*f*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))
+ ((I/3)*A)/(c*f*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]]) +
 (2*A*Tan[e + f*x])/(3*a*c*f*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e
+ f*x]])
```

Rubi [A] time = 0.245398, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 39}

$$-\frac{B+iA}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}}+\frac{2A\tan(e+fx)}{3acf\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}+\frac{}{3cf(a+ia\tan(e+fx}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x
])^(3/2)),x]
```

```
[Out] -(I*A + B)/(3*f*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(3/2))
+ ((I/3)*A)/(c*f*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*Tan[e + f*x]]) +
 (2*A*Tan[e + f*x])/(3*a*c*f*Sqrt[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e
+ f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 39

```
Int[1/(((a_) + (b_.)*(x_))^(3/2)*((c_) + (d_.)*(x_))^(3/2)), x_Symbol] :> S
imp[x/(a*c*Sqrt[a + b*x]*Sqrt[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] && Eq
Q[b*c + a*d, 0]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^{5/2}(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}} + \frac{(aA)\,\mathrm{Subst}\Big(\int$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}} + \frac{}{3cf(a+ia\tan}$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{3/2}} + \frac{}{3cf(a+ia\tan}$$

Mathematica [A] time = 8.5646, size = 120, normalized size = 0.8

$$\frac{\sqrt{c-ic\tan(e+fx)}(\sin(2(e+fx))-i\cos(2(e+fx)))(9A\tan(e+fx)+A\sin(3(e+fx))\sec(e+fx)-2B\cos(2(e+f}{12ac^2f(\tan(e+fx)-i)\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e
 + f*x])^(3/2)),x]
```

```
[Out] (((-I)*Cos[2*(e + f*x)] + Sin[2*(e + f*x)])*(-2*B - 2*B*Cos[2*(e + f*x)] +
A*Sec[e + f*x]*Sin[3*(e + f*x)] + 9*A*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*
x]])/(12*a*c^2*f*(-I + Tan[e + f*x])*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.125, size = 113, normalized size = 0.8

$$-\frac{2A\left(\tan\left(fx+e\right)\right)^{5}+5A\left(\tan\left(fx+e\right)\right)^{3}-B\left(\tan\left(fx+e\right)\right)^{2}+3A\tan\left(fx+e\right)-B}{3fa^{2}c^{2}\left(-\tan\left(fx+e\right)+i\right)^{3}\left(\tan\left(fx+e\right)+i\right)^{3}}\sqrt{a\left(1+i\tan\left(fx+e\right)\right)}\sqrt{-c\left(-1+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/3/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a^2/c^2*(2*A
*tan(f*x+e)^5+5*A*tan(f*x+e)^3-B*tan(f*x+e)^2+3*A*tan(f*x+e)-B)/(-tan(f*x+e
)+I)^3/(tan(f*x+e)+I)^3
```

Maxima [A] time = 2.55065, size = 267, normalized size = 1.78

$$\frac{\left(3\left(3iA-B\right)\cos\left(2fx+2e\right)-\left(9A+3iB\right)\sin\left(2fx+2e\right)-2B\right)\cos\left(\frac{3}{2}\arctan\left(\sin\left(2fx+2e\right),\cos\left(2fx+2e\right)\right)\right)+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

```
[Out] 1/24*((3*(3*I*A - B)*cos(2*f*x + 2*e) - (9*A + 3*I*B)*sin(2*f*x + 2*e) - 2*
B)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 3*(-3*I*A - B)*co
s(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((9*A + 3*I*B)*cos(2*f
*x + 2*e) + 3*(3*I*A - B)*sin(2*f*x + 2*e) + 2*A)*sin(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) + (9*A - 3*I*B)*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))))/(a^(3/2)*c^(3/2)*f)
```

Fricas [A] time = 1.38303, size = 409, normalized size = 2.73

$$\frac{\left((-iA-B)e^{(8ifx+8ie)}+(-10iA-4B)e^{(6ifx+6ie)}+8Be^{(5ifx+5ie)}-6Be^{(4ifx+4ie)}+8Be^{(3ifx+3ie)}+(10iA-4B)e^{(2ifx+2i}\right.}{24a^2c^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/24*((-I*A - B)*e^(8*I*f*x + 8*I*e) + (-10*I*A - 4*B)*e^(6*I*f*x + 6*I*e)
+ 8*B*e^(5*I*f*x + 5*I*e) - 6*B*e^(4*I*f*x + 4*I*e) + 8*B*e^(3*I*f*x + 3*I*
e) + (10*I*A - 4*B)*e^(2*I*f*x + 2*I*e) + I*A - B)*sqrt(a/(e^(2*I*f*x + 2*I
*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-3*I*f*x - 3*I*e)/(a^2*c^2*f
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(3/2)/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^(3/2)*(-I*c*tan(f*x
+ e) + c)^(3/2)), x)
```

3.842 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=269

$$-\frac{2(-B+4iA)\sqrt{a+ia\tan(e+fx)}}{15a^2c^2f\sqrt{c-ic\tan(e+fx)}}-\frac{2(-B+4iA)\sqrt{a+ia\tan(e+fx)}}{15a^2cf(c-ic\tan(e+fx))^{3/2}}-\frac{(-B+4iA)\sqrt{a+ia\tan(e+fx)}}{5a^2f(c-ic\tan(e+fx))^{5/2}}+\frac{}{3f(a+ia\,\mathrm{ta}}$$

```
[Out] (I*A - B)/(3*f*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(5/2)) +
 ((4*I)*A - B)/(3*a*f*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/
2)) - (((4*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(5*a^2*f*(c - I*c*Tan[e +
f*x])^(5/2)) - (2*((4*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*a^2*c*f*(c
- I*c*Tan[e + f*x])^(3/2)) - (2*((4*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(
15*a^2*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.317456, antiderivative size = 269, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$-\frac{2(-B+4iA)\sqrt{a+ia\tan(e+fx)}}{15a^2c^2f\sqrt{c-ic\tan(e+fx)}}-\frac{2(-B+4iA)\sqrt{a+ia\tan(e+fx)}}{15a^2cf(c-ic\tan(e+fx))^{3/2}}-\frac{(-B+4iA)\sqrt{a+ia\tan(e+fx)}}{5a^2f(c-ic\tan(e+fx))^{5/2}}+\frac{}{3f(a+ia\,\mathrm{ta}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x
])^(5/2)),x]
```


```
[Out] (I*A - B)/(3*f*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e + f*x])^(5/2)) +
 ((4*I)*A - B)/(3*a*f*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(5/
2)) - (((4*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(5*a^2*f*(c - I*c*Tan[e +
f*x])^(5/2)) - (2*((4*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(15*a^2*c*f*(c
- I*c*Tan[e + f*x])^(3/2)) - (2*((4*I)*A - B)*Sqrt[a + I*a*Tan[e + f*x]])/(
15*a^2*c^2*f*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^{5/2}(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{iA-B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}} + \frac{((4A+iB)c)\,\text{Su}}{}$$

$$= \frac{iA-B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{3af\sqrt{a+ia\tan}}$$

$$= \frac{iA-B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{3af\sqrt{a+ia\tan}}$$

$$= \frac{iA-B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{3af\sqrt{a+ia\tan}}$$

$$= \frac{iA-B}{3f(a+ia\tan(e+fx))^{3/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{3af\sqrt{a+ia\tan}}$$

Mathematica [A] time = 11.8992, size = 170, normalized size = 0.63

$$\frac{\sec(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(3(e+fx))+i\sin(3(e+fx)))(20(A+iB)\cos(2(e+fx))+(A+4iB)\cos(4(e+fx))}{120ac^3f(\tan(e+fx)-i)\sqrt{a+ia\tan}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e
 + f*x])^(5/2)),x]
```

```
[Out] (Sec[e + f*x]*(Cos[3*(e + f*x)] + I*Sin[3*(e + f*x)])*(-45*A + 20*(A + I*B)
*Cos[2*(e + f*x)] + (A + (4*I)*B)*Cos[4*(e + f*x)] - (40*I)*A*Sin[2*(e + f*
x)] + 10*B*Sin[2*(e + f*x)] - (4*I)*A*Sin[4*(e + f*x)] + B*Sin[4*(e + f*x)]
)*Sqrt[c - I*c*Tan[e + f*x]])/(120*a*c^3*f*(-I + Tan[e + f*x])*Sqrt[a + I*a
*Tan[e + f*x]])
```

Maple [A] time = 0.138, size = 199, normalized size = 0.7

$$\frac{\frac{i}{15}\left(8\,iA\left(\tan\left(fx+e\right)\right)^{6}-2\,iB\left(\tan\left(fx+e\right)\right)^{5}-2\,B\left(\tan\left(fx+e\right)\right)^{6}+20\,iA\left(\tan\left(fx+e\right)\right)^{4}-8\,A\left(\tan\left(fx+e\right)\right)^{5}-5\right.}{fa^2c^3\left(\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a^2/c^3*(8
*I*A*tan(f*x+e)^6-2*I*B*tan(f*x+e)^5-2*B*tan(f*x+e)^6+20*I*A*tan(f*x+e)^4-8
*A*tan(f*x+e)^5-5*I*B*tan(f*x+e)^3-5*B*tan(f*x+e)^4+15*I*A*tan(f*x+e)^2-20*
A*tan(f*x+e)^3-3*I*B*tan(f*x+e)+3*I*A-12*A*tan(f*x+e)+3*B)/(tan(f*x+e)+I)^4
/(-tan(f*x+e)+I)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.46272, size = 531, normalized size = 1.97

$$\frac{\left((-3i\,A-3\,B)e^{\left(10i\,fx+10i\,e\right)}+(-23i\,A-13\,B)e^{\left(8i\,fx+8i\,e\right)}+(-110i\,A-10\,B)e^{\left(6i\,fx+6i\,e\right)}+(48i\,A+48\,B)e^{\left(5i\,fx+5i\,e\right)}+(-30i\,A\right.}{240}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/240*((-3*I*A - 3*B)*e^(10*I*f*x + 10*I*e) + (-23*I*A - 13*B)*e^(8*I*f*x +
 8*I*e) + (-110*I*A - 10*B)*e^(6*I*f*x + 6*I*e) + (48*I*A + 48*B)*e^(5*I*f*
x + 5*I*e) + (-30*I*A - 30*B)*e^(4*I*f*x + 4*I*e) + (48*I*A + 48*B)*e^(3*I*
f*x + 3*I*e) + (65*I*A - 35*B)*e^(2*I*f*x + 2*I*e) + 5*I*A - 5*B)*sqrt(a/(e
^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-3*I*f*x - 3*
I*e)/(a^2*c^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(3/2)/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^(3/2)*(-I*c*tan(f*x
+ e) + c)^(5/2)), x)
```

3.843 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=343

$$\frac{7c^{9/2}(-7B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f}+\frac{7c^4(-7B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^3f}+\frac{7c^3(-7B+2iA)\sqrt{}}{}$$

```
[Out] (7*((2*I)*A - 7*B)*c^(9/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(5/2)*f) + (7*((2*I)*A - 7*B)*c^4*Sqr
t[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*a^3*f) + (7*((2*I)*A
 - 7*B)*c^3*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(6*a^3
*f) + (14*((2*I)*A - 7*B)*c^2*(c - I*c*Tan[e + f*x])^(5/2))/(15*a^2*f*Sqrt[
a + I*a*Tan[e + f*x]]) - (2*((2*I)*A - 7*B)*c*(c - I*c*Tan[e + f*x])^(7/2))
/(15*a*f*(a + I*a*Tan[e + f*x])^(3/2)) + ((I*A - B)*(c - I*c*Tan[e + f*x])^
(9/2))/(5*f*(a + I*a*Tan[e + f*x])^(5/2))
```

Rubi [A] time = 0.380989, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$\frac{7c^{9/2}(-7B+2iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f}+\frac{7c^4(-7B+2iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^3f}+\frac{7c^3(-7B+2iA)\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(9/2))/(a + I*a*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (7*((2*I)*A - 7*B)*c^(9/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqr
t[a]*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(5/2)*f) + (7*((2*I)*A - 7*B)*c^4*Sqr
t[a + I*a*Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(2*a^3*f) + (7*((2*I)*A
 - 7*B)*c^3*Sqrt[a + I*a*Tan[e + f*x]]*(c - I*c*Tan[e + f*x])^(3/2))/(6*a^3
*f) + (14*((2*I)*A - 7*B)*c^2*(c - I*c*Tan[e + f*x])^(5/2))/(15*a^2*f*Sqrt[
a + I*a*Tan[e + f*x]]) - (2*((2*I)*A - 7*B)*c*(c - I*c*Tan[e + f*x])^(7/2))
/(15*a*f*(a + I*a*Tan[e + f*x])^(3/2)) + ((I*A - B)*(c - I*c*Tan[e + f*x])^
(9/2))/(5*f*(a + I*a*Tan[e + f*x])^(5/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{9/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{7/2}}{(a+iax)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{9/2}}{5f(a+ia\tan(e+fx))^{5/2}} - \frac{((2A+7iB)c)\,\text{Subst}\left(\int \frac{(c-icx)^{7/2}}{(a+iax)^{5/2}}\,dx,\right.}{5f}$$

$$= -\frac{2(2iA-7B)c(c-ic\tan(e+fx))^{7/2}}{15af(a+ia\tan(e+fx))^{3/2}} + \frac{(iA-B)(c-ic\tan(e+fx))^{9/2}}{5f(a+ia\tan(e+fx))^{5/2}}$$

$$= \frac{14(2iA-7B)c^2(c-ic\tan(e+fx))^{5/2}}{15a^2f\sqrt{a+ia\tan(e+fx)}} - \frac{2(2iA-7B)c(c-ic\tan(e+f}{15af(a+ia\tan(e+fx))^3}$$

$$= \frac{7(2iA-7B)c^3\sqrt{a+ia\tan(e+fx)}(c-ic\tan(e+fx))^{3/2}}{6a^3f} + \frac{14(2iA-7}{15a^2}$$

$$= \frac{7(2iA-7B)c^4\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^3f} + \frac{7(2iA-7B)}{}$$

$$= \frac{7(2iA-7B)c^4\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^3f} + \frac{7(2iA-7B)}{}$$

$$= \frac{7(2iA-7B)c^4\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{2a^3f} + \frac{7(2iA-7B)}{}$$

$$= \frac{7(2iA-7B)c^{9/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f} + \frac{7(2iA-7B)c^4\sqrt{a+ia\tan}}{2}$$

Mathematica [A] time = 15.1775, size = 247, normalized size = 0.72

$$-\frac{\sqrt{2}c^4e^{-4i(e+fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}\left(105(7B-2iA)e^{5i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2\tan^{-1}\left(e^{i(e+fx)}\right)-2iA\left(-8e^{2i(e+fx)}+56e^{4i(e+fx)}+175e^{6}\right.\right.}{15a^2f\left(1+e^{2i(e+fx)}\right)^2\sqrt{a+ia\tan}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(9/2))/(a + I*a*Tan[
e + f*x])^(5/2),x]
```

```
[Out] -(Sqrt[2]*c^4*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*((-2*I)*A*(6 - 8*E^((2*I)*(
e + f*x)) + 56*E^((4*I)*(e + f*x)) + 175*E^((6*I)*(e + f*x)) + 105*E^((8*I)
*(e + f*x))) + B*(12 - 56*E^((2*I)*(e + f*x)) + 392*E^((4*I)*(e + f*x)) + 1
225*E^((6*I)*(e + f*x)) + 735*E^((8*I)*(e + f*x))) + 105*((-2*I)*A + 7*B)*E
^((5*I)*(e + f*x))*(1 + E^((2*I)*(e + f*x)))^2*ArcTan[E^(I*(e + f*x))]))/(1
5*a^2*E^((4*I)*(e + f*x))*(1 + E^((2*I)*(e + f*x)))^2*f*Sqrt[a + I*a*Tan[e
+ f*x]])
```

Maple [B] time = 0.125, size = 899, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/30/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*c^4/a^3*(-38
81*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+4410*I*B*ln((a*c
*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+
e)^2*a*c+2014*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^3+840
*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/
2))*tan(f*x+e)^3*a*c-210*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*
(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^4*a*c-735*I*B*ln((a*c*tan(f*x+e)+(a*c*
(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^4*a*c+15*I*B*(
a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^5-2940*B*ln((a*c*tan(f*x
+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c
-150*B*tan(f*x+e)^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+30*I*A*(a*c*(1
+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^4-840*I*A*ln((a*c*tan(f*x+e)+(
a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)*a*c+1260*A
*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*
```

```
tan(f*x+e)^2*a*c+584*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2
)-735*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c
)^(1/2))*a*c+334*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+2940*B*ln((a*
c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x
+e)*a*c+4576*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-1316*I
*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2-210*A*ln((a*c*tan(
f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-1096*A*(a
*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-1154*B*(a*c)^(1/2)*(a*c*(
1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(a*c)^(1/2)/(-tan(f*x+
e)+I)^4
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.91753, size = 1820, normalized size = 5.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/60*(2*((-334*I*A + 1154*B)*c^4*e^(9*I*f*x + 9*I*e) + (420*I*A - 1470*B)*c
^4*e^(8*I*f*x + 8*I*e) + (-668*I*A + 2308*B)*c^4*e^(7*I*f*x + 7*I*e) + (700
*I*A - 2450*B)*c^4*e^(6*I*f*x + 6*I*e) + (-334*I*A + 1154*B)*c^4*e^(5*I*f*x
 + 5*I*e) + (224*I*A - 784*B)*c^4*e^(4*I*f*x + 4*I*e) + (-32*I*A + 112*B)*c
^4*e^(2*I*f*x + 2*I*e) + (24*I*A - 24*B)*c^4)*sqrt(a/(e^(2*I*f*x + 2*I*e) +
 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) - 15*(a^3*f*e^(8*I*f
*x + 8*I*e) + a^3*f*e^(6*I*f*x + 6*I*e))*sqrt((196*A^2 + 1372*I*A*B - 2401*
B^2)*c^9/(a^5*f^2))*log((2*((14*I*A - 49*B)*c^4*e^(2*I*f*x + 2*I*e) + (14*I
*A - 49*B)*c^4)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*
```

```
e) + 1))*e^(I*f*x + I*e) + (a^3*f*e^(2*I*f*x + 2*I*e) - a^3*f)*sqrt((196*A^
2 + 1372*I*A*B - 2401*B^2)*c^9/(a^5*f^2)))/((-28*I*A + 98*B)*c^4*e^(2*I*f*x
 + 2*I*e) + (-28*I*A + 98*B)*c^4)) + 15*(a^3*f*e^(8*I*f*x + 8*I*e) + a^3*f*
e^(6*I*f*x + 6*I*e))*sqrt((196*A^2 + 1372*I*A*B - 2401*B^2)*c^9/(a^5*f^2))*
log((2*((14*I*A - 49*B)*c^4*e^(2*I*f*x + 2*I*e) + (14*I*A - 49*B)*c^4)*sqrt
(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x +
I*e) - (a^3*f*e^(2*I*f*x + 2*I*e) - a^3*f)*sqrt((196*A^2 + 1372*I*A*B - 240
1*B^2)*c^9/(a^5*f^2)))/((-28*I*A + 98*B)*c^4*e^(2*I*f*x + 2*I*e) + (-28*I*A
 + 98*B)*c^4)))/(a^3*f*e^(8*I*f*x + 8*I*e) + a^3*f*e^(6*I*f*x + 6*I*e))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(9/2)/(a+I*a*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{9}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(9/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(9/2)/(I*a*tan(f*x +
 e) + a)^(5/2), x)
```

3.844 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=284

$$\frac{2c^{7/2}(-6B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f}+\frac{c^3(-6B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^3f}+\frac{2c^2(-6B+iA)(c-ic}{3a^2f\sqrt{a+ia\,\mathrm{ta}}}$$

```
[Out] (2*(I*A - 6*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(5/2)*f) + ((I*A - 6*B)*c^3*Sqrt[a + I*a*
Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(a^3*f) + (2*(I*A - 6*B)*c^2*(c -
 I*c*Tan[e + f*x])^(3/2))/(3*a^2*f*Sqrt[a + I*a*Tan[e + f*x]]) - (2*(I*A -
6*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(15*a*f*(a + I*a*Tan[e + f*x])^(3/2))
+ ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(5*f*(a + I*a*Tan[e + f*x])^(5/2
))
```

Rubi [A] time = 0.342894, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {3588, 78, 47, 50, 63, 217, 203}

$$\frac{2c^{7/2}(-6B+iA)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f}+\frac{c^3(-6B+iA)\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^3f}+\frac{2c^2(-6B+iA)(c-ic}{3a^2f\sqrt{a+ia\,\mathrm{ta}}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (2*(I*A - 6*B)*c^(7/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]
*Sqrt[c - I*c*Tan[e + f*x]])])/(a^(5/2)*f) + ((I*A - 6*B)*c^3*Sqrt[a + I*a*
Tan[e + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])/(a^3*f) + (2*(I*A - 6*B)*c^2*(c -
 I*c*Tan[e + f*x])^(3/2))/(3*a^2*f*Sqrt[a + I*a*Tan[e + f*x]]) - (2*(I*A -
6*B)*c*(c - I*c*Tan[e + f*x])^(5/2))/(15*a*f*(a + I*a*Tan[e + f*x])^(3/2))
+ ((I*A - B)*(c - I*c*Tan[e + f*x])^(7/2))/(5*f*(a + I*a*Tan[e + f*x])^(5/2
))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
```

```
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{7/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{(A+Bx)(c-icx)^{5/2}}{(a+iax)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{5f(a+ia\tan(e+fx))^{5/2}} - \frac{((A+6iB)c)\,\mathrm{Subst}\left(\int \frac{(c-icx)^{5/2}}{(a+iax)^{5/2}}\,dx, x\right.}{5f}$$

$$= -\frac{2(iA-6B)c(c-ic\tan(e+fx))^{5/2}}{15af(a+ia\tan(e+fx))^{3/2}} + \frac{(iA-B)(c-ic\tan(e+fx))^{7/2}}{5f(a+ia\tan(e+fx))^{5/2}}$$

$$= \frac{2(iA-6B)c^2(c-ic\tan(e+fx))^{3/2}}{3a^2f\sqrt{a+ia\tan(e+fx)}} - \frac{2(iA-6B)c(c-ic\tan(e+fx))^{5}}{15af(a+ia\tan(e+fx))^{3/2}}$$

$$= \frac{(iA-6B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^3f} + \frac{2(iA-6B)c^2(c}{3a^2f\sqrt{a+}}$$

$$= \frac{(iA-6B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^3f} + \frac{2(iA-6B)c^2(c}{3a^2f\sqrt{a+}}$$

$$= \frac{(iA-6B)c^3\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}{a^3f} + \frac{2(iA-6B)c^2(c}{3a^2f\sqrt{a+}}$$

$$= \frac{2(iA-6B)c^{7/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f} + \frac{(iA-6B)c^3\sqrt{a+ia\tan(e+}}{a^3f}$$

Mathematica [A] time = 14.2969, size = 205, normalized size = 0.72

$$\frac{2\sqrt{2}c^2e^{-4i(e+fx)}\left(\frac{c}{1+e^{2i(e+fx)}}\right)^{3/2}\left(15i(A+6iB)e^{5i(e+fx)}\left(1+e^{2i(e+fx)}\right)\tan^{-1}\left(e^{i(e+fx)}\right)+iA\left(-2e^{2i(e+fx)}+10e^{4i(e+fx)}+15e^{6i(e+f}\right.\right.}{15a^2f\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(7/2))/(a + I*a*Tan[
e + f*x])^(5/2),x]
```

```
[Out] (2*Sqrt[2]*c^2*(c/(1 + E^((2*I)*(e + f*x))))^(3/2)*(I*A*(3 - 2*E^((2*I)*(e
+ f*x)) + 10*E^((4*I)*(e + f*x)) + 15*E^((6*I)*(e + f*x))) - 3*B*(1 - 4*E^(
(2*I)*(e + f*x)) + 20*E^((4*I)*(e + f*x)) + 30*E^((6*I)*(e + f*x))) + (15*I
)*(A + (6*I)*B)*E^((5*I)*(e + f*x))*(1 + E^((2*I)*(e + f*x)))*ArcTan[E^(I*(
e + f*x))]))/(15*a^2*E^((4*I)*(e + f*x))*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [B] time = 0.121, size = 835, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*c^3/a^3*(-47
4*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)+540*I*B*ln((a*c*t
an(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)
^2*a*c-15*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a
*c)^(1/2))*tan(f*x+e)^4*a*c+246*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2
)*tan(f*x+e)^3+60*I*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)
^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c-360*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(
f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c-15*B*tan(f*x+e)
^4*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)-90*I*B*ln((a*c*tan(f*x+e)+(a*c*
(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^4*a*c-60*I*A*l
n((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*ta
n(f*x+e)*a*c+90*A*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/
2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+46*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))^
(1/2)*(a*c)^(1/2)-90*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a
*c)^(1/2))/(a*c)^(1/2))*a*c+26*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)
+360*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(
1/2))*tan(f*x+e)*a*c+564*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^
(1/2)-94*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)*tan(f*x+e)^2-15*A*ln(
(a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*a*c-
74*A*(a*c)^(1/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-141*B*(a*c)^(1/2)*
(a*c*(1+tan(f*x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(-tan(f*x+e)+I)^
4/(a*c)^(1/2)
```

Maxima [B] time = 3.9302, size = 1416, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] ((900*A + 5400*I*B)*c^3*cos(6*f*x + 6*e) + (600*A + 3600*I*B)*c^3*cos(4*f*x
 + 4*e) - (120*A + 720*I*B)*c^3*cos(2*f*x + 2*e) + 900*(I*A - 6*B)*c^3*sin(
6*f*x + 6*e) + 600*(I*A - 6*B)*c^3*sin(4*f*x + 4*e) + 120*(-I*A + 6*B)*c^3*
sin(2*f*x + 2*e) + (180*A + 180*I*B)*c^3 + ((450*A + 2700*I*B)*c^3*cos(7/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (450*A + 2700*I*B)*c^3*cos(5
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 450*(I*A - 6*B)*c^3*sin(7
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 450*(I*A - 6*B)*c^3*sin(5
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan2(cos(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))), sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + 1) + ((450*A + 2700*I*B)*c^3*cos(7/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + (450*A + 2700*I*B)*c^3*cos(5/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 450*(I*A - 6*B)*c^3*sin(7/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 450*(I*A - 6*B)*c^3*sin(5/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))))*arctan2(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))), -sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1) +
(225*(I*A - 6*B)*c^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
 225*(I*A - 6*B)*c^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) -
 (225*A + 1350*I*B)*c^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) - (225*A + 1350*I*B)*c^3*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))))*log(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*sin(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) + 1) + (225*(-I*A + 6*B)*c^3*cos(7/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 225*(-I*A + 6*B)*c^3*cos(5/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (225*A + 1350*I*B)*c^3*sin(7/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + (225*A + 1350*I*B)*c^3*sin(5/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*log(cos(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e)))^2 + sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 - 2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1))*sq
rt(a)*sqrt(c)/((-450*I*a^3*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) - 450*I*a^3*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 450
*a^3*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 450*a^3*sin(5/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

Fricas [B] time = 1.73902, size = 1531, normalized size = 5.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] -1/60*(15*a^3*sqrt((4*A^2 + 48*I*A*B - 144*B^2)*c^7/(a^5*f^2))*f*e^(6*I*f*x
 + 6*I*e)*log((2*((2*I*A - 12*B)*c^3*e^(2*I*f*x + 2*I*e) + (2*I*A - 12*B)*c
^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(
I*f*x + I*e) + (a^3*f*e^(2*I*f*x + 2*I*e) - a^3*f)*sqrt((4*A^2 + 48*I*A*B -
 144*B^2)*c^7/(a^5*f^2)))/((-4*I*A + 24*B)*c^3*e^(2*I*f*x + 2*I*e) + (-4*I*
A + 24*B)*c^3)) - 15*a^3*sqrt((4*A^2 + 48*I*A*B - 144*B^2)*c^7/(a^5*f^2))*f
*e^(6*I*f*x + 6*I*e)*log((2*((2*I*A - 12*B)*c^3*e^(2*I*f*x + 2*I*e) + (2*I*
A - 12*B)*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e
) + 1))*e^(I*f*x + I*e) - (a^3*f*e^(2*I*f*x + 2*I*e) - a^3*f)*sqrt((4*A^2 +
 48*I*A*B - 144*B^2)*c^7/(a^5*f^2)))/((-4*I*A + 24*B)*c^3*e^(2*I*f*x + 2*I*
e) + (-4*I*A + 24*B)*c^3)) - 2*((-52*I*A + 282*B)*c^3*e^(7*I*f*x + 7*I*e) +
 (60*I*A - 360*B)*c^3*e^(6*I*f*x + 6*I*e) + (-52*I*A + 282*B)*c^3*e^(5*I*f*
x + 5*I*e) + (40*I*A - 240*B)*c^3*e^(4*I*f*x + 4*I*e) + (-8*I*A + 48*B)*c^3
*e^(2*I*f*x + 2*I*e) + (12*I*A - 12*B)*c^3)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1
))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-6*I*f*x - 6*I*e)/
(a^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(7/2)/(a+I*a*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{7}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(7/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(7/2)/(I*a*tan(f*x +
 e) + a)^(5/2), x)
```

3.845 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=205

$$-\frac{2Bc^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f}-\frac{2Bc^2\sqrt{c-ic\tan(e+fx)}}{a^2f\sqrt{a+ia\tan(e+fx)}}+\frac{(-B+iA)(c-ic\tan(e+fx))^{5/2}}{5f(a+ia\tan(e+fx))^{5/2}}+\frac{2Bc(c-ic\tan(e+f}{3af(a+ia\tan(e+f}$$

```
[Out] (-2*B*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(a^(5/2)*f) - (2*B*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(a
^2*f*Sqrt[a + I*a*Tan[e + f*x]]) + (2*B*c*(c - I*c*Tan[e + f*x])^(3/2))/(3*
a*f*(a + I*a*Tan[e + f*x])^(3/2)) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(5/2)
)/(5*f*(a + I*a*Tan[e + f*x])^(5/2))
```

Rubi [A] time = 0.289492, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3588, 78, 47, 63, 217, 203}

$$-\frac{2Bc^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f}-\frac{2Bc^2\sqrt{c-ic\tan(e+fx)}}{a^2f\sqrt{a+ia\tan(e+fx)}}+\frac{(-B+iA)(c-ic\tan(e+fx))^{5/2}}{5f(a+ia\tan(e+fx))^{5/2}}+\frac{2Bc(c-ic\tan(e+f}{3af(a+ia\tan(e+f}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[e + f*
x])^(5/2),x]
```

```
[Out] (-2*B*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + I*a*Tan[e + f*x]])/(Sqrt[a]*Sqrt[c -
 I*c*Tan[e + f*x]])])/(a^(5/2)*f) - (2*B*c^2*Sqrt[c - I*c*Tan[e + f*x]])/(a
^2*f*Sqrt[a + I*a*Tan[e + f*x]]) + (2*B*c*(c - I*c*Tan[e + f*x])^(3/2))/(3*
a*f*(a + I*a*Tan[e + f*x])^(3/2)) + ((I*A - B)*(c - I*c*Tan[e + f*x])^(5/2)
)/(5*f*(a + I*a*Tan[e + f*x])^(5/2))
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{5/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)(c-icx)^{3/2}}{(a+iax)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{5f(a+ia\tan(e+fx))^{5/2}} - \frac{(iBc)\,\text{Subst}\left(\int \frac{(c-icx)^{3/2}}{(a+iax)^{5/2}}\,dx, x, \tan(\right.}{f}$$

$$= \frac{2Bc(c-ic\tan(e+fx))^{3/2}}{3af(a+ia\tan(e+fx))^{3/2}} + \frac{(iA-B)(c-ic\tan(e+fx))^{5/2}}{5f(a+ia\tan(e+fx))^{5/2}} + \frac{(iBc^2}{}$$

$$= -\frac{2Bc^2\sqrt{c-ic\tan(e+fx)}}{a^2f\sqrt{a+ia\tan(e+fx)}} + \frac{2Bc(c-ic\tan(e+fx))^{3/2}}{3af(a+ia\tan(e+fx))^{3/2}} + \frac{(iA-B)(}{5f(a+}$$

$$= -\frac{2Bc^2\sqrt{c-ic\tan(e+fx)}}{a^2f\sqrt{a+ia\tan(e+fx)}} + \frac{2Bc(c-ic\tan(e+fx))^{3/2}}{3af(a+ia\tan(e+fx))^{3/2}} + \frac{(iA-B)(}{5f(a+}$$

$$= -\frac{2Bc^2\sqrt{c-ic\tan(e+fx)}}{a^2f\sqrt{a+ia\tan(e+fx)}} + \frac{2Bc(c-ic\tan(e+fx))^{3/2}}{3af(a+ia\tan(e+fx))^{3/2}} + \frac{(iA-B)(}{5f(a+}$$

$$= -\frac{2Bc^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+ia\tan(e+fx)}}{\sqrt{a}\sqrt{c-ic\tan(e+fx)}}\right)}{a^{5/2}f} - \frac{2Bc^2\sqrt{c-ic\tan(e+fx)}}{a^2f\sqrt{a+ia\tan(e+fx)}} + \frac{2Bc(}{3af(}$$

Mathematica [A] time = 12.7061, size = 129, normalized size = 0.63

$$-\frac{\sqrt{2}c^2e^{-4i(e+fx)}\sqrt{\frac{c}{1+e^{2i(e+fx)}}}\left(-3iA+B\left(-10e^{2i(e+fx)}+30e^{4i(e+fx)}+3\right)+30Be^{5i(e+fx)}\tan^{-1}\left(e^{i(e+fx)}\right)\right)}{15a^2f\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(5/2))/(a + I*a*Tan[
e + f*x])^(5/2),x]
```

```
[Out] -(Sqrt[2]*c^2*Sqrt[c/(1 + E^((2*I)*(e + f*x)))]*((-3*I)*A + B*(3 - 10*E^((2
*I)*(e + f*x)) + 30*E^((4*I)*(e + f*x))) + 30*B*E^((5*I)*(e + f*x))*ArcTan[
E^(I*(e + f*x))]))/(15*a^2*E^((4*I)*(e + f*x))*f*Sqrt[a + I*a*Tan[e + f*x]]
)
```

Maple [B] time = 0.119, size = 557, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)*c^2/a^3*(-15
*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2))/(a*c)^(1/
2))*tan(f*x+e)^4*a*c+90*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)
*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^2*a*c+43*I*B*(a*c*(1+tan(f*x+e)^2))^(
1/2)*(a*c)^(1/2)*tan(f*x+e)^3-60*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2)
)^(1/2)*(a*c)^(1/2))/(a*c)^(1/2))*tan(f*x+e)^3*a*c+3*I*A*tan(f*x+e)^2*(a*c*
(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+3*A*tan(f*x+e)^3*(a*c*(1+tan(f*x+e)^2))
^(1/2)*(a*c)^(1/2)-15*I*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(
a*c)^(1/2))/(a*c)^(1/2))*a*c-77*I*B*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2
)*tan(f*x+e)+60*B*ln((a*c*tan(f*x+e)+(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/
2))/(a*c)^(1/2))*tan(f*x+e)*a*c+97*B*tan(f*x+e)^2*(a*c*(1+tan(f*x+e)^2))^(1
/2)*(a*c)^(1/2)+3*I*A*(a*c*(1+tan(f*x+e)^2))^(1/2)*(a*c)^(1/2)+3*A*(a*c)^(1
/2)*(a*c*(1+tan(f*x+e)^2))^(1/2)*tan(f*x+e)-23*B*(a*c)^(1/2)*(a*c*(1+tan(f*
x+e)^2))^(1/2))/(a*c*(1+tan(f*x+e)^2))^(1/2)/(-tan(f*x+e)+I)^4/(a*c)^(1/2)
```

Maxima [A] time = 3.22251, size = 294, normalized size = 1.43

$$-\frac{\left(30\,Bc^2\arctan\left(\cos\left(fx+e\right),\sin\left(fx+e\right)+1\right)+30\,Bc^2\arctan\left(\cos\left(fx+e\right),-\sin\left(fx+e\right)+1\right)-6\,(i\,A-B)c^2\cos\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] -1/30*(30*B*c^2*arctan2(cos(f*x + e), sin(f*x + e) + 1) + 30*B*c^2*arctan2(
cos(f*x + e), -sin(f*x + e) + 1) - 6*(I*A - B)*c^2*cos(5*f*x + 5*e) - 20*B*
c^2*cos(3*f*x + 3*e) + 60*B*c^2*cos(f*x + e) + 15*I*B*c^2*log(cos(f*x + e)^
2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) - 15*I*B*c^2*log(cos(f*x + e)^2 +
sin(f*x + e)^2 - 2*sin(f*x + e) + 1) - (6*A + 6*I*B)*c^2*sin(5*f*x + 5*e) +
 20*I*B*c^2*sin(3*f*x + 3*e) - 60*I*B*c^2*sin(f*x + e))*sqrt(c)/(a^(5/2)*f)
```

Fricas [B] time = 1.7066, size = 1223, normalized size = 5.97

$$\left(15\,a^{3} f \sqrt{-\frac{B^{2} c^{5}}{a^{5} f^{2}}} e^{\left(6 i\,f x+6 i\,e\right)} \log\left(-\frac{2 \left(B c^{2} e^{\left(2 i\,f x+2 i\,e\right)}+B c^{2}\right) \sqrt{\frac{a}{e^{\left(2 i\,f x+2 i\,e\right)}+1}} \sqrt{\frac{c}{e^{\left(2 i\,f x+2 i\,e\right)}+1}} e^{\left(i\,f x+i\,e\right)}+\left(a^{3} f e^{\left(2 i\,f x+2 i\,e\right)}-a^{3} f\right) \sqrt{-\frac{B^{2} c^{5}}{a^{5} f^{2}}}}{2 \left(B c^{2} e^{\left(2 i\,f x+2 i\,e\right)}+B c^{2}\right)}\right)-15\,a^{3} f \sqrt{-\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/30*(15*a^3*f*sqrt(-B^2*c^5/(a^5*f^2))*e^(6*I*f*x + 6*I*e)*log(-1/2*(2*(B*
c^2*e^(2*I*f*x + 2*I*e) + B*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(
e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e) + (a^3*f*e^(2*I*f*x + 2*I*e) - a^
3*f)*sqrt(-B^2*c^5/(a^5*f^2)))/(B*c^2*e^(2*I*f*x + 2*I*e) + B*c^2)) - 15*a^
3*f*sqrt(-B^2*c^5/(a^5*f^2))*e^(6*I*f*x + 6*I*e)*log(-1/2*(2*(B*c^2*e^(2*I*
f*x + 2*I*e) + B*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x
+ 2*I*e) + 1))*e^(I*f*x + I*e) - (a^3*f*e^(2*I*f*x + 2*I*e) - a^3*f)*sqrt(-
B^2*c^5/(a^5*f^2)))/(B*c^2*e^(2*I*f*x + 2*I*e) + B*c^2)) + ((-6*I*A + 46*B)
*c^2*e^(7*I*f*x + 7*I*e) - 60*B*c^2*e^(6*I*f*x + 6*I*e) + (-6*I*A + 46*B)*c
^2*e^(5*I*f*x + 5*I*e) - 40*B*c^2*e^(4*I*f*x + 4*I*e) + (6*I*A + 14*B)*c^2*
e^(2*I*f*x + 2*I*e) + (6*I*A - 6*B)*c^2)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*
sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-6*I*f*x - 6*I*e)/(a^
3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(5/2)/(a+I*a*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}{\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(5/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(5/2)/(I*a*tan(f*x +
 e) + a)^(5/2), x)
```

3.846 $\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=104

$$\frac{(4B+iA)(c-ic\tan(e+fx))^{3/2}}{15af(a+ia\tan(e+fx))^{3/2}}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{5f(a+ia\tan(e+fx))^{5/2}}$$

```
[Out] ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(5*f*(a + I*a*Tan[e + f*x])^(5/2))
 + ((I*A + 4*B)*(c - I*c*Tan[e + f*x])^(3/2))/(15*a*f*(a + I*a*Tan[e + f*x]
)^(3/2))
```

Rubi [A] time = 0.228521, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3588, 78, 37}

$$\frac{(4B+iA)(c-ic\tan(e+fx))^{3/2}}{15af(a+ia\tan(e+fx))^{3/2}}+\frac{(-B+iA)(c-ic\tan(e+fx))^{3/2}}{5f(a+ia\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[e + f*
x])^(5/2),x]
```


```
[Out] ((I*A - B)*(c - I*c*Tan[e + f*x])^(3/2))/(5*f*(a + I*a*Tan[e + f*x])^(5/2))
 + ((I*A + 4*B)*(c - I*c*Tan[e + f*x])^(3/2))/(15*a*f*(a + I*a*Tan[e + f*x]
)^(3/2))
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
```

```
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c-ic\tan(e+fx))^{3/2}}{(a+ia\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{(A+Bx)\sqrt{c-icx}}{(a+iax)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{5f(a+ia\tan(e+fx))^{5/2}} + \frac{((A-4iB)c)\,\text{Subst}\left(\int \frac{\sqrt{c-icx}}{(a+iax)^{5/2}}\,dx, x\right.}{5f}$$
$$= \frac{(iA-B)(c-ic\tan(e+fx))^{3/2}}{5f(a+ia\tan(e+fx))^{5/2}} + \frac{(iA+4B)(c-ic\tan(e+fx))^{3/2}}{15af(a+ia\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 7.77362, size = 92, normalized size = 0.88

$$\frac{c(1-i\tan(e+fx))\sqrt{c-ic\tan(e+fx)}((A-4iB)\tan(e+fx)-4iA-B)}{15a^2f(\tan(e+fx)-i)^2\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^(3/2))/(a + I*a*Tan[
e + f*x])^(5/2),x]
```

```
[Out] (c*(1 - I*Tan[e + f*x])*((-4*I)*A - B + (A - (4*I)*B)*Tan[e + f*x])*Sqrt[c
- I*c*Tan[e + f*x]])/(15*a^2*f*(-I + Tan[e + f*x])^2*Sqrt[a + I*a*Tan[e + f
*x]])
```

Maple [A] time = 0.11, size = 92, normalized size = 0.9

$$\frac{\frac{i}{15}c\left(1+\left(\tan\left(fx+e\right)\right)^2\right)\left(iA\tan\left(fx+e\right)-iB+4\,B\tan\left(fx+e\right)+4\,A\right)}{fa^3\left(-\tan\left(fx+e\right)+i\right)^4}\sqrt{-c\left(-1+i\tan\left(fx+e\right)\right)}\sqrt{a\left(1+i\tan\left(fx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15*I/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a^3*c*(1+t
an(f*x+e)^2)*(I*A*tan(f*x+e)-I*B+4*B*tan(f*x+e)+4*A)/(-tan(f*x+e)+I)^4
```

Maxima [A] time = 2.99084, size = 207, normalized size = 1.99

$$\frac{\left((150\,A-150i\,B)c\cos\left(4\,fx+4\,e\right)+(240\,A-60i\,B)c\cos\left(2\,fx+2\,e\right)-150\,(-i\,A-B)c\sin\left(4\,fx+4\,e\right)-60\,(-4i\,A-\cdots\right.}{\left(-900i\,a^3\cos\left(7\,fx+7\,e\right)-900i\,a^3\cos\left(5\,fx+5\,e\right)+900\,a^3\sin\left(7\,fx+7\,e\right)+900\,a^3\sin\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] ((150*A - 150*I*B)*c*cos(4*f*x + 4*e) + (240*A - 60*I*B)*c*cos(2*f*x + 2*e)
 - 150*(-I*A - B)*c*sin(4*f*x + 4*e) - 60*(-4*I*A - B)*c*sin(2*f*x + 2*e) +
 (90*A + 90*I*B)*c)*sqrt(a)*sqrt(c)/((-900*I*a^3*cos(7*f*x + 7*e) - 900*I*a
^3*cos(5*f*x + 5*e) + 900*a^3*sin(7*f*x + 7*e) + 900*a^3*sin(5*f*x + 5*e))*
f)
```

Fricas [A] time = 1.35945, size = 371, normalized size = 3.57

$$\frac{\left((-8i\,A-2\,B)ce^{(7i\,fx+7i\,e)}+(-8i\,A-2\,B)ce^{(5i\,fx+5i\,e)}+(5i\,A+5\,B)ce^{(4i\,fx+4i\,e)}+(8i\,A+2\,B)ce^{(2i\,fx+2i\,e)}+(3i\,A-3\,B)c\cdots\right.}{30\,a^3 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/30*((-8*I*A - 2*B)*c*e^(7*I*f*x + 7*I*e) + (-8*I*A - 2*B)*c*e^(5*I*f*x +
5*I*e) + (5*I*A + 5*B)*c*e^(4*I*f*x + 4*I*e) + (8*I*A + 2*B)*c*e^(2*I*f*x +
 2*I*e) + (3*I*A - 3*B)*c)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I
*f*x + 2*I*e) + 1))*e^(-5*I*f*x - 5*I*e)/(a^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(3/2)/(a+I*a*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(3/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(-I*c*tan(f*x + e) + c)^(3/2)/(I*a*tan(f*x +
 e) + a)^(5/2), x)
```

3.847 $\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=157

$$\frac{(3B+2iA)\sqrt{c-ic\tan(e+fx)}}{15a^2f\sqrt{a+ia\tan(e+fx)}}+\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{5f(a+ia\tan(e+fx))^{5/2}}+\frac{(3B+2iA)\sqrt{c-ic\tan(e+fx)}}{15af(a+ia\tan(e+fx))^{3/2}}$$

```
[Out] ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(5*f*(a + I*a*Tan[e + f*x])^(5/2)) +
 (((2*I)*A + 3*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a*f*(a + I*a*Tan[e + f*x]
)^(3/2)) + (((2*I)*A + 3*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a^2*f*Sqrt[a +
I*a*Tan[e + f*x]])
```

Rubi [A] time = 0.244008, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$\frac{(3B+2iA)\sqrt{c-ic\tan(e+fx)}}{15a^2f\sqrt{a+ia\tan(e+fx)}}+\frac{(-B+iA)\sqrt{c-ic\tan(e+fx)}}{5f(a+ia\tan(e+fx))^{5/2}}+\frac{(3B+2iA)\sqrt{c-ic\tan(e+fx)}}{15af(a+ia\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e + f*x]
)^(5/2),x]
```

```
[Out] ((I*A - B)*Sqrt[c - I*c*Tan[e + f*x]])/(5*f*(a + I*a*Tan[e + f*x])^(5/2)) +
 (((2*I)*A + 3*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a*f*(a + I*a*Tan[e + f*x]
)^(3/2)) + (((2*I)*A + 3*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a^2*f*Sqrt[a +
I*a*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
```

```
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+B\tan(e+fx))\sqrt{c-ic\tan(e+fx)}}{(a+ia\tan(e+fx))^{5/2}}\,dx &= \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^{7/2}\sqrt{c-icx}}\,dx, x, \tan(e+fx)\right)}{f}\\
&= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{5f(a+ia\tan(e+fx))^{5/2}} + \frac{((2A-3iB)c)\,\mathrm{Subst}\left(\int \frac{1}{(a+iax)^{5/2}\sqrt{c-icx}}\,dx\right.}{5f}\\
&= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{5f(a+ia\tan(e+fx))^{5/2}} + \frac{(2iA+3B)\sqrt{c-ic\tan(e+fx)}}{15af(a+ia\tan(e+fx))^{3/2}} + \frac{((2A-}{}\\
&= \frac{(iA-B)\sqrt{c-ic\tan(e+fx)}}{5f(a+ia\tan(e+fx))^{5/2}} + \frac{(2iA+3B)\sqrt{c-ic\tan(e+fx)}}{15af(a+ia\tan(e+fx))^{3/2}} + \frac{(2iA+}{15a^2}
\end{aligned}$$

Mathematica [A] time = 4.66213, size = 106, normalized size = 0.68

$$\frac{\sec^2(e+fx)\sqrt{c-ic\tan(e+fx)}((6A-9iB)\sin(2(e+fx))+(-6B-9iA)\cos(2(e+fx))-5iA)}{30a^2f(\tan(e+fx)-i)^2\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*Sqrt[c - I*c*Tan[e + f*x]])/(a + I*a*Tan[e
+ f*x])^(5/2),x]
```

```
[Out] (Sec[e + f*x]^2*((-5*I)*A + ((-9*I)*A - 6*B)*Cos[2*(e + f*x)] + (6*A - (9*I
)*B)*Sin[2*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(30*a^2*f*(-I + Tan[e +
f*x])^2*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.126, size = 127, normalized size = 0.8

$$\frac{-\frac{i}{15}\left(2\,iA\left(\tan\left(fx+e\right)\right)^{3}-12\,iB\left(\tan\left(fx+e\right)\right)^{2}+3\,B\left(\tan\left(fx+e\right)\right)^{3}-13\,iA\tan\left(fx+e\right)+8\,A\left(\tan\left(fx+e\right)\right)^{2}+3\right.}{fa^{3}\left(-\tan\left(fx+e\right)+i\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/15*I/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a^3*(2*I*
A*tan(f*x+e)^3-12*I*B*tan(f*x+e)^2+3*B*tan(f*x+e)^3-13*I*A*tan(f*x+e)+8*A*t
an(f*x+e)^2+3*I*B-12*B*tan(f*x+e)-7*A)/(-tan(f*x+e)+I)^4
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.4206, size = 416, normalized size = 2.65

$$\frac{\left((-28i\,A-12\,B)e^{(7i\,fx+7i\,e)}+(15i\,A+15\,B)e^{(6i\,fx+6i\,e)}+(-28i\,A-12\,B)e^{(5i\,fx+5i\,e)}+(25i\,A+15\,B)e^{(4i\,fx+4i\,e)}+(13i\,A-\right.}{60\,a^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/60*((-28*I*A - 12*B)*e^(7*I*f*x + 7*I*e) + (15*I*A + 15*B)*e^(6*I*f*x + 6
*I*e) + (-28*I*A - 12*B)*e^(5*I*f*x + 5*I*e) + (25*I*A + 15*B)*e^(4*I*f*x +
 4*I*e) + (13*I*A - 3*B)*e^(2*I*f*x + 2*I*e) + 3*I*A - 3*B)*sqrt(a/(e^(2*I*
f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-5*I*f*x - 5*I*e)/(
a^3*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(5
/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\sqrt{-ic\tan\left(fx+e\right)+c}}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^(1/2)*(A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*sqrt(-I*c*tan(f*x + e) + c)/(I*a*tan(f*x + e
) + a)^(5/2), x)
```

3.848 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}}\,dx$

Optimal. Leaf size=212

$$\frac{2(2B+3iA)\sqrt{c-ic\tan(e+fx)}}{15a^2cf\sqrt{a+ia\tan(e+fx)}}-\frac{B+iA}{f(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}}+\frac{2(2B+3iA)\sqrt{c-ic\tan(e+fx)}}{15acf(a+ia\tan(e+fx))^{3/2}}+\frac{(2\dots}{\dots}$$

```
[Out] -((I*A + B)/(f*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]])) +
(((3*I)*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(5*c*f*(a + I*a*Tan[e + f*x])^
(5/2)) + (2*((3*I)*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a*c*f*(a + I*a*
Tan[e + f*x])^(3/2)) + (2*((3*I)*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a
^2*c*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rubi [A] time = 0.278414, antiderivative size = 212, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 37}

$$\frac{2(2B+3iA)\sqrt{c-ic\tan(e+fx)}}{15a^2cf\sqrt{a+ia\tan(e+fx)}}-\frac{B+iA}{f(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}}+\frac{2(2B+3iA)\sqrt{c-ic\tan(e+fx)}}{15acf(a+ia\tan(e+fx))^{3/2}}+\frac{(2\dots}{\dots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e +
 f*x]]),x]
```

```
[Out] -((I*A + B)/(f*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f*x]])) +
(((3*I)*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(5*c*f*(a + I*a*Tan[e + f*x])^
(5/2)) + (2*((3*I)*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a*c*f*(a + I*a*
Tan[e + f*x])^(3/2)) + (2*((3*I)*A + 2*B)*Sqrt[c - I*c*Tan[e + f*x]])/(15*a
^2*c*f*Sqrt[a + I*a*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^{7/2}(c-icx)^{3/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(a(3A-2iB))\,\text{Subst}\left(\right.}{}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(3iA+2B)\sqrt{c-ic\tan}}{5cf(a+ia\tan(e+}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(3iA+2B)\sqrt{c-ic\tan}}{5cf(a+ia\tan(e+}$$

$$= -\frac{iA+B}{f(a+ia\tan(e+fx))^{5/2}\sqrt{c-ic\tan(e+fx)}} + \frac{(3iA+2B)\sqrt{c-ic\tan}}{5cf(a+ia\tan(e+}$$

Mathematica [A] time = 6.33682, size = 132, normalized size = 0.62

$$-\frac{\sec(e+fx)\sqrt{c-ic\tan(e+fx)}(-i(3A-2iB)(5\sin(e+fx)-3\sin(3(e+fx)))+(-30A+5iB)\cos(e+fx)+(6A-9i}{60a^2cf(\tan(e+fx)-i)\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*T
an[e + f*x]]),x]
```

```
[Out] -(Sec[e + f*x]*((-30*A + (5*I)*B)*Cos[e + f*x] + (6*A - (9*I)*B)*Cos[3*(e +
 f*x)] - I*(3*A - (2*I)*B)*(5*Sin[e + f*x] - 3*Sin[3*(e + f*x)]))*Sqrt[c -
I*c*Tan[e + f*x]])/(60*a^2*c*f*(-I + Tan[e + f*x])*Sqrt[a + I*a*Tan[e + f*x
]])
```

Maple [A] time = 0.183, size = 186, normalized size = 0.9

$$-\frac{4iB(\tan(fx+e))^5+12iA(\tan(fx+e))^4-6A(\tan(fx+e))^5+2iB(\tan(fx+e))^3+8B(\tan(fx+e))^4+18i}{15fa^3c(-\tan(fx+e)+i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/15/f*(-c*(-1+I*tan(f*x+e)))^(1/2)*(a*(1+I*tan(f*x+e)))^(1/2)/a^3/c*(4*I*
B*tan(f*x+e)^5+12*I*A*tan(f*x+e)^4-6*A*tan(f*x+e)^5+2*I*B*tan(f*x+e)^3+8*B*
tan(f*x+e)^4+18*I*A*tan(f*x+e)^2-3*A*tan(f*x+e)^3-2*I*B*tan(f*x+e)+7*B*tan(
f*x+e)^2+6*I*A+3*A*tan(f*x+e)-B)/(-tan(f*x+e)+I)^4/(tan(f*x+e)+I)^2
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.35331, size = 458, normalized size = 2.16

$$\frac{\left((-15i\,A-15\,B)e^{\left(8i\,fx+8i\,e\right)}+(-48i\,A+8\,B)e^{\left(7i\,fx+7i\,e\right)}+30i\,Ae^{\left(6i\,fx+6i\,e\right)}+(-48i\,A+8\,B)e^{\left(5i\,fx+5i\,e\right)}+(60i\,A+10\,B)e^{\left(4i\,f\right.}\right.}{120\,a^3cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/120*((-15*I*A - 15*B)*e^(8*I*f*x + 8*I*e) + (-48*I*A + 8*B)*e^(7*I*f*x +
7*I*e) + 30*I*A*e^(6*I*f*x + 6*I*e) + (-48*I*A + 8*B)*e^(5*I*f*x + 5*I*e) +
 (60*I*A + 10*B)*e^(4*I*f*x + 4*I*e) + (18*I*A - 8*B)*e^(2*I*f*x + 2*I*e) +
 3*I*A - 3*B)*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e)
 + 1))*e^(-5*I*f*x - 5*I*e)/(a^3*c*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))**(1/2)/(a+I*a*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\sqrt{-i\,c\tan\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(c-I*c*tan(f*x+e))^(1/2)/(a+I*a*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^(5/2)*sqrt(-I*c*tan(
f*x + e) + c)), x)
```

3.849 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=216

$$\frac{2(4A-iB)\tan(e+fx)}{15a^2cf\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}-\frac{B+iA}{3f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}}+\frac{B}{15acf(a+ia\tan(e+}$$

```
[Out] -(I*A + B)/(3*f*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(3/2))
+ ((4*I)*A + B)/(15*c*f*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f
*x]]) + ((4*I)*A + B)/(15*a*c*f*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*T
an[e + f*x]]) + (2*(4*A - I*B)*Tan[e + f*x])/(15*a^2*c*f*Sqrt[a + I*a*Tan[e
 + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.293649, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.089, Rules used = {3588, 78, 45, 39}

$$\frac{2(4A-iB)\tan(e+fx)}{15a^2cf\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}-\frac{B+iA}{3f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}}+\frac{B}{15acf(a+ia\tan(e+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x
])^(3/2)),x]
```

```
[Out] -(I*A + B)/(3*f*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(3/2))
+ ((4*I)*A + B)/(15*c*f*(a + I*a*Tan[e + f*x])^(5/2)*Sqrt[c - I*c*Tan[e + f
*x]]) + ((4*I)*A + B)/(15*a*c*f*(a + I*a*Tan[e + f*x])^(3/2)*Sqrt[c - I*c*T
an[e + f*x]]) + (2*(4*A - I*B)*Tan[e + f*x])/(15*a^2*c*f*Sqrt[a + I*a*Tan[e
 + f*x]]*Sqrt[c - I*c*Tan[e + f*x]])
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 39

```
Int[1/(((a_) + (b_.)*(x_))^(3/2)*((c_) + (d_.)*(x_))^(3/2)), x_Symbol] :> S
imp[x/(a*c*Sqrt[a + b*x]*Sqrt[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] && Eq
Q[b*c + a*d, 0]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int \frac{A+Bx}{(a+iax)^{7/2}(c-icx)^{5/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}} + \frac{(a(4A-iB))\,\mathrm{S}}{}$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}} + \frac{}{15cf(a+ia\,\mathrm{ta}}$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}} + \frac{}{15cf(a+ia\,\mathrm{ta}}$$

$$= -\frac{iA+B}{3f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{3/2}} + \frac{}{15cf(a+ia\,\mathrm{ta}}$$

Mathematica [A] time = 11.907, size = 133, normalized size = 0.62

$$-\frac{i\sqrt{c-ic\tan(e+fx)}(20(A-iB)\cos(2(e+fx))+(A-4iB)\cos(4(e+fx))+40iA\sin(2(e+fx))+4iA\sin(4(e+fx))-}{120a^2c^2f\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e
 + f*x])^(3/2)),x]
```

```
[Out] ((-I/120)*(-45*A + 20*(A - I*B)*Cos[2*(e + f*x)] + (A - (4*I)*B)*Cos[4*(e +
 f*x)] + (40*I)*A*Sin[2*(e + f*x)] + 10*B*Sin[2*(e + f*x)] + (4*I)*A*Sin[4*
(e + f*x)] + B*Sin[4*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(a^2*c^2*f*Sqr
t[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.125, size = 199, normalized size = 0.9

$$-\frac{\frac{i}{15}\left(8iA\left(\tan\left(fx+e\right)\right)^6-2iB\left(\tan\left(fx+e\right)\right)^5+2B\left(\tan\left(fx+e\right)\right)^6+20iA\left(\tan\left(fx+e\right)\right)^4+8A\left(\tan\left(fx+e\right)\right)^5-5}{fa^3c^2\left(-\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/15*I/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a^3/c^2*(
8*I*A*tan(f*x+e)^6-2*I*B*tan(f*x+e)^5+2*B*tan(f*x+e)^6+20*I*A*tan(f*x+e)^4+
8*A*tan(f*x+e)^5-5*I*B*tan(f*x+e)^3+5*B*tan(f*x+e)^4+15*I*A*tan(f*x+e)^2+20
*A*tan(f*x+e)^3-3*I*B*tan(f*x+e)+3*I*A+12*A*tan(f*x+e)-3*B)/(-tan(f*x+e)+I)
^4/(tan(f*x+e)+I)^3
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="maxima")
```

[Out] Exception raised: RuntimeError

Fricas [A] time = 1.48528, size = 531, normalized size = 2.46

$$\frac{\left((-5i\,A-5\,B)e^{(10i\,fx+10i\,e)}+(-65i\,A-35\,B)e^{(8i\,fx+8i\,e)}+(-48i\,A+48\,B)e^{(7i\,fx+7i\,e)}+(30i\,A-30\,B)e^{(6i\,fx+6i\,e)}+(-48i\,A\right.}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="fricas")
```

```
[Out] 1/240*((-5*I*A - 5*B)*e^(10*I*f*x + 10*I*e) + (-65*I*A - 35*B)*e^(8*I*f*x +
 8*I*e) + (-48*I*A + 48*B)*e^(7*I*f*x + 7*I*e) + (30*I*A - 30*B)*e^(6*I*f*x
 + 6*I*e) + (-48*I*A + 48*B)*e^(5*I*f*x + 5*I*e) + (110*I*A - 10*B)*e^(4*I*
f*x + 4*I*e) + (23*I*A - 13*B)*e^(2*I*f*x + 2*I*e) + 3*I*A - 3*B)*sqrt(a/(e
^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-5*I*f*x - 5*
I*e)/(a^3*c^2*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(5/2)/(c-I*c*tan(f*x+e))**(3
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-i\,c\tan\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(3/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^(5/2)*(-I*c*tan(f*x
+ e) + c)^(3/2)), x)
```

3.850 $\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=204

$$\frac{8A\tan(e+fx)}{15a^2c^2f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}-\frac{B+iA}{5f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}}+\frac{4}{15acf(a+ia\tan(e}$$

```
[Out] -(I*A + B)/(5*f*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5/2))
+ ((I/5)*A)/(c*f*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(3/2))
 + (4*A*Tan[e + f*x])/(15*a*c*f*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e
 + f*x])^(3/2)) + (8*A*Tan[e + f*x])/(15*a^2*c^2*f*Sqrt[a + I*a*Tan[e + f*x
]]*Sqrt[c - I*c*Tan[e + f*x]])
```

Rubi [A] time = 0.275143, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3588, 78, 45, 40, 39}

$$\frac{8A\tan(e+fx)}{15a^2c^2f\sqrt{a+ia\tan(e+fx)}\sqrt{c-ic\tan(e+fx)}}-\frac{B+iA}{5f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}}+\frac{4}{15acf(a+ia\tan(e}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x
])^(5/2)),x]
```


```
[Out] -(I*A + B)/(5*f*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(5/2))
+ ((I/5)*A)/(c*f*(a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e + f*x])^(3/2))
 + (4*A*Tan[e + f*x])/(15*a*c*f*(a + I*a*Tan[e + f*x])^(3/2)*(c - I*c*Tan[e
 + f*x])^(3/2)) + (8*A*Tan[e + f*x])/(15*a^2*c^2*f*Sqrt[a + I*a*Tan[e + f*x
]]*Sqrt[c - I*c*Tan[e + f*x]])
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 40

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(m_), x_Symbol] :> -Simp[(
x*(a + b*x)^(m + 1)*(c + d*x)^(m + 1))/(2*a*c*(m + 1)), x] + Dist[(2*m + 3)
/(2*a*c*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^(m + 1), x], x] /; FreeQ[
{a, b, c, d}, x] && EqQ[b*c + a*d, 0] && ILtQ[m + 3/2, 0]
```

Rule 39

```
Int[1/(((a_) + (b_.)*(x_))^(3/2)*((c_) + (d_.)*(x_))^(3/2)), x_Symbol] :> S
imp[x/(a*c*Sqrt[a + b*x]*Sqrt[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] && Eq
Q[b*c + a*d, 0]
```

Rubi steps

$$\int \frac{A+B\tan(e+fx)}{(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}}\,dx = \frac{(ac)\,\text{Subst}\left(\int \frac{A+Bx}{(a+iax)^{7/2}(c-icx)^{7/2}}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{iA+B}{5f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}} + \frac{(aA)\,\text{Subst}\Big(\int$$

$$= -\frac{iA+B}{5f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{5cf(a+ia\tan}$$

$$= -\frac{iA+B}{5f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{5cf(a+ia\tan}$$

$$= -\frac{iA+B}{5f(a+ia\tan(e+fx))^{5/2}(c-ic\tan(e+fx))^{5/2}} + \frac{}{5cf(a+ia\tan}$$

Mathematica [A] time = 11.5343, size = 151, normalized size = 0.74

$$\frac{\sec^2(e+fx)\sqrt{c-ic\tan(e+fx)}(\cos(3(e+fx))+i\sin(3(e+fx)))(-150A\sin(e+fx)-25A\sin(3(e+fx))-3A\sin(5}{240a^2c^3f(\tan(e+fx)-i)^2\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Tan[e + f*x])/((a + I*a*Tan[e + f*x])^(5/2)*(c - I*c*Tan[e
 + f*x])^(5/2)),x]
```

```
[Out] (Sec[e + f*x]^2*(Cos[3*(e + f*x)] + I*Sin[3*(e + f*x)])*(30*B*Cos[e + f*x]
+ 15*B*Cos[3*(e + f*x)] + 3*B*Cos[5*(e + f*x)] - 150*A*Sin[e + f*x] - 25*A*
Sin[3*(e + f*x)] - 3*A*Sin[5*(e + f*x)])*Sqrt[c - I*c*Tan[e + f*x]])/(240*a
^2*c^3*f*(-I + Tan[e + f*x])^2*Sqrt[a + I*a*Tan[e + f*x]])
```

Maple [A] time = 0.131, size = 124, normalized size = 0.6

$$\frac{8A\left(\tan\left(fx+e\right)\right)^7+28A\left(\tan\left(fx+e\right)\right)^5+35A\left(\tan\left(fx+e\right)\right)^3-3B\left(\tan\left(fx+e\right)\right)^2+15A\tan\left(fx+e\right)-3B}{15fa^3c^3\left(-\tan\left(fx+e\right)+i\right)^4\left(\tan\left(fx+e\right)+i\right)^4}\sqrt{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/15/f*(a*(1+I*tan(f*x+e)))^(1/2)*(-c*(-1+I*tan(f*x+e)))^(1/2)/a^3/c^3*(8*A
*tan(f*x+e)^7+28*A*tan(f*x+e)^5+35*A*tan(f*x+e)^3-3*B*tan(f*x+e)^2+15*A*tan
(f*x+e)-3*B)/(-tan(f*x+e)+I)^4/(tan(f*x+e)+I)^4
```

Maxima [B] time = 2.64763, size = 446, normalized size = 2.19

$$\frac{\left(30\,(5i\,A-B)\cos\left(4\,fx+4\,e\right)+5\,(5i\,A-3\,B)\cos\left(2\,fx+2\,e\right)-(150\,A+30i\,B)\sin\left(4\,fx+4\,e\right)-(25\,A+15i\,B)\sin\left(2\,f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="maxima")
```

```
[Out] 1/480*((30*(5*I*A - B)*cos(4*f*x + 4*e) + 5*(5*I*A - 3*B)*cos(2*f*x + 2*e)
- (150*A + 30*I*B)*sin(4*f*x + 4*e) - (25*A + 15*I*B)*sin(2*f*x + 2*e) - 6*
B)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 5*(-5*I*A - 3*B)*
cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 30*(-5*I*A - B)*cos(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + ((150*A + 30*I*B)*cos(4*
f*x + 4*e) + (25*A + 15*I*B)*cos(2*f*x + 2*e) + 30*(5*I*A - B)*sin(4*f*x +
4*e) + 5*(5*I*A - 3*B)*sin(2*f*x + 2*e) + 6*A)*sin(5/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + (25*A - 15*I*B)*sin(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + (150*A - 30*I*B)*sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))))/(a^(5/2)*c^(5/2)*f)
```

Fricas [A] time = 1.50763, size = 540, normalized size = 2.65

$$\frac{\left((-3i\,A-3\,B)e^{(12i\,fx+12i\,e)}+(-28i\,A-18\,B)e^{(10i\,fx+10i\,e)}+(-175i\,A-45\,B)e^{(8i\,fx+8i\,e)}+96\,Be^{(7i\,fx+7i\,e)}-60\,Be^{(6i\,fx+6i\,e)}+\right.}{480\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="fricas")
```

```
[Out] 1/480*((-3*I*A - 3*B)*e^(12*I*f*x + 12*I*e) + (-28*I*A - 18*B)*e^(10*I*f*x
+ 10*I*e) + (-175*I*A - 45*B)*e^(8*I*f*x + 8*I*e) + 96*B*e^(7*I*f*x + 7*I*e
) - 60*B*e^(6*I*f*x + 6*I*e) + 96*B*e^(5*I*f*x + 5*I*e) + (175*I*A - 45*B)*
```

```
e^(4*I*f*x + 4*I*e) + (28*I*A - 18*B)*e^(2*I*f*x + 2*I*e) + 3*I*A - 3*B)*sq
rt(a/(e^(2*I*f*x + 2*I*e) + 1))*sqrt(c/(e^(2*I*f*x + 2*I*e) + 1))*e^(-5*I*f
*x - 5*I*e)/(a^3*c^3*f)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))**(5/2)/(c-I*c*tan(f*x+e))**(5
/2),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{B\tan\left(fx+e\right)+A}{\left(ia\tan\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-ic\tan\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))/(a+I*a*tan(f*x+e))^(5/2)/(c-I*c*tan(f*x+e))^(5/2
),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)/((I*a*tan(f*x + e) + a)^(5/2)*(-I*c*tan(f*x
+ e) + c)^(5/2)), x)
```

3.851 $\int (a+ia\tan(e+fx))^m(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx$

Optimal. Leaf size=150

$$\frac{(B+iA)(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))^n}{2fn}-\frac{2^{n-1}(B(m-n)+iA(m+n))(1-i\tan(e+fx))^{-n}(a+ia\tan(e+fx)$$

```
[Out] ((I*A + B)*(a + I*a*Tan[e + f*x])^m*(c - I*c*Tan[e + f*x])^n)/(2*f*n) - (2^
(-1 + n)*(B*(m - n) + I*A*(m + n))*Hypergeometric2F1[m, -n, 1 + m, (1 + I*T
an[e + f*x])/2]*(a + I*a*Tan[e + f*x])^m*(c - I*c*Tan[e + f*x])^n)/(f*m*n*(
1 - I*Tan[e + f*x])^n)
```

Rubi [A] time = 0.227203, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {3588, 79, 70, 69}

$$\frac{(B+iA)(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))^n}{2fn}-\frac{2^{n-1}(B(m-n)+iA(m+n))(1-i\tan(e+fx))^{-n}(a+ia\tan(e+fx)}{fmn$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^m*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*x])^n,
x]
```


```
[Out] ((I*A + B)*(a + I*a*Tan[e + f*x])^m*(c - I*c*Tan[e + f*x])^n)/(2*f*n) - (2^
(-1 + n)*(B*(m - n) + I*A*(m + n))*Hypergeometric2F1[m, -n, 1 + m, (1 + I*T
an[e + f*x])/2]*(a + I*a*Tan[e + f*x])^m*(c - I*c*Tan[e + f*x])^n)/(f*m*n*(
1 - I*Tan[e + f*x])^n)
```


Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 79

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^Simplify[p +
1], x], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && !RationalQ[p] && SumSi
mplerQ[p, 1]
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && !In
tegerQ[m] && !IntegerQ[n] && (RationalQ[m] || !SimplerQ[n + 1, m + 1])
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] && !IntegerQ[m] && !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] || !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^m(A+B\tan(e+fx))(c-ic\tan(e+fx))^n\,dx = \frac{(ac)\,\text{Subst}\left(\int (a+iax)^{-1+m}(A+Bx)(c-icx)^{-1+n}\right.}{f}$$

$$= \frac{(iA+B)(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))}{2fn}$$

$$= \frac{(iA+B)(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))}{2fn}$$

$$= \frac{(iA+B)(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))}{2fn}$$

Mathematica [A] time = 33.303, size = 197, normalized size = 1.31

$$\frac{2^{m+n-1}\left(e^{ifx}\right)^m\left(\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}\right)^m\left(\frac{c}{1+e^{2i(e+fx)}}\right)^n\sec^{-m}(e+fx)(\cos(fx)+i\sin(fx))^{-m}(a+ia\tan(e+fx))^m\left((m+1)(B-iA)\text{Hy}\right.}{fm(m}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^m*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^n,x]
```

```
[Out] (2^(-1 + m + n)*(E^(I*f*x))^m*(c/(1 + E^((2*I)*(e + f*x))))^n*(E^(I*(e + f*
x))/(1 + E^((2*I)*(e + f*x))))^m*((-I)*(A - I*B)*E^((2*I)*(e + f*x))*m*Hype
rgeometric2F1[1, 1 - n, 2 + m, -E^((2*I)*(e + f*x))] + ((-I)*A + B)*(1 + m)
*Hypergeometric2F1[1, -n, 1 + m, -E^((2*I)*(e + f*x))])*(a + I*a*Tan[e + f*
x])^m)/(f*m*(1 + m)*Sec[e + f*x]^m*(Cos[f*x] + I*Sin[f*x])^m)
```

Maple [F] time = 1.095, size = 0, normalized size = 0.

$$\int \left(a+ia\tan\left(fx+e\right)\right)^{m}\left(A+B\tan\left(fx+e\right)\right)\left(c-ic\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^m*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x)
```

```
[Out] int((a+I*a*tan(f*x+e))^m*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{m}\left(-i\,c\tan\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^m*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="maxima")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^m*(-I*c*tan(f*x + e)
+ c)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A-iB)e^{(2ifx+2ie)}+A+iB\right)\left(\frac{2ae^{(2ifx+2ie)}}{e^{(2ifx+2ie)}+1}\right)^m\left(\frac{2c}{e^{(2ifx+2ie)}+1}\right)^n}{e^{(2ifx+2ie)}+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^m*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*f*x + 2*I*e) + A + I*B)*(2*a*e^(2*I*f*x + 2*I*e)
/(e^(2*I*f*x + 2*I*e) + 1))^m*(2*c/(e^(2*I*f*x + 2*I*e) + 1))^n/(e^(2*I*f*x
 + 2*I*e) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**m*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**n,x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(ia\tan\left(fx+e\right)+a\right)^m\left(-ic\tan\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^m*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^n,x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^m*(-I*c*tan(f*x + e)
+ c)^n, x)
```

3.852 $\int (a+ia\tan(e+fx))^{1+m}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{-1-m}\,dx$

Optimal. Leaf size=147

$$\frac{aB2^m(1+i\tan(e+fx))^{-m}(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))^{-m}\text{Hypergeometric2F1}\left(-m,-m,1-m,\frac{1}{2}(1-i\tan\right.}{cfm}$$

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(1 + m)*(c - I*c*Tan[e + f*x])^(-1 - m))
/(2*f*(1 + m)) + (2^m*a*B*Hypergeometric2F1[-m, -m, 1 - m, (1 - I*Tan[e + f
*x])/2]*(a + I*a*Tan[e + f*x])^m)/(c*f*m*(1 + I*Tan[e + f*x])^m*(c - I*c*Ta
n[e + f*x])^m)
```

Rubi [A] time = 0.224891, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.085, Rules used = {3588, 79, 70, 69}

$$\frac{aB2^m(1+i\tan(e+fx))^{-m}(a+ia\tan(e+fx))^m(c-ic\tan(e+fx))^{-m}\,{}_2F_1\left(-m,-m;1-m;\frac{1}{2}(1-i\tan(e+fx))\right)}{cfm}-\frac{(B+i}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + I*a*Tan[e + f*x])^(1 + m)*(A + B*Tan[e + f*x])*(c - I*c*Tan[e + f*
x])^(-1 - m),x]
```

```
[Out] -((I*A + B)*(a + I*a*Tan[e + f*x])^(1 + m)*(c - I*c*Tan[e + f*x])^(-1 - m))
/(2*f*(1 + m)) + (2^m*a*B*Hypergeometric2F1[-m, -m, 1 - m, (1 - I*Tan[e + f
*x])/2]*(a + I*a*Tan[e + f*x])^m)/(c*f*m*(1 + I*Tan[e + f*x])^m*(c - I*c*Ta
n[e + f*x])^m)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 79

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^Simplify[p +
1], x], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && !RationalQ[p] && SumSi
mplerQ[p, 1]
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && !In
tegerQ[m] && !IntegerQ[n] && (RationalQ[m] || !SimplerQ[n + 1, m + 1])
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] && !IntegerQ[m] && !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] || !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rubi steps

$$\int (a+ia\tan(e+fx))^{1+m}(A+B\tan(e+fx))(c-ic\tan(e+fx))^{-1-m}\,dx = \frac{(ac)\,\mathrm{Subst}\left(\int (a+iax)^m(A+Bx)(c-icx)^{-2}\right.}{f}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{1+m}(c-ic\tan}{2f(1+m)}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{1+m}(c-ic\tan}{2f(1+m)}$$

$$= -\frac{(iA+B)(a+ia\tan(e+fx))^{1+m}(c-ic\tan}{2f(1+m)}$$

Mathematica [A] time = 84.1838, size = 177, normalized size = 1.2

$$\frac{ae^{i(e+2fx)}\left(e^{ifx}\right)^m\left(\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}\right)^m(\tan(e+fx)-i)\left(\frac{c}{1+e^{2i(e+fx)}}\right)^{-m}\sec^{-m-1}(e+fx)(\cos(fx)+i\sin(fx))^{-m-1}(a+ia\tan(e+f}{2cf(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + I*a*Tan[e + f*x])^(1 + m)*(A + B*Tan[e + f*x])*(c - I*c*Tan[
e + f*x])^(-1 - m),x]
```

```
[Out] (a*E^(I*(e + 2*f*x))*(E^(I*f*x))^m*(E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)
)))^m*(A - I*B + (2*I)*B*Hypergeometric2F1[1, 1 + m, 2 + m, -E^((2*I)*(e +
f*x))])*Sec[e + f*x]^(-1 - m)*(Cos[f*x] + I*Sin[f*x])^(-1 - m)*(-I + Tan[e
+ f*x])*(a + I*a*Tan[e + f*x])^m)/(2*c*(c/(1 + E^((2*I)*(e + f*x))))^m*f*(1
 + m))
```

Maple [F] time = 1.369, size = 0, normalized size = 0.

$$\int \left(a + ia\tan\left(fx+e\right)\right)^{1+m}\left(A + B\tan\left(fx+e\right)\right)\left(c - ic\tan\left(fx+e\right)\right)^{-1-m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+I*a*tan(f*x+e))^(1+m)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(-1-m),x)
```

```
[Out] int((a+I*a*tan(f*x+e))^(1+m)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(-1-m),x)
```

Maxima [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1+m)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(-1-
m),x, algorithm="maxima")
```

```
[Out] Timed out
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left((A - iB)e^{\left(2i fx+2i e\right)} + A + iB\right)\left(\frac{2\,ae^{\left(2i fx+2i e\right)}}{e^{\left(2i fx+2i e\right)}+1}\right)^{m+1}\left(\frac{2\,c}{e^{\left(2i fx+2i e\right)}+1}\right)^{-m-1}}{e^{\left(2i fx+2i e\right)}+1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1+m)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(-1-
m),x, algorithm="fricas")
```

```
[Out] integral(((A - I*B)*e^(2*I*f*x + 2*I*e) + A + I*B)*(2*a*e^(2*I*f*x + 2*I*e)
/(e^(2*I*f*x + 2*I*e) + 1))^(m + 1)*(2*c/(e^(2*I*f*x + 2*I*e) + 1))^(-m - 1
)/(e^(2*I*f*x + 2*I*e) + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))**(1+m)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))**(-
1-m),x)
```

```
[Out] Timed out
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \left(B\tan\left(fx+e\right)+A\right)\left(i\,a\tan\left(fx+e\right)+a\right)^{m+1}\left(-i\,c\tan\left(fx+e\right)+c\right)^{-m-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+I*a*tan(f*x+e))^(1+m)*(A+B*tan(f*x+e))*(c-I*c*tan(f*x+e))^(-1-
m),x, algorithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(I*a*tan(f*x + e) + a)^(m + 1)*(-I*c*tan(f*x
 + e) + c)^(-m - 1), x)
```

3.853 $\int \frac{(c-ic\tan(e+fx))^n(-i(2+n)+(-2+n)\tan(e+fx))}{(-i+\tan(e+fx))^2}\,dx$

Optimal. Leaf size=33

$$\frac{(c-ic\tan(e+fx))^n}{f(-\tan(e+fx)+i)^2}$$

```
[Out] (c - I*c*Tan[e + f*x])^n/(f*(I - Tan[e + f*x])^2)
```

Rubi [A] time = 0.105814, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {3588, 74}

$$\frac{(c-ic\tan(e+fx))^n}{f(-\tan(e+fx)+i)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c - I*c*Tan[e + f*x])^n*((-I)*(2 + n) + (-2 + n)*Tan[e + f*x]))/(-I +
 Tan[e + f*x])^2,x]
```

```
[Out] (c - I*c*Tan[e + f*x])^n/(f*(I - Tan[e + f*x])^2)
```

Rule 3588

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*tan[(e_.) +
 (f_.)*(x_)])*((c_) + (d_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Di
st[(a*c)/f, Subst[Int[(a + b*x)^(m - 1)*(c + d*x)^(n - 1)*(A + B*x), x], x,
 Tan[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, A, B, m, n}, x] && EqQ[b*c +
 a*d, 0] && EqQ[a^2 + b^2, 0]
```

Rule 74

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && NeQ[n + p + 2, 0] && EqQ
[a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)), 0]
```

Rubi steps

$$\int \frac{(c-ic\tan(e+fx))^n(-i(2+n)+(-2+n)\tan(e+fx))}{(-i+\tan(e+fx))^2}\,dx = -\frac{(ic)\,\mathrm{Subst}\left(\int \frac{(c-icx)^{-1+n}(-i(2+n)+(-2+n)x)}{(-i+x)^3}\,dx, x, \tan(e+f\right.}{f}$$
$$= \frac{(c-ic\tan(e+fx))^n}{f(i-\tan(e+fx))^2}$$

Mathematica [A] time = 3.70189, size = 56, normalized size = 1.7

$$\frac{(c\sec(e+fx))^n\exp(n(-\log(c\sec(e+fx))+\log(c-ic\tan(e+fx))))}{f(\tan(e+fx)-i)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c - I*c*Tan[e + f*x])^n*((-I)*(2 + n) + (-2 + n)*Tan[e + f*x]))
/(-I + Tan[e + f*x])^2,x]
```

```
[Out] (E^(n*(-Log[c*Sec[e + f*x]] + Log[c - I*c*Tan[e + f*x]]))*(c*Sec[e + f*x])^
n)/(f*(-I + Tan[e + f*x])^2)
```

Maple [F] time = 0.713, size = 0, normalized size = 0.

$$\int \frac{(c-ic\tan(fx+e))^n(-i(2+n)+(n-2)\tan(fx+e))}{(\tan(fx+e)-i)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-I*c*tan(f*x+e))^n*(-I*(2+n)+(n-2)*tan(f*x+e))/(tan(f*x+e)-I)^2,x)
```

```
[Out] int((c-I*c*tan(f*x+e))^n*(-I*(2+n)+(n-2)*tan(f*x+e))/(tan(f*x+e)-I)^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^n*(-I*(2+n)+(-2+n)*tan(f*x+e))/(-I+tan(f*x+e))
^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [B] time = 1.37158, size = 153, normalized size = 4.64

$$-\frac{\left(\frac{2\,c}{e^{\left(2i\,fx+2i\,e\right)}+1}\right)^{n}\left(e^{\left(4i\,fx+4i\,e\right)}+2\,e^{\left(2i\,fx+2i\,e\right)}+1\right)e^{\left(-4i\,fx-4i\,e\right)}}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^n*(-I*(2+n)+(-2+n)*tan(f*x+e))/(-I+tan(f*x+e))
^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*c/(e^(2*I*f*x + 2*I*e) + 1))^n*(e^(4*I*f*x + 4*I*e) + 2*e^(2*I*f*x
+ 2*I*e) + 1)*e^(-4*I*f*x - 4*I*e)/f
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))**n*(-I*(2+n)+(-2+n)*tan(f*x+e))/(tan(f*x+e)-I)
**2,x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left((n-2)\tan\left(fx+e\right)-i\,n-2i\right)\left(-i\,c\tan\left(fx+e\right)+c\right)^{n}}{\left(\tan\left(fx+e\right)-i\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-I*c*tan(f*x+e))^n*(-I*(2+n)+(-2+n)*tan(f*x+e))/(-I+tan(f*x+e))
^2,x, algorithm="giac")
```

```
[Out] integrate(((n - 2)*tan(f*x + e) - I*n - 2*I)*(-I*c*tan(f*x + e) + c)^n/(tan
(f*x + e) - I)^2, x)
```

3.854 $\int \frac{(A+B\tan(e+fx))(c+d\tan(e+fx))}{(a+ia\tan(e+fx))^2}\,dx$

Optimal. Leaf size=104

$$\frac{A(d+ic)+B(c+3id)}{4a^2f(1+i\tan(e+fx))}+\frac{x(A-iB)(c-id)}{4a^2}+\frac{(-B+iA)(c+id)}{4f(a+ia\tan(e+fx))^2}$$

```
[Out] ((A - I*B)*(c - I*d)*x)/(4*a^2) + (B*(c + (3*I)*d) + A*(I*c + d))/(4*a^2*f*
(1 + I*Tan[e + f*x])) + ((I*A - B)*(c + I*d))/(4*f*(a + I*a*Tan[e + f*x])^2
)
```

Rubi [A] time = 0.238247, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {3590, 3526, 8}

$$\frac{A(d+ic)+B(c+3id)}{4a^2f(1+i\tan(e+fx))}+\frac{x(A-iB)(c-id)}{4a^2}+\frac{(-B+iA)(c+id)}{4f(a+ia\tan(e+fx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c + d*Tan[e + f*x]))/(a + I*a*Tan[e + f*x])^2,x]
```

```
[Out] ((A - I*B)*(c - I*d)*x)/(4*a^2) + (B*(c + (3*I)*d) + A*(I*c + d))/(4*a^2*f*
(1 + I*Tan[e + f*x])) + ((I*A - B)*(c + I*d))/(4*f*(a + I*a*Tan[e + f*x])^2
)
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
```

```
] && LtQ[m, 0]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c+d\tan(e+fx))}{(a+ia\tan(e+fx))^2}\,dx = \frac{(iA-B)(c+id)}{4f(a+ia\tan(e+fx))^2} - \frac{i\int \frac{a(B(c+id)+A(ic+d))+2aBd\tan(e+fx)}{a+ia\tan(e+fx)}\,dx}{2a^2}$$
$$= \frac{B(c+3id)+A(ic+d)}{4a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c+id)}{4f(a+ia\tan(e+fx))^2} + \frac{((A-iB)(c-id))}{4a^2}$$
$$= \frac{(A-iB)(c-id)x}{4a^2} + \frac{B(c+3id)+A(ic+d)}{4a^2f(1+i\tan(e+fx))} + \frac{(iA-B)(c+id)}{4f(a+ia\tan(e+fx))^2}$$

Mathematica [A] time = 1.68907, size = 201, normalized size = 1.93

$$-\frac{(A+B\tan(e+fx))(c+d\tan(e+fx))(\sin(2(e+fx))(A(4icfx+c+4dfx+id)+B(4cfx+ic-4idfx-d))+\cos(2}{16a^2f(\tan(e+fx)-i)^2(A\cos(e+fx)+B\sin(e+fx))(c\cos}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c + d*Tan[e + f*x]))/(a + I*a*Tan[e + f*x]
)^2,x]
```

```
[Out] -((((4*I)*(A*c + B*d) + (A*(d*(-1 - (4*I)*f*x) + c*(I + 4*f*x)) - B*(c + (4*
I)*c*f*x + d*(I + 4*f*x)))*Cos[2*(e + f*x)] + (B*(I*c - d + 4*c*f*x - (4*I)
*d*f*x) + A*(c + I*d + (4*I)*c*f*x + 4*d*f*x))*Sin[2*(e + f*x)])*(A + B*Tan
[e + f*x])*(c + d*Tan[e + f*x]))/(16*a^2*f*(A*Cos[e + f*x] + B*Sin[e + f*x]
)*(c*Cos[e + f*x] + d*Sin[e + f*x])*(-I + Tan[e + f*x])^2)
```

Maple [B] time = 0.045, size = 338, normalized size = 3.3

$$\frac{-\frac{i}{4}Bc}{fa^2\left(\tan\left(fx+e\right)-i\right)} - \frac{\frac{i}{8}B\ln\left(\tan\left(fx+e\right)+i\right)d}{fa^2} + \frac{Ac}{4\,fa^2\left(\tan\left(fx+e\right)-i\right)} + \frac{3\,Bd}{4\,fa^2\left(\tan\left(fx+e\right)-i\right)} + \frac{}{4\,fa^2\left(\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x)
```

```
[Out] -1/4*I/f/a^2/(tan(f*x+e)-I)*B*c-1/8*I/f/a^2*B*ln(tan(f*x+e)+I)*d+1/4/f/a^2/
(tan(f*x+e)-I)*A*c+3/4/f/a^2/(tan(f*x+e)-I)*B*d+1/4/f/a^2/(tan(f*x+e)-I)^2*
A*d+1/4/f/a^2/(tan(f*x+e)-I)^2*B*c-1/4*I/f/a^2/(tan(f*x+e)-I)*A*d+1/8*I/f/a
^2*A*ln(tan(f*x+e)+I)*c+1/4*I/f/a^2/(tan(f*x+e)-I)^2*B*d-1/4*I/f/a^2/(tan(f
*x+e)-I)^2*A*c-1/8/f/a^2*ln(tan(f*x+e)-I)*A*d-1/8/f/a^2*ln(tan(f*x+e)-I)*B*
c+1/8/f/a^2*A*ln(tan(f*x+e)+I)*d+1/8/f/a^2*B*ln(tan(f*x+e)+I)*c+1/8*I/f/a^2
*ln(tan(f*x+e)-I)*B*d-1/8*I/f/a^2*ln(tan(f*x+e)-I)*A*c
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algorit
hm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 1.34732, size = 224, normalized size = 2.15

$$\frac{\left((4\,(A-i\,B)c+(-4i\,A-4\,B)d)fxe^{(4i\,fx+4i\,e)}+(i\,A-B)c-(A+i\,B)d+(4i\,Ac+4i\,Bd)e^{(2i\,fx+2i\,e)}\right)e^{(-4i\,fx-4i\,e)}}{16\,a^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algorit
hm="fricas")
```

```
[Out] 1/16*((4*(A - I*B)*c + (-4*I*A - 4*B)*d)*f*x*e^(4*I*f*x + 4*I*e) + (I*A - B
)*c - (A + I*B)*d + (4*I*A*c + 4*I*B*d)*e^(2*I*f*x + 2*I*e))*e^(-4*I*f*x -
4*I*e)/(a^2*f)
```

Sympy [A] time = 1.8764, size = 298, normalized size = 2.87

$$\begin{cases} \frac{\left(\left(16iAa^2cfe^{4ie}+16iBa^2dfe^{4ie}\right)e^{-2ifx}+\left(4iAa^2cfe^{2ie}-4Aa^2dfe^{2ie}-4Ba^2cfe^{2ie}-4iBa^2dfe^{2ie}\right)e^{-4ifx}\right)e^{-6ie}}{64a^4f^2} & \text{for } 64a^4f^2e^{6ie}\neq 0 \\ x\left(-\frac{Ac-iAd-iBc-Bd}{4a^2}+\frac{\left(Ace^{4ie}+2Ace^{2ie}+Ac-iAde^{4ie}+iAd-iBce^{4ie}+iBc-Bde^{4ie}+2Bde^{2ie}-Bd\right)e^{-4ie}}{4a^2}\right) & \text{otherwise} \end{cases} + \frac{x\,(Ac-iAd-iB}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))**2,x)
```

```
[Out] Piecewise((((16*I*A*a**2*c*f*exp(4*I*e) + 16*I*B*a**2*d*f*exp(4*I*e))*exp(-
2*I*f*x) + (4*I*A*a**2*c*f*exp(2*I*e) - 4*A*a**2*d*f*exp(2*I*e) - 4*B*a**2*
c*f*exp(2*I*e) - 4*I*B*a**2*d*f*exp(2*I*e))*exp(-4*I*f*x))*exp(-6*I*e)/(64*
a**4*f**2), Ne(64*a**4*f**2*exp(6*I*e), 0)), (x*(-(A*c - I*A*d - I*B*c - B*
d)/(4*a**2) + (A*c*exp(4*I*e) + 2*A*c*exp(2*I*e) + A*c - I*A*d*exp(4*I*e) +
 I*A*d - I*B*c*exp(4*I*e) + I*B*c - B*d*exp(4*I*e) + 2*B*d*exp(2*I*e) - B*d
)*exp(-4*I*e)/(4*a**2)), True)) + x*(A*c - I*A*d - I*B*c - B*d)/(4*a**2)
```

Giac [B] time = 1.23019, size = 270, normalized size = 2.6

$$-\frac{\frac{2\,(-iAc-Bc-Ad+iBd)\log\left(-i\tan\left(fx+e\right)+1\right)}{a^2}+\frac{2\,(iAc+Bc+Ad-iBd)\log\left(-i\tan\left(fx+e\right)-1\right)}{a^2}+\frac{-3iAc\tan\left(fx+e\right)^2-3Bc\tan\left(fx+e\right)^2-3Ad\tan\left(fx+e\right)^2+3i}{}}{16f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^2,x, algorit
hm="giac")
```

```
[Out] -1/16*(2*(-I*A*c - B*c - A*d + I*B*d)*log(-I*tan(f*x + e) + 1)/a^2 + 2*(I*A
*c + B*c + A*d - I*B*d)*log(-I*tan(f*x + e) - 1)/a^2 + (-3*I*A*c*tan(f*x +
e)^2 - 3*B*c*tan(f*x + e)^2 - 3*A*d*tan(f*x + e)^2 + 3*I*B*d*tan(f*x + e)^2
 - 10*A*c*tan(f*x + e) + 10*I*B*c*tan(f*x + e) + 10*I*A*d*tan(f*x + e) - 6*
B*d*tan(f*x + e) + 11*I*A*c + 3*B*c + 3*A*d + 5*I*B*d)/(a^2*(tan(f*x + e) -
 I)^2))/f
```

3.855 $\int \frac{(A+B\tan(e+fx))(c+d\tan(e+fx))}{(a+ia\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=147

$$-\frac{(B+iA)(c-id)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}f}+\frac{(-B+iA)(c+id)}{3f(a+ia\tan(e+fx))^{3/2}}+\frac{A(d+ic)+B(c+3id)}{2af\sqrt{a+ia\tan(e+fx)}}$$

```
[Out] -((I*A + B)*(c - I*d)*ArcTanh[Sqrt[a + I*a*Tan[e + f*x]]/(Sqrt[2]*Sqrt[a])]
)/(2*Sqrt[2]*a^(3/2)*f) + ((I*A - B)*(c + I*d))/(3*f*(a + I*a*Tan[e + f*x])
^(3/2)) + (B*(c + (3*I)*d) + A*(I*c + d))/(2*a*f*Sqrt[a + I*a*Tan[e + f*x]]
)
```

Rubi [A] time = 0.295479, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {3590, 3526, 3480, 206}

$$-\frac{(B+iA)(c-id)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}f}+\frac{(-B+iA)(c+id)}{3f(a+ia\tan(e+fx))^{3/2}}+\frac{A(d+ic)+B(c+3id)}{2af\sqrt{a+ia\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*Tan[e + f*x])*(c + d*Tan[e + f*x]))/(a + I*a*Tan[e + f*x])^(3/2
),x]
```

```
[Out] -((I*A + B)*(c - I*d)*ArcTanh[Sqrt[a + I*a*Tan[e + f*x]]/(Sqrt[2]*Sqrt[a])]
)/(2*Sqrt[2]*a^(3/2)*f) + ((I*A - B)*(c + I*d))/(3*f*(a + I*a*Tan[e + f*x])
^(3/2)) + (B*(c + (3*I)*d) + A*(I*c + d))/(2*a*f*Sqrt[a + I*a*Tan[e + f*x]]
)
```

Rule 3590

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*tan[(e_.) +
(f_.)*(x_)])*((c_.) + (d_.)*tan[(e_.) + (f_.)*(x_)]), x_Symbol] :> -Simp[((
A*b - a*B)*(a*c + b*d)*(a + b*Tan[e + f*x])^m)/(2*a^2*f*m), x] + Dist[1/(2*
a*b), Int[(a + b*Tan[e + f*x])^(m + 1)*Simp[A*b*c + a*B*c + a*A*d + b*B*d +
 2*a*B*d*Tan[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] &&
NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ[a^2 + b^2, 0]
```

Rule 3526

```
Int[((a_) + (b_.)*tan[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*tan[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*(a + b*Tan[e + f*x])^m)/(2*a*
f*m), x] + Dist[(b*c + a*d)/(2*a*b), Int[(a + b*Tan[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 + b^2, 0
] && LtQ[m, 0]
```

Rule 3480

```
Int[Sqrt[(a_) + (b_.)*tan[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(2*a - x^2), x], x, Sqrt[a + b*Tan[c + d*x]]], x] /; FreeQ[{a,
 b, c, d}, x] && EqQ[a^2 + b^2, 0]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rubi steps

$$\int \frac{(A+B\tan(e+fx))(c+d\tan(e+fx))}{(a+ia\tan(e+fx))^{3/2}}\,dx = \frac{(iA-B)(c+id)}{3f(a+ia\tan(e+fx))^{3/2}} - \frac{i\int \frac{a(B(c+id)+A(ic+d))+2aBd\tan(e+fx)}{\sqrt{a+ia\tan(e+fx)}}\,dx}{2a^2}$$

$$= \frac{(iA-B)(c+id)}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{B(c+3id)+A(ic+d)}{2af\sqrt{a+ia\tan(e+fx)}} + \frac{((A-iB)(c-ia$$

$$= \frac{(iA-B)(c+id)}{3f(a+ia\tan(e+fx))^{3/2}} + \frac{B(c+3id)+A(ic+d)}{2af\sqrt{a+ia\tan(e+fx)}} - \frac{(i(A-iB)(c-i$$

$$= -\frac{(iA+B)(c-id)\tanh^{-1}\left(\frac{\sqrt{a+ia\tan(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}f} + \frac{(iA-B)(c+id)}{3f(a+ia\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 5.31034, size = 206, normalized size = 1.4

$$\frac{(A+B\tan(e+fx))(c+d\tan(e+fx))\left(\frac{2}{3}\cos(e+fx)((A(d+5ic)+B(c+7id))\cos(e+fx)-3(Ac-iAd-iBc+3Bd}{4f(a+ia\tan(e+fx))^{3/2}(A\cos(e+fx)+B\sin(e+fx))(c\cos(e+f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*Tan[e + f*x])*(c + d*Tan[e + f*x]))/(a + I*a*Tan[e + f*x]
)^(3/2),x]
```

```
[Out] (((-I)*(A - I*B)*(c - I*d)*E^(I*(e + f*x))*Sqrt[1 + E^((2*I)*(e + f*x))]*Ar
cSinh[E^(I*(e + f*x))] + (2*Cos[e + f*x]*((B*(c + (7*I)*d) + A*((5*I)*c + d
))*Cos[e + f*x] - 3*(A*c - I*B*c - I*A*d + 3*B*d)*Sin[e + f*x]))/3)*(A + B*
Tan[e + f*x])*(c + d*Tan[e + f*x]))/(4*f*(A*Cos[e + f*x] + B*Sin[e + f*x])*
(c*Cos[e + f*x] + d*Sin[e + f*x])*(a + I*a*Tan[e + f*x])^(3/2))
```

Maple [A] time = 0.074, size = 131, normalized size = 0.9

$$\frac{-2\,i}{af}\left(-\left(-\frac{i}{4}Ad-\frac{i}{4}Bc+\frac{Ac}{4}+\frac{3\,Bd}{4}\right)\frac{1}{\sqrt{a+ia\tan\left(fx+e\right)}}-\frac{a\left(-Bd+iAd+iBc+Ac\right)}{6}\left(a+ia\tan\left(fx+e\right)\right)^{-\frac{3}{2}}-\frac{\sqrt{2}}{2}\left(\frac{i}{4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2),x)
```

```
[Out] -2*I/f/a*(-(-1/4*I*A*d-1/4*I*B*c+1/4*A*c+3/4*B*d)/(a+I*a*tan(f*x+e))^(1/2)-
1/6*a*(-B*d+I*A*d+I*B*c+A*c)/(a+I*a*tan(f*x+e))^(3/2)-1/2*(1/4*I*A*d+1/4*I*
B*c-1/4*A*c+1/4*B*d)*2^(1/2)/a^(1/2)*arctanh(1/2*(a+I*a*tan(f*x+e))^(1/2)*2
^(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2),x, alg
orithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [B] time = 1.74103, size = 1629, normalized size = 11.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2),x, alg
orithm="fricas")
```

```
[Out] -1/12*(3*sqrt(1/2)*a^2*f*sqrt(-((A^2 - 2*I*A*B - B^2)*c^2 - (2*I*A^2 + 4*A*
B - 2*I*B^2)*c*d - (A^2 - 2*I*A*B - B^2)*d^2)/(a^3*f^2))*e^(4*I*f*x + 4*I*e
)*log(-(2*I*sqrt(1/2)*a^2*f*sqrt(-((A^2 - 2*I*A*B - B^2)*c^2 - (2*I*A^2 + 4
*A*B - 2*I*B^2)*c*d - (A^2 - 2*I*A*B - B^2)*d^2)/(a^3*f^2))*e^(2*I*f*x + 2*
I*e) - sqrt(2)*((A - I*B)*c - (I*A + B)*d + ((A - I*B)*c - (I*A + B)*d)*e^(
2*I*f*x + 2*I*e))*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-I*
f*x - I*e)/((A - I*B)*c - (I*A + B)*d)) - 3*sqrt(1/2)*a^2*f*sqrt(-((A^2 - 2
*I*A*B - B^2)*c^2 - (2*I*A^2 + 4*A*B - 2*I*B^2)*c*d - (A^2 - 2*I*A*B - B^2)
*d^2)/(a^3*f^2))*e^(4*I*f*x + 4*I*e)*log(-(-2*I*sqrt(1/2)*a^2*f*sqrt(-((A^2
 - 2*I*A*B - B^2)*c^2 - (2*I*A^2 + 4*A*B - 2*I*B^2)*c*d - (A^2 - 2*I*A*B -
B^2)*d^2)/(a^3*f^2))*e^(2*I*f*x + 2*I*e) - sqrt(2)*((A - I*B)*c - (I*A + B)
*d + ((A - I*B)*c - (I*A + B)*d)*e^(2*I*f*x + 2*I*e))*sqrt(a/(e^(2*I*f*x +
2*I*e) + 1))*e^(I*f*x + I*e))*e^(-I*f*x - I*e)/((A - I*B)*c - (I*A + B)*d))
 - sqrt(2)*((I*A - B)*c - (A + I*B)*d + ((4*I*A + 2*B)*c + 2*(A + 4*I*B)*d)
*e^(4*I*f*x + 4*I*e) + ((5*I*A + B)*c + (A + 7*I*B)*d)*e^(2*I*f*x + 2*I*e))
*sqrt(a/(e^(2*I*f*x + 2*I*e) + 1))*e^(I*f*x + I*e))*e^(-4*I*f*x - 4*I*e)/(a
^2*f)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))**(3/2),x)
```

```
[Out] Exception raised: AttributeError
```

Giac [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(B\tan\left(fx+e\right)+A\right)\left(d\tan\left(fx+e\right)+c\right)}{\left(i\,a\tan\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*tan(f*x+e))*(c+d*tan(f*x+e))/(a+I*a*tan(f*x+e))^(3/2),x, alg
orithm="giac")
```

```
[Out] integrate((B*tan(f*x + e) + A)*(d*tan(f*x + e) + c)/(I*a*tan(f*x + e) + a)^
(3/2), x)
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
```

```
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
```

```
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems
```

```

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
    debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
    ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
```

```
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
```

```
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
```

```
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
```

```
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]

def is_atom(expn):
    try:
```

```
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
```

```
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
```

```
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

def tree(expr):
    debug=False;
    if debug:
         print ("Enter tree(expr), expr=",expr)
         print ("expr.operator()=",expr.operator())
         print ("expr.operands()=",expr.operands())
         print ("map(tree, expr.operands()=",map(tree, expr.operands()))

    if expr.operator() is None:
        return expr
    else:
        return [expr.operator()]+list(map(tree, expr.operands()))

def leaf_count(anti):
    debug=False;

    if debug: print ("Enter leaf_count, anti=", anti, " len(anti)=", len(anti))

    if len(anti) == 0: #special check for optimal being 0 for some test cases.
       if debug: print ("len(anti) == 0")
       return 1
    else:
        if debug: print ("round(1.35*len(flatten(tree(anti))))=",round(1.35*len(
    flatten(tree(anti)))))
        return round(1.35*len(flatten(tree(anti)))) #fudge factor
                     #since this estimate of leaf count is bit lower than
                     #what it should be compared to Mathematica's

def is_sqrt(expr):
    debug=False;
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

```

```
def is_elementary_function(func):
    debug = False

    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug = False

    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U
    ']

def is_appell_function(func):
```

```
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in sagemath

def is_atom(expn):

    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
            return expn in expn.parent().base_ring() or expn in expn.parent().gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):
    debug=False

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer)
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],Rational)
                return 1
```

```
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: # isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): # is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):
    debug = False;

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, " leaf_count_optimal=",leaf_count_optimal)
```

```


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=", expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```